

# Royal Institute of British Architects

## Ministry of Housing, Communities and Local Government: Future Buildings Standard April 2021

The Royal Institute of British Architects is a global professional membership body driving excellence in architecture. We serve our members and society in order to deliver better buildings and places, stronger communities and a sustainable environment. Being inclusive, ethical, environmentally aware and collaborative underpins all that we do.

The RIBA welcomes the opportunity to respond to the Future Buildings Standard consultation.

On 29 June 2019 RIBA Council voted to join the global declaration of an environment and climate emergency, two days after the UK government passed a law to require the UK to end its contribution to global warming by 2050 by bringing all greenhouse gas emissions to net zero. The climate emergency demands urgent action and leadership by the Government, architects, and the wider construction industry.

We welcome the direction of travel shown by many of the measures proposed in this consultation. However, we believe that there is a need for greater ambition on behalf of the Government if we are to significantly improve the performance and reduce the environmental impacts of the built environment.

The RIBA recommends that the Government:

- Start regulating total energy consumption and not introduce primary energy
- Set actual energy performance targets for buildings
- Ensure new buildings are really on track for net zero carbon, with low energy demand and no fossil fuels
- Assess building performance better to close the performance gap
- Introduce and regulate embodied carbon targets for buildings
- Set a National Retrofit Strategy

## Section A: Non-Domestic Buildings

### The Future Buildings Standard

**Question 1: Our aim is that buildings constructed to the Future Buildings Standard will be capable of becoming carbon neutral over time as the electricity grid and heat networks decarbonise. Do you agree that the outline of the Future Buildings Standard in this chapter meets this aim?**

- a) Yes
- b) No

**Please explain your reasoning and provide supporting evidence or alternative suggestions.**

*b) No*

The RIBA welcomes the direction of travel signified by many of the measures proposed in this consultation and the Government's ambition to reduce the impact of buildings on the environment.

However, the RIBA recommends setting actual operational energy targets (measured in kWh/m<sup>2</sup>/yr) and embodied carbon targets (measured in kgCO<sub>2</sub>/m<sup>2</sup>) for buildings. Actual energy targets would encourage architects, developers and building owners to be innovative with their designs.

Both operational energy and embodied carbon are key metrics for the RIBA's 2030 Climate Challenge which calls for RIBA Chartered Practices to reach net zero whole life carbon by 2030. Meeting these targets is critical to ensuring the built environment reaches net zero and Government targets should be aligned with the 2030 Challenge.

It would also be beneficial for the Government to create specific targets for carbon emissions with an absolute scale of kgCO<sub>2</sub>/m<sup>2</sup>. Currently, there are no specific levels of carbon emissions or operational energy targets mandated. Percentage improvements from a notional baseline are inherently flawed as they benefit buildings of poor shape and design.

It was welcome to see the importance of fabric efficiency included in the consultation. The RIBA believes that fabric efficiency should be the primary consideration when designing new buildings; any method of delivering heat should be secondary.

**Question 2: We believe that developers will typically deploy heat pumps and heat networks to deliver the low carbon heating requirement of the Future Buildings Standard where practical. What are your views on this and in what circumstances should other low carbon technologies, such as direct electric heating or hydrogen, be used?**

The Future Buildings Standard should stipulate that any new building requires low carbon heating and that it should not be attached to the gas grid or reliant on any fossil fuel.

As research and development continue, there may be new technologies and products that are low carbon and produce similar results to heat pumps, these should not be discounted. The RIBA suggests that the Building Regulations should be target-based, rather than approach-based.

**Question 3: Do you agree that some non-domestic building types are more suitable for low carbon heating and hot water, and that some non-domestic building types are more challenging?**

- a) Yes
- b) No

**If you answered no, please explain your reasoning.**

*a) Yes*

Question 4: Do you agree with the allocation of building types to space and water heating demand types, as presented in Table 2.1 of this consultation document?

- a) Yes
- b) No

If you answered no, please explain your reasoning, including how different building types should be allocated.

- a) Yes

Question 5: We would like to introduce the Future Buildings Standard for all buildings as quickly as possible. When do you think the Future Buildings Standard should introduce low carbon space heating for buildings with Type 1 or Type 2 demand (buildings that have space heating demand more suitable for heat pumps)?

- a) 2025 – our proposed date
- b) Another date (please specify)

Please explain your reasoning.

- a) 2025 – our proposed date

Question 6: We would like to introduce the Future Buildings Standard for all buildings as quickly as possible. When do you think the Future Buildings Standard should introduce low carbon space heating for buildings with Type 3 demand (buildings that have space heating demand less suitable for heat pumps)?

- a) 2025
- b) Another date (please specify)

Please explain your reasoning.

- a) 2025

The date should be reviewed in conjunction with the adequate research and industry engagement. Low carbon space heating for Type 3 spaces must be technologically achievable while considering cost and affordability in respect to the specific use class of the space and sustainability considerations such as embodied carbon versus gains on operational energy.

Question 7: We would like to introduce the Future Buildings Standard for all buildings as quickly as possible. When do you think the Future Buildings Standard should introduce low carbon water heating for buildings with Type 1 or Type 3 demand (buildings that have water heating demand more suitable for point-of-use heaters or heat pumps)?

- a) 2025 – our proposed date
- b) Another date (please specify)

Please explain your reasoning.

- a) 2025 – our proposed date

Question 8: We would like to introduce the Future Buildings Standard for all buildings as quickly as possible. When do you think the Future Buildings Standard should introduce low carbon water heating for buildings with Type 2 demand (buildings that have water heating demand less suitable for point-of-use heaters or heat pumps)?

- a) 2025
- b) Another date (please specify)

Please explain your reasoning.

- a) 2025

## Interim uplift to Part L standards for non-domestic buildings

**Question 9: We would welcome any further suggestions, beyond those provided in this consultation, for improving the modelling process; Part L and Part F compliance; and the actual energy performance of non-domestic buildings. Please provide related evidence.**

The RIBA welcomes the Government's suggested moves toward in-use energy for non-domestic buildings and is ready to support the Government in doing so. Moving towards the disclosure of operational energy would drive clean growth and reduce carbon emissions and better performance through greater building owner and operator awareness. New York and Australia both disclose the operational energy use for all buildings, the latter has helped the country to reduce operational energy by 70%.

We would also like to see the Government set embodied carbon targets for non-domestic buildings. The choice of materials used in construction can significantly impact the amount of carbon emitted during a project. To help address the levels of embodied carbon in non-domestic buildings, the UK should introduce embodied carbon targets, in line with the RIBA 2030 Climate Challenge. Setting embodied carbon targets will increase the demand for low carbon materials – stimulating growth in low-emission manufacturing of traditional materials and promote new low carbon materials. Actively considering embodied carbon will also encourage the use of local materials, driving the built environment to source products from the UK where possible.

The RIBA recommends that the Government endorse the use of Post-Occupancy Evaluation (POE) and should require as a requirement for any building that receives public funding. POE is the process of obtaining feedback on a building's performance in use after it has been built and occupied. POE is the only way of accurately measuring if a building is as energy efficient as anticipated. There is significant evidence that buildings tend to over promise and underperform, particularly in relation to energy efficiency. POE verifies to both the building owner and user that it is as energy efficient as promised.

**Question 10: What level of uplift to the energy efficiency standards for non-domestic buildings in the Building Regulations should be introduced in 2021?**

- a) Option 1 – average 22% CO2 reduction
- b) Option 2 – average 27% CO2 reduction (this is the Government's preferred option)
- c) No change
- d) Other level of uplift (please specify)

**Please explain your reasoning and provide supporting evidence or alternative suggestions where applicable.**

*d) Other level of uplift (please specify)*

The RIBA welcomes the ambition of a 27% reduction for non-domestic buildings in 2021. However, it is unclear how this percentage reduction will help reach net zero as the reduction is compared to current standards.

Currently, there are no specific levels of carbon emissions or operational energy targets mandated. We must start measuring absolute values rather than percentage reductions from a notional baseline. The notional building does not reward efficient building form and orientation.

We must move towards setting actual energy consumption requirements, measured in energy use intensity (EUI), in kWh/m<sup>2</sup>/yr. This would encourage architects, engineers, developers and building owners to work together, be innovative and reward good design based on form, orientation and fabric performance.

The RIBA suggests that operational energy targets should align with the 2030 Climate Challenge.

Going forward, the RIBA 2030 Climate Challenge should be used as guidelines for further uplifts in the Future Buildings Standard.

The 2030 Climate Challenge operational energy targets are below:

2020 Target - < 170 kWh/m<sup>2</sup>/y – DEC C Rating

2025 Target - < 110 kWh/m<sup>2</sup>/y – DEC B Rating

2030 Target - < 0 to 55 kWh/m<sup>2</sup>/y – DEC A Rating

The RIBA suggests that embodied carbon targets should also be included within the methodology.

**Question 11: Do you agree with the way that we are proposing to apply primary energy as the principal performance metric?**

a) Yes

b) No

If you answered no, please explain your reasoning.

b) No

Primary energy does not provide consumers with actual building performance and does not encourage building performance directly, as it is heavily dependent on the wider energy system. Primary energy obscures the actual performance of a building as it doesn't account for upstream activities involved in the production of the fuel.

The RIBA suggests that operational energy (kWh/m<sup>2</sup>/yr) should be the preferred way to measure and demonstrate energy use intensity (EUI). This metric is already well known and understood within the sector as well as by building owners and occupiers.

Operational energy should be calculated from the design stage and reviewed through a POE. POE is essential to ensure that a building is as energy efficient as intended.

Using operational energy as the key metric would also allow for benchmarking and minimum standards to be easily established based on building type, driving further innovation within the built environment.

**Question 12: Do you agree with using CO<sub>2</sub> as the secondary performance metric?**

a) Yes

b) No

If you answered no, please explain your reasoning.

a. Yes

Continuing to use CO<sub>2</sub> as a secondary metric is important because it is well-known, it ensures continuity and allows comparison with previous targets.

However, the RIBA also suggests another key metric should be included, embodied carbon.

Embodied carbon is emissions generated from the processes associated with sourcing materials, fabricating them into products and systems, transporting them to site and assembling them into a building. They also include the emissions generated from maintenance, repair and replacement, as well as final demolition and disposal.

Currently, there is some guidance on appropriate levels of embodied carbon for buildings. However, the lack of specific regulations has meant that this guidance has not been widely utilised. Excluding embodied carbon calculations when constructing a new building would be an oversight, as the materials used in constructing any new building has a large impact on the total level of carbon emitted.

The embodied carbon metrics should be calculated in accordance with the RICS Whole Life Carbon Assessment for the Built Environment, which aligns with BS EN 15978. This metric is widely accepted within the built environment as an appropriate way to measure embodied carbon.

Question 13: Do you agree with the approach to calculating CO2 and primary energy factors, referred to in paragraph 3.5.7 of this consultation document?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide supporting evidence or alternative suggestions.

Question 14: Do you agree with the proposals for natural gas being assigned as the heating fuel for any fuels with a worse CO2 emission factor than natural gas?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide supporting evidence or alternative suggestions.

- a) Yes

Question 15: Do you agree with our proposal of using a hybrid electric/heat pump heating system in the notional building when electricity is specified as a heating fuel?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide supporting evidence or alternative suggestions.

Question 16: Do you agree with the proposal for the treatment of domestic hot water in the notional building?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

Question 17: Do you agree with the proposal for connecting to an existing heat network, as presented in the draft NCM modelling guide?

- a) Yes
- b) No, they give too much of an advantage to heat networks
- c) No, they do not give enough of an advantage to heat networks
- d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide supporting evidence or alternative suggestions.

Question 18: Do you agree with the proposal for connecting to a new heat network, as presented in the draft NCM modelling guide?

- a) Yes
- b) No, they give too much of an advantage to heat networks
- c) No, they do not give enough of an advantage to heat networks
- d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide supporting evidence or alternative suggestions.

**Question 19: Do you agree with the proposed changes to the National Calculation Methodology Modelling Guide and activity database?**

- a) Yes
- b) Yes, but additional changes should be made
- c) No

If you answered b or c, please explain your reasoning and provide alternative suggestions.

**Question 20: We would welcome any further suggestions for revising the outputs from SBEM, which would enable easier checking by building control on building completion. Please provide related evidence.**

SBEM is used to calculate the target emissions rate (TER) and building emissions rate (BER) rather than to predict operational energy or whole life carbon performance. Therefore, SBEM is an inappropriate methodology to reduce the climate impact of the built environment. SBEM cannot deliver the improvements needed for designing to an operational energy standard. This is a significant hurdle to delivering net zero buildings.

SBEM should be replaced with a more sophisticated advanced modelling methodology that can more accurately model operational energy building performance.

Government should consult on this new tool and look to existing models, such as the Australian NABERS, CIBSE's tools on evaluating operational energy performance of buildings at the design stage (TM54 and DomEARM), Passivhaus Planning Package (PHPP) and Dynamic Thermal Simulation (DTS), as a starting point.

**Question 21: Do you agree with the proposals for limiting heat gains in non-domestic buildings?**

- a) Yes
- b) No, they go too far
- c) No, they do not go far enough
- d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide alternative suggestions.

a) Yes

The g-value should be improved as per Table 4.3 as a minimum and should be assessed in relation to shading, overheating and daylight. It also needs to consider building-specific factors such as orientation, number of aspects and glazing ratio.

**Question 22: Do you agree with the proposed minimum standards for fabric performance in new non-domestic buildings as presented in Table 3.2 of this consultation document?**

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough
- d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide supporting evidence or alternative suggestions.

c) *No, the standards do not go far enough*

For new non-domestic buildings, the minimum fabric standards should be further uplifted at the earliest opportunity, given fabric performance is the primary driver of reducing carbon emissions.

The RIBA suggests the following fabric standards:

Solid Walls	0.1 – 0.15 W/m <sup>2</sup> .K
Roof	0.1 – 0.12 W/m <sup>2</sup> .K
Ground Floor	0.1 – 0.12 W/m <sup>2</sup> .K

Curtain Walling including frame	1.2 W/m <sup>2</sup> .K
Windows including frame	1.2 W/m <sup>2</sup> .K
Doors including frame	1.8 W/m <sup>2</sup> .K

Furthermore, the minimum standard for air permeability is too high and should be reduced to 3m<sup>3</sup>/m<sup>2</sup>.h at 50Pa.

**Question 23: Do you agree with the proposed minimum standards for fabric performance of new thermal elements in existing non-domestic buildings as presented in Table 3.3 of this consultation document?**

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough
- d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide supporting evidence or alternative suggestions.

*c) No, the standards do not go far enough*

For new non-domestic buildings, the minimum fabric standards should be further uplifted at the earliest opportunity, given fabric performance is the primary driver of reducing carbon emissions.

The RIBA suggests the following fabric standards:

Walls	0.18 W/m <sup>2</sup> .K
Roof	0.15 W/m <sup>2</sup> .K

**Question 24: Do you agree with the draft guidance in paragraph 4.15 of the draft Approved Document L, volume 2: buildings other than dwellings on reducing unwanted air infiltration when carrying out work to existing non-domestic buildings?**

- a) Yes
- b) No

If you answered no, please explain your reasoning.

**Question 25: Do you agree that the limiting U-value for rooflights in new and existing non-domestic buildings should be based on a rooflight in a horizontal position, as detailed in paragraph 4.4 of draft Approved Document L, volume 2: buildings other than dwellings?**

- a) Yes
- b) No

If you answered no, please explain your reasoning.

*a) Yes*

The simplification of the guidance and consistency with the Future Homes Standard would be beneficial.

**Question 26: Do you agree that we should adopt the latest version of BR 443 for calculating U-values in new and existing non-domestic buildings, as detailed in paragraph 4.1 of draft Approved Document L, volume 2: buildings other than dwellings?**

- a) Yes
- b) No

If you answered no, please explain your reasoning.

*a) Yes*

The method for calculation should be consistent with that being adopted under the Future Homes Standard.

Question 27: Do you agree with the newly proposed minimum efficiencies for natural gas, oil and LPG boiler and domestic hot water system installations in new non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 28: Do you agree with the proposed set of standards for air distribution systems for new non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 29: Do you agree with the proposals for self-regulating devices for new non-domestic buildings, as set out in Sections 5 and 6 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

a) Yes

Question 30: Do you agree with the minimum efficacy proposals for lighting in new non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

a) Yes

We are in principle happy with the minimum efficacy proposals for lighting if that are based on CIBSE's SLL Lighting Handbook.

Question 31: Do you agree with the proposals for cooling in new non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough If you answered no (b or c), please explain your reasoning.

a) Yes

We are in principle happy with the proposals for cooling if that are based on CIBSE's Design Guide A and following the principle that systems should not be significantly oversized.

Question 32: Do you agree with the proposals to require building automation and control systems in new non-domestic buildings, when such buildings have a heating or air-conditioning system over 290kW?

- a) Yes
- b) No, a different trigger point should be used
- c) No, I do not agree that building automation and control systems should be required in new buildings

d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide alternative suggestions. Please also highlight any unintended consequences that may result from setting this standard.

*d) No, I disagree for another reason*

Building automation should not be mandatory, but designers should assess whether the upfront embodied carbon and ongoing operational energy of running a building automation system is offset by the reductions in the building operational energy. Efforts should first be made to improve the fabric of the building. Newer technologies will change the nature in how systems are attuned to occupancy behaviour and/or demand.

**Question 33: Do you agree with the technical specification for new building automation and control systems as EN 15232, Class A?**

a) Yes

b) No, the requirements go too far

c) No, the requirements do not go far enough

If you answered no (b or c), please explain your reasoning.

**Question 34: Do you agree with the proposals for improving the commissioning guidance for new non-domestic buildings in Section 8 and 9 of draft Approved Document L, volume 2: buildings other than dwellings?**

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

d) No, I disagree for another reason

If you answered no (b, c, or d), please explain your reasoning and provide alternative suggestions.

a) Yes

**Question 35: Do you agree with the proposals for requirements relating to the assessment of overall energy performance of building services installations and providing information to building owners for new non-domestic buildings given in sections 8 and 9 of Approved Document L, volume 2: buildings other than dwellings?**

a) Yes

b) No

If you answered no, please explain your reasoning.

a) Yes

**Question 36: Do you agree with the guidance proposals for adequate sizing and controls of building services systems in new non-domestic buildings, as detailed in Sections 5 and 6 of draft Approved Document L, volume 2: buildings other than dwellings?**

a) Yes

b) No, I do not agree with providing guidance on this

c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning.

**Question 37: Do you agree with the proposal that wet space heating systems in new buildings should be designed to operate with a flow temperature of 55°C or lower?**

a) Yes, through a minimum standard set in paragraph 5.9 of the Approved Document L, volume 2: buildings other than dwellings

b) Yes, through carbon and primary energy credit in SBEM

c) Yes, by another means

d) No, the temperature should be below 55°C

e) No, this standard should not be applied to all new buildings

f) No, I disagree for another reason

Please explain your reasoning.

a) Yes, through a minimum standard set in paragraph 5.9 of the Approved Document L, volume 2: buildings other than dwellings

The RIBA agrees with the proposal; however, designers will need to understand what impact this has to the sizing of systems such as radiators and radiant ceiling panels where applicable.

Question 38: Do you agree with the proposals to clarify, rationalise and simplify the guidance for building services in new non-domestic buildings, and to incorporate the standards of the Non-Domestic Building Services guidance into the main body of the Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

a) Yes

Question 39: Do you agree with the proposals to simplify the requirements in the Building Regulations for the consideration of high-efficiency alternative systems in new non-domestic buildings?

a) Yes

b) No

If you answered no, please explain your reasoning.

a) Yes

Question 40: Do you agree with the efficiency proposals for replacement fixed building services in existing non-domestic buildings as detailed in paragraphs 5.4 to 5.7 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

a) Yes

Question 41: Do you agree with the newly proposed minimum efficiencies for natural gas, oil and LPG boiler and domestic hot water system installations in existing non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 42: Should minimum boiler efficiency standards in existing non-domestic buildings still benefit from relaxations through the use of heating efficiency credits?

a) Yes, boiler installations should continue to benefit from heating efficiency credits

b) No, boiler installations should no longer benefit from heating efficiency credits (the Government's proposal)

If you answered yes, please explain your reasoning.

Question 43: Do you agree with the proposed set of standards for air distribution systems for existing non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 44: Do you agree with our proposed approach and guidance to mandating self-regulating controls in existing non-domestic buildings, including technical and functional feasibility, as detailed in Sections 5 and 6 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

Question 45: Do you agree with the minimum efficacy proposals for lighting in existing non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

a) Yes

We are in principle happy with the minimum efficacy proposals for lighting if that are based on CIBSE's SLL Lighting Handbook.

Question 46: Do you agree with the proposals for cooling in existing non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

a) Yes

We are in principle happy with the proposals for cooling if that are based on CIBSE's Design Guide A and following the principle that systems should not be significantly oversized.

Question 47: Do you agree with the proposals that when Building Automation and Control System is installed in an existing non-domestic building with a heating or air-conditioning system over 290 kW, it should meet the same minimum standards as new non-domestic buildings?

- a) Yes
- b) No, a different trigger point should be used
- c) No, a different standard should be used
- d) No, for another reason

If you answered no (b, c or d), please explain your reasoning and provide alternative suggestions.

d) No, I disagree for another reason

Building automation should not be mandatory, but designers should assess whether the upfront embodied carbon and ongoing operational energy of running a building automation system is offset by the reductions in the building operational energy. Efforts should first be made to improve the fabric of the building. Newer technologies will change the nature in how systems are attuned to occupancy behaviour and/or demand.

Question 48: Do you agree with the proposals for requirements relating to the assessment of overall energy performance of building services installations and providing information to building owners for existing non-domestic buildings?

- a) Yes
- b) No, I do not agree with providing this guidance
- c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning, including any further suggestions.

a) Yes

Question 49: Do you agree with the guidance proposals for adequate sizing and controls of building services systems in existing non-domestic buildings, as detailed in Sections 5 and 6 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No, do not agree with providing this guidance
- c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning.

Question 50: Do you agree with the proposal that when whole wet space heating systems (i.e. boiler and radiators) are replaced in existing non-domestic buildings the replacement system should be designed to operate with a flow temperature of 55°C or lower?

- a) Yes, through a minimum standard set in paragraph 5.9 of Approved Document L, volume 2: buildings other than dwellings
- b) Yes, through carbon and primary energy credit in SBEM
- c) Yes, by another means
- d) No, the temperature should be below 55°C
- e) No, this standard should not be applied to all existing buildings
- f) No, I disagree for another reason

Please explain your reasoning.

a) Yes, through a minimum standard set in paragraph 5.9 of Approved Document L, volume 2: buildings other than dwellings

However, designers will need to understand what impact this has to the sizing of systems such as radiators and radiant ceiling panels where applicable.

Question 51: Do you agree with the proposals to restructure the guidance for building services in existing non-domestic buildings, and to incorporate the standards of the Non-Domestic Building Services guidance into the main body of the Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

a) Yes

Question 52: Do you agree the Government should continue to provide guidance for minimum building services efficiencies in existing non-domestic buildings, if the standard does not go significantly further than the Ecodesign regulations?

- a) Yes
- b) No, the Ecodesign regulations are sufficient
- c) No

If you answered no (b or c), please explain your reasoning.

a) Yes

Question 53: Do you agree with the changes made to simplify, rationalise and clarify the guidance, and the updates to external references in Appendix E and Appendix F, in Approved Document L, volume 2: buildings other than dwellings, as outlined in paragraph 3.12.1 of the consultation document?

- a) Yes
- b) Yes, but not with the changes to the supplementary guidance
- c) Yes, but not with the external references
- d) No

If you answered no, please explain your reasoning.

Please do not repeat comments on the changes made to simplify, rationalise and clarify the guidance for Building Services which you have already provided under Questions 38, 51 and 52.

Question 54: Do you agree that the measures in Tables D.1 and D.2 of Appendix D of Approved Document L, volume 2: buildings other than dwellings are likely to be technically, functionally and economically feasible under normal circumstances?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

Question 55: Do you agree with the proposals for relaxation factors for modular and portable buildings, as detailed in Tables 2.2 and 2.3 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No, the requirements go too far
- c) No, the requirements do not go far enough

If you answered no (b or c), please explain your reasoning and provide supporting evidence or alternative suggestions.

- a) Yes

Question 56: Do you think that the Pulse methodology should be an approved means of demonstrating airtightness for non-domestic buildings?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide supporting evidence.

*b. No*

The RIBA does not agree that the Pulse methodology should be introduced as an approved means of demonstrating airtightness. Any method of airtightness testing should be sensitive enough to test at 0.1 m<sup>3</sup>/m<sup>2</sup>/hr at 50Pa.

In addition, the Pulse methodology cannot provide a means of sustained pressurisation for leakage path diagnostic purposes. Ensuring effective identification and remediation of significant air tightness defects should remain one of the test's primary objectives. The Pulse methodology could be used as part of an airtightness process rather than a test for compliance.

Question 57: Do you agree that we should adopt an independent approved airtightness testing methodology such as the CIBSE draft methodology for non-domestic buildings?

- a) Yes, and the CIBSE methodology is appropriate
- b) Yes, but with a methodology other than CIBSE
- c) No, an independent approved airtightness methodology shouldn't be adopted.

If you answered no, please explain your reasoning.

- a) Yes, and the CIBSE methodology is appropriate

Question 58: Do you agree with the proposal for guidance on the calibration of devices that carry out airtightness testing in new and existing non-domestic buildings?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

Question 59: Do you agree with the proposed approach to energy sub-metering, as detailed in Section 5 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

a) Yes

Metering should enable the comparison between forecast energy, in-performance energy and facilities energy reporting.

Question 60: Do you agree with the proposed approach to energy forecasting, as detailed in paragraph 9.4 of draft Approved Document L, volume 2: buildings other than dwellings?

- a) Yes
- b) No, I do not agree with the proposed approach
- c) No, energy forecasting should not form part of the Building Regulations

If you answered no (b or c), please explain your reasoning and provide alternative suggestions.

a) Yes

Question 61: Do you agree with the proposals for transitional arrangements for buildings other than dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

a) Yes

The RIBA agrees with the proposals for transitional arrangements, however, further clarity on the definitions of what constitutes an 'individual building' and 'work commencing' are required.

For an 'individual building', we require further clarity on what this means for large developments where several building blocks may be built-off of a single podium base.

The definition of 'work commencing' must also be clearly defined and should relate to the installation of permanent below and/or above grade works, and not simply demolition or enabling works.

## Interim uplift to Part F standards for non-domestic buildings

Question 62: Do you agree with the proposed guidance in Section 1 and Section 2 of Approved Document F, volume 2: buildings other than dwellings on minimising the ingress of external pollutants and on the proper installation of ventilation systems in non-domestic buildings?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

a) Yes

Question 63: Do you agree with the proposed guidance for reducing noise nuisance for ventilation systems in non-domestic buildings?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

a) Yes

Mechanical ventilation systems should be designed and installed to minimise noise. Due consideration should be shown for outside noise when considering the suitability of opening windows for purge ventilation.

Question 64: Do you agree with the additional guidance provided in paragraphs 1.18 to 1.26 of the draft Approved Document F, volume 2: buildings other than dwellings on the installation of ventilation systems?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

Question 65: Do you agree that the guidance in Appendix B of the draft Approved Document F, volume 2: buildings other than dwellings provides an appropriate basis for setting minimum ventilation standards?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

Question 66: Do you agree with the list of industry guidance presented in Section 1 of draft Approved Document F, volume 2: buildings other than dwellings?

- a) Yes
- b) Yes, but additional guidance should be provided
- c) No

Please explain your reasoning and where relevant provide alternative suggestions for guidance.

Question 67: Do you agree with the list of references to industry guidance presented in Appendix C and Appendix D in the draft Approved Document F, volume 2: buildings other than dwellings?

- a) Yes
- b) No, the Government should amend the list of references
- c) No, for another reason

If you answered no (b or c), please explain your reasoning and provide alternative suggestions.

Question 68: Do you agree with the proposals to simplify, rationalise and clarify the Approved Document guidance in Approved Document F, volume 2: buildings other than dwellings as outlined in paragraph 4.3.7 of the consultation document?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions

b) No

The RIBA recommends retaining the advice on stack ventilation to encourage its use.

Question 69: Do you agree that purge ventilation in offices should be designed to provide at least four air changes per hour?

- a) Yes
- b) No, this standard goes too far
- c) No, this standard does not go far enough

If you answered no (b or c), please explain your reasoning and provide alternative suggestions.

Question 70: Do you agree with the guidance for the ventilation of car parks and offices, as detailed in Section 1 of Approved Document F, volume 2: buildings other than dwellings?

- a) Yes
- b) Yes, but some improvements can be made
- c) No, the guidance should be significantly changed

If you answered b or c, please explain your reasoning and provide alternative suggestions.

Please note that the appropriate questions on measures to prevent the spread of infection are detailed in section 4.4 of this consultation document.

Question 71: Do you agree with the proposals in Section 3 of draft Approved Document F, volume 2: buildings other than dwellings, when replacing an existing window with no background ventilators?

- a) Yes
- b) No, the standards do not go far enough
- c) No, the standards go too far

If you answered no, please explain your reasoning and provide alternative suggestions.

a) Yes

Ventilation is critical in retrofit, and the RIBA recommends, as in PAS2035, improvements should be made to meet minimum requirements wherever possible.

Question 72: Do you agree with the proposal to provide a completed commissioning sheet to the building owner and associated guidance in Section 4 of draft Approved Document F, volume 2: buildings other than dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

a) Yes

Question 73: Do you agree with requiring increased capacity of 50% within new ventilation systems in offices shown in paragraph 1.38 of the draft Approved Document F, volume 2: buildings other than dwellings?

- a) Yes
- b) Yes, but with qualifications
- c) No, the standard is too high
- d) No, the standard is too low
- e) No, I disagree for another reason

If you answered b, c, d or e, please explain your reasoning.

e) No, I disagree for another reason

Any increase in the required capacity of ventilation systems in offices should be considered in conjunction with the increase on operational energy usage and embodied carbon, as well as impacting the sizing of mechanical equipment and air delivery systems. An increase to ventilation rates should be assessed in relation to the benefits of the occupants.

It is unclear how the 50% uplift figure was derived. RIBA members are typically seeing uplifts of 30% providing benefits.

Question 74: Do you agree with the proposed standards for provision of outdoor air for offices, shown in paragraphs 1.35 to 1.36 of draft Approved Document F, volume 2: buildings other than dwellings?

- a) Yes
- b) Yes, but with qualifications
- c) No

If you answered b or c, please explain your reasoning.

*b) Yes, but with qualifications*

However, designers should be encouraged to assess the benefits of natural ventilation where applicable for a variety of health reasons, but this needs to be reviewed against outdoor air quality, noise and coordination with the operation of mechanical systems.

Question 75: Do you agree that extract ventilation in bathrooms, WCs, and other sanitary accommodation should be capable of operating in a continuous mode if necessary?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

*a) Yes*

The RIBA agrees with this in principle; however, this will have an additional impact on operational energy which should be taken into consideration.

Question 76: Do you agree with the proposal for indoor air quality monitoring in offices as outlined in paragraphs 1.39 to 1.41 of draft Approved Document F, volume 2: buildings other than dwellings?

- a) Yes
- b) Yes, but with qualifications
- c) No

If you answered b or c, please explain your reasoning and provide any suggestions for guidance if applicable.

*a) Yes*

Question 77: If applicable, please provide any suggestions for guidance for indoor air quality monitoring (e.g. CO<sub>2</sub> monitoring) in non-domestic buildings.

Question 78: Do you agree with the proposals for systems that recirculate air as outlined in paragraph 1.46 of draft Approved Document F, volume 2: buildings other than dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

*a) Yes*

The RIBA agrees with the principles suggested; however, designers should be encouraged to assess the benefits of natural ventilation where applicable. Whenever considering natural ventilation, this must be reviewed against outdoor air quality, noise and coordination with the operation of mechanical systems.

Question 79: Do you agree with the proposed minimum ventilation standard in occupiable rooms in all types of non-domestic buildings where singing, loud speech or aerobic exercise may take place, where low temperature and low humidity environments may exist, or where members of the public may gather in large groups? These are outlined in paragraphs 1.27 and 1.28 of draft Approved Document F, volume 2: buildings other than dwellings.

- a) Yes
- b) Yes, with qualifications

c) No

If you answered b or c, please explain your reasoning and provide any suggestions for guidance if applicable.

Question 80: Do you think the mitigating measures to protect against infection via aerosols would be suitable for any non-domestic buildings other than those stated in the Approved Document guidance?

a) Yes

b) No

If you answered yes, please explain your reasoning and provide evidence to support this.

a) Yes

## Section B: Domestic Buildings

### Standards for overheating in new residential buildings in 2021

Question 81: How should the Government address the overheating risk?

a) Through a new requirement in the Building Regulations and an Approved Document, as proposed in this consultation

b) Through Parts L and F of the Building Regulations

c) Through government guidance

d) I have an alternative approach

e) It isn't an issue that needs addressing

Please explain your reasoning and provide alternative suggestions where applicable.

*a) Through a new requirement in the Building Regulations and an Approved Document, as proposed in this consultation*

Question 82: Do you agree with the buildings that are in scope of this new part of the Building Regulations?

a) Yes

b) Yes, but they should be expanded to include more building types and/or existing buildings

c) No, they should be reduced to only include flats and houses

d) No, I disagree for another reason

Please explain your reasoning.

a) Yes

Question 83: Do you agree that the division of England based on overheating risk detailed in paragraph 5.6.3 of this consultation document is correct?

a) Yes

b) No, there should be one area

c) No, there should be more areas

If you answered no (b or c), please explain your reasoning and provide supporting evidence.

*c) No, there should be more areas*

The RIBA understands the intention of simplifying the categories to London and locations other than London. However, there are locations further south that experience warmer temperatures than London, and there are other locations that experience higher temperatures due to the Heat Island Effect.

In addition, the impact of existing stock alongside weather should be considered. Single aspect properties and cities with large proportions of back-to-back housing can also impact on overheating.

A more scientific, data-driven series of categories need to be defined to address local overheating issues.

**Question 84: Do you agree with the categorisation of buildings into Group A and Group B as detailed in paragraph 5.6.5 of this consultation document?**

- a) Yes
- b) No

If you answered no, please explain how buildings should be re-categorised.

*a) Yes*

**Question 85: Do you agree with the simplified method as a means of compliance with the proposed new requirement to reduce overheating risk?**

- a) Yes
- b) No, the method should be more sophisticated
- c) No, the method is too easy to pass
- d) No, for another reason

If you answered no (b, c or d), please explain your reasoning and provide supporting evidence.

*d) No, for another reason*

The RIBA promotes a performance based overheating standard, rather than the introduction of fixed design requirements. The proposed method is too simple and could lead to other unintended consequences such as a lack of daylight. In addition, other issues related to overheating, such as building fabric and heating pipes in common areas are not addressed in this method.

A performance-based approach to overheating gives architects and designers greater design flexibility, allowing them to address overheating risk more easily alongside other needs.

To meet the performance standard, low risk buildings (such as self-build or minor developments) could use an updated overheating assessment. Higher risk designs should be required to be assessed using dynamic thermal modelling in accordance with CIBSE TM59 guidance.

To ensure new homes are meeting the required overheating standard, this should be verified through Post Occupancy Evaluation.

**Question 86: Do you agree with the maximum glazing area and shading standards for limiting solar gains in the simplified method as detailed in paragraphs 1.6 to 1.9 of the draft Overheating Approved Document?**

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide supporting evidence.

*b) No*

The RIBA agrees with this proposal, but we suggest this should be assessed alongside daylighting and beneficial winter solar gain.

**Question 87: Do you agree with the approach to removing excess heat in the simplified method as detailed in paragraphs 1.10 to 1.13 of the draft Overheating Approved Document?**

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide supporting evidence.

*b) No*

The free area proposed suggests that every glazed panel needs to be operable. Providing excessive operable windows will be impactful to the thermal performance of the envelope. The free area should be determined based on project-specific calculations.

Openings of 60 degrees may not be practical in all applications, especially at height, for security or acoustic reasons or in areas that experience high wind loads where the force required to close windows that are opened 60 degrees may exceed acceptable levels. There are additional social and inclusivity benefits to low-level glazing and the proposed method is not inclusive and should not be used.

**Question 88: Do you think that adequate levels of daylight will be provided and that homes will be acceptable to purchasers while meeting these proposed standards?**

- a) Yes
- b) No

Please explain your reasoning.

- a) Yes

The RIBA agrees that adequate levels of daylight will be provided; however, we suggest that daylight analysis will need to be carried out to verify that the application and location of the windows are correct and designed to meet the requirements.

**Question 89: Do you agree with offering dynamic thermal analysis as a means of compliance with the proposed new requirement to reduce overheating risk?**

- a) Yes, as described in the draft Overheating Approved Document
- b) Yes, but not as described in the draft Overheating Approved Document
- c) No

Please explain your reasoning and provide alternative suggestions where applicable.

- a) Yes, as described in the draft Overheating Approved Document

**Question 90: Please detail any information you have about the likelihood of occupants opening doors and windows at night in unoccupied rooms.**

**Question 91: Do you agree with the proposed acceptable strategies for shading and the removal of excess heat, when following the dynamic thermal analysis method, as found in Section 2 of the draft Overheating Approved Document?**

- a) Yes, I agree with both sets of acceptable strategies
- b) Yes, but with amendments to the acceptable shading strategies
- c) Yes, but with amendments to the acceptable strategies to remove excess heat
- d) Yes, but with amendments to both sets of acceptable strategies
- e) No, I do not agree with the acceptable strategies

Please explain your reasoning and provide any suggested amendments where applicable.

- a) Yes, I agree with both sets of acceptable strategies

The RIBA agrees with both sets of acceptable strategies; however, all strategies need to be assessed holistically against daylighting requirements, energy reduction and the thermal performance of the building. The options provided should not be adopted in isolation of their impact to other aspects of the building performance.

**Question 92: Do you agree that the overheating standard should not account for the effect of curtains, blinds and tree cover?**

- a) Yes, curtains, blinds and tree cover should be excluded
- b) Yes, but only curtains and blinds should be excluded
- c) Yes, but only tree cover should be excluded
- d) No, none of these should be excluded

If you answered b, c or d, please explain your reasoning.

- a) Yes, curtains, blinds and tree cover should be excluded

**Question 93: Do you agree that the building should be constructed to meet the overheating requirement without the need for mechanical cooling?**

- a) Yes
- b) No

If you answered no, please explain your reasoning.

*a) Yes*

**Question 94: Do you agree with limiting noise in new residential buildings when the overheating strategy is in use, and the proposed guidance in Section 3 of the draft Overheating Approved Document?**

- a) Yes
- b) Yes, but with amendments to the guidance
- c) No, I do not agree with limiting noise when the overheating strategy is in use

If you answered b or c, please explain your reasoning and provide alternative suggestions.

*b) Yes, but with amendments to the guidance*

The guidance ignores the implications of the reliance on heat pumps for domestic hot water. Heat pumps make noise, and therefore, as more heat pumps are installed the noise will increase over time. This has not been taken into account in the guidance.

**Question 95: Do you agree with minimising the ingress of external pollutants when the overheating strategy is in use, and that the external pollutants guidance in Approved Document F, volume 1: dwellings should be followed where practicable?**

- a) Yes
- b) Yes, but with amendments to the guidance
- c) No, I do not agree with minimising the ingress of external pollutants when the overheating strategy is in use

If you answered b or c, please explain your reasoning and provide alternative suggestions.

*a) Yes*

**Question 96: Do you agree with the proposals on security in Section 3 of the draft Overheating Approved Document in new residential buildings?**

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

*b) No*

The RIBA agrees with the proposals however, consideration should be given for how security shutters, louvres or railings will affect the free area of window openings. In addition, all rooms, not just bedrooms should be considered alongside Secure by Design and other security guidance, should they be easily accessible.

**Question 97: Do you agree with the protection from falling guidance proposed in Section 3 of the draft Overheating Approved Document?**

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

*b) No*

The RIBA agrees with the protection from falling guidance with some conditions. We agree that window handles should not be more than 600mm from the inside face of the wall when the window is at its maximum opening angle. However, this parameter needs to be tested in conjunction with the guidance

note 1.12 – that windows should open to a minimum of 60 degrees. When considered together the two requirements may place significant limitations on the size and type of window that can be specified depending on the handle location.

In addition, the design of the guarding will need to be considered when calculating the free area. This would result in most windows utilising tilt and turn but with restrictors on turn.

Finally, the height needs to be considered in relation to the free area offered to the operable window, the usability of operating windows at the height suggested (particularly for windows opening greater than 30 degrees), as well as the impact to the sight light of building occupants, as visual comfort should also be a consideration.

**Question 98: Do you agree with the guidance on protection from entrapment proposed in Section 3 of the draft Overheating Approved Document?**

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

- a) Yes

The RIBA agrees with the guidance, but feels it would be better placed in Approved Document K and Q.

**Question 99: Are there any further issues which affect usability that should be included in the Overheating Approved Document?**

- a) Yes
- b) No

Please explain your reasoning and provide supporting evidence.

**Question 100: Do you agree with the proposed requirement to provide information on the overheating strategy to the building owner?**

- a) Yes, I agree with the requirement, the list provided and that this should be within a Home User Guide
- b) Yes, I agree with the requirement, but think that the list provided should be changed or that this should not be provided within a Home User Guide
- c) No, I do not agree with providing information

Please explain your reasoning and provide alternative suggestions where applicable.

- a) Yes, I agree with the requirement, the list provided and that this should be within a Home User Guide

**Question 101: How do you see this new Building Regulation interacting with policies in local plans?**

**Question 102: Do you agree that this guidance on limiting the effects of heat gains in summer, in both Approved Document L guidance for new dwellings and SAP Appendix P, can be removed?**

- a) Yes
- b) No

If you answered no, please explain your reasoning.

Question 103: Should the transitional arrangements that apply to the overheating requirements align with the proposed transitional arrangements for Part L and F 2021 for new dwellings, as described in paragraph 5.10.2 of this consultation document?

- a) Yes
- b) No

Please explain your reasoning and provide alternative suggestions where applicable. If you answered no, please also propose an alternative reasonable period that could apply.

- a) Yes

## Part L standards for domestic buildings in 2021

Question 104: Do you agree with the proposed minimum fabric standards for existing domestic buildings set out in Table 6.1 of this consultation document?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide supporting evidence.

- b) No

As improvements may be elemental, compliance with the proposed standards can be achieved simply by meeting the minimum U-values. Therefore, these should be more ambitious. All U-values for new elements within existing dwellings should be more ambitious and closer to *Passivhaus* standards.

Question 105: Do you agree with the draft guidance in section 4 of the draft Approved Document L, volume 1: dwellings on reducing unwanted air infiltration when carrying out work to existing homes?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

- b) No

Whilst the intent to reduce air-infiltration is welcomed, cross-reference should be made to other relevant guidance.

Enhancing building fabric thermal performance often inherently brings issues with increased moisture and condensation. Reference should be made to Approved Document Part F, Section 3: Work on existing dwellings, and there should be an obligation on a party replacing or changing an element under Approved Document Part L to also consider the implications of Approved Document Part F and ensure the ventilation provision of the dwelling is not reduced below the minimum standards.

A whole house retrofit approach should be adopted to avoid unintended consequences of elemental improvements, and reference should be made to PAS 2035. The design should also adopt a coherent approach to managing moisture risk, consistent with the guidance in BS 5250.

Question 106: Do you agree that we should control the primary energy and fabric energy efficiency of new extensions to existing homes when using the SAP method of compliance?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

Question 107: Do you agree that the limiting U-value for rooflights in existing domestic buildings should be based on a rooflight in a horizontal position, as detailed in Section 4 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

a) Yes

The limiting U-value should be consistent with that being adopted under the Future Homes Standard.

Question 108: Do you agree that we should adopt the latest version of BR 443 for calculating U-values in existing domestic buildings, as detailed in Section 4 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

a) Yes

The calculation method should be consistent with that being adopted under the Future Homes Standard.

Question 109: Do you agree with the proposed minimum fabric standards set out in Table 6.2 of this consultation document, and Sections 4 and 11 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning provide supporting evidence.

b) No

To reach net zero we must be ambitious with our fabric standards. The proposed targets are too high and are not sufficient to reach net zero. The targets should be set at levels closer to *Passivhaus*.

Question 110: What level of FEES should be used for Part L 2021?

- a) Option 1, full fabric specification
- b) Option 2, fabric specification x1.15
- c) Neither, it should be higher
- d) Neither, it should be lower

Please explain your reasoning and provide supporting evidence, including whether you think a higher level of FEES will make it more or less likely for a home to be built with low carbon heat.

c) *Neither, it should be higher*

Fabric performance should always be the first step in reducing carbon emissions as part of a hierarchical approach to energy savings. Therefore, the U-values should be revised.

The RIBA suggests the following U-values:

Solid Walls	0.1 – 0.15 W/m <sup>2</sup> .K
Roof	0.1 – 0.12 W/m <sup>2</sup> .K
Ground Floor	0.1 – 0.12 W/m <sup>2</sup> .K
Curtain Walling including frame	1.2 W/m <sup>2</sup> .K
Windows including frame	1.2 W/m <sup>2</sup> .K
Doors including frame	1.8 W/m <sup>2</sup> .K

Furthermore, the minimum standard for air permeability is too high and should be reduced to 3m<sup>3</sup>/m<sup>2</sup>.h at 50Pa.

Question 111: Do you agree that we have adequately covered matters which are currently in the Domestic Building Services Compliance Guide in draft Approved Document L, volume 1: dwellings for existing homes?

- a) Yes
- b) No

If you answered no, please explain which matters are not adequately covered.

Question 112: Do you agree with the proposed minimum standards for building services in existing homes, as detailed in Sections 5 and 6 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 113: Do you agree with the proposals for replacement fixed building services in existing homes, as detailed in Section 5 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

Question 114: Do you agree with our proposed approach to mandating self-regulating controls in existing domestic buildings, including technical and economic feasibility, as detailed in Sections 5 and 6 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

a) Yes

Question 115: Do you agree with the proposed specifications for building automation and control systems installed in a new or existing home, as detailed in Section 6 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

Question 116: Do you agree with the proposals for extending commissioning requirements to Building Automation and Control Systems and on-site electricity generation systems, as detailed in Sections 8 and 9 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

a) Yes

Question 117: Do you agree with the proposals for requirements relating to the assessment of overall energy performance of building services installations and providing information to homeowners, as detailed in Sections 8 and 9 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No, I do not agree with providing this guidance
- c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning.

a) Yes

Question 118: Do you agree with the proposed changes to water treatment guidance and removing formal guidance on water softening?

- a) Yes
- b) No

If you answered no, please explain your reasoning.

Question 119: Do you agree with the guidance proposals for adequate sizing and controls of building services systems in domestic buildings, as detailed in Sections 5 and 6 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No, I do not agree with providing this guidance
- c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning.

a) Yes

Question 120: Do you agree with the guidance proposals on sizing a system to run at 55°C when a whole heating system is replaced, as detailed in Section 5 of draft Approved Document L, volume 1: dwellings?

- a) Yes
- b) No, I do not agree with providing this guidance
- c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning.

c) No, the guidance should be improved

The temperature should be lower to allow for heat pumps to be used.

Question 121: Do you agree with the proposed changes to the supplementary guidance and the external references in Appendix D and Appendix E, in the draft Approved Document L, volume 1: dwellings as outlined in paragraph 6.8.2.?

- a) Yes
- b) Yes, but not with the changes to the supplementary guidance
- c) Yes, but not with the external references
- d) No

If you answered b, c or d, please explain your reasoning.

Question 122: Do you agree with the proposal for guidance on the calibration of devices that carry out airtightness testing in new and existing domestic buildings?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

## Part F standards for existing domestic buildings in 2021

Question 123: Do you agree that we have adequately covered matters for existing dwellings which are currently in the Domestic Ventilation Compliance Guide in draft Approved Document F, volume 1: dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

Question 124: Do you agree with the proposed changes to supplementary guidance and the external references used in Appendix E and Appendix F, for existing domestic buildings from the draft Approved Document F, volume 1: dwellings?

- a) Yes
- b) Yes, but not with the changes to the supplementary guidance
- c) Yes, but not with the external references
- d) No

If you answered b, c or d, please explain your reasoning.

**Question 125: Do you agree with the proposal to align the guidance and standards for work to existing homes to that outlined in Chapter 4 of the Government Response to the Future Homes Standard consultation?**

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide supporting evidence.

*b) No*

We agree that the guidance and standards for work to existing homes should be aligned with that for new homes. However, the standards outlined in Chapter 4 of the Government response to the Future Homes Standard need to be more robust, especially in relation to airtightness and ventilation.

**Question 126: Do you agree with the proposed guidance for installing energy efficiency measures in existing homes, as detailed in Section 3 of draft Approved Document F, volume 1: dwellings.**

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

*a) Yes*

Ventilation through infiltration should be considered as part of the ventilation provision in existing buildings. Installing energy efficiency measures may reduce infiltration and consequently indoor air quality. Where ventilation through infiltration has been significantly reduced additional and/or new ventilation provision may be required.

**Question 127: Do you agree with the content of the proposed checklist for ventilation provision detailed in Appendix D of draft Approved Document F, volume 1: dwellings?**

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

*a) Yes*

**Question 128: Do you agree with the guidance in Section 3 of draft Approved Document F, volume 1: dwellings when replacing an existing window with no background ventilators?**

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

*a) Yes*

The RIBA agrees with the principles of ensuring the ventilation provision in the building should meet, at a minimum, existing levels. This must ensure, however, that the assessment of existing ventilation includes the potential reduction in infiltration from a whole building retrofit (mentioned in Appendix B).

Question 129: Do you agree with the proposals in paragraphs 3.29 to 3.31 of draft Approved Document F, volume 1: dwellings in 7.4.11 of this consultation document on work to existing kitchens or bathrooms?

- a) Yes
- b) No, the standards go too far
- c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning and provide alternative suggestions.

*c) No, the standards do not go far enough*

Kitchens and bathrooms are major sources of water vapour in homes and refurbishment is a perfect time to improve comfort and wellbeing standards.

Question 130: Do you agree with the proposal to provide a completed commissioning sheet to the homeowner, as detailed in Section 4 of draft Approved Document F volume 1: dwellings?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

a) Yes

## Impact and Equalities Assessment

Question 131: Please provide any feedback you have on the impact assessment here, including the assumptions made and the assessment of the potential costs and benefits of the proposed options we have made.

Question 132: Please provide any feedback you have on the potential impact of the proposals outlined in this consultation document on persons who have a protected characteristic. Please provide evidence to support your comments.