

Table 1. Recommendations		
Topic	Recommendation	Owner and timing
Compliance and the performance gap	1. Overhaul the compliance and enforcement framework so that it is outcomes-based (focussing on performance of homes once built), places risk with those able to control it, and provides transparent information and a clear audit trail, with effective oversight and sanctions. Fund local authorities to enforce standards properly across the country.	<i>MHCLG, devolved administrations, HMT by 2019</i>
Compliance and the performance gap	2. Reform monitoring metrics and certification to reflect real-world performance, rather than modelled data (e.g. SAP). Accurate performance testing and reporting must be made widespread, committing developers to the standards they advertise.	<i>BEIS, MHCLG, devolved administrations, industry 2020-2025</i>
Compliance and the performance gap	3. Review professional standards and skills across the building, heat and ventilation supply trades with a nationwide training programme to upskill the existing workforce, along with an increased focus on incentivising high 'as-built' performance. Ensure appropriate accreditation schemes are in place.	<i>BEIS, industry 2019</i>
Compliance and the performance gap	4. Undertake a large-scale study to provide robust quantification and benchmarking of the performance gap for energy, water and ventilation.	<i>BEIS, industry 2019</i>
Building regulations	5. Implement tighter standards for new buildings to ensure they are designed for a changing climate, properly ventilated, moisture-safe, are future-proofed for low-carbon heating and deliver ultra-high levels of energy efficiency. The whole-life carbon and peak demand impacts of new homes should be minimised.	<i>MHCLG, devolved administrations, in force and forward trajectory set out by 2020</i>
Building regulations	6. Government should develop a targeted package of new measures to incentivise and support those developers and individuals who wish to take early action in building low-carbon and resilient homes.	<i>MHCLG, BEIS, HMT, devolved administrations by 2020</i>
Building regulations	7. All new homes should be made low-carbon heat ready. By 2025 at the latest, no new homes should connect to the gas grid, and should instead rely on low-carbon heating systems such as heat pumps.	<i>MHCLG, BEIS, devolved administrations trajectory set out by 2020</i>

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Building regulations	8. The Standard Assessment Procedure should be reviewed and revised to drive high real-world performance and value properly the benefits of low-carbon technologies. It should formally integrate a forward trajectory for declining grid carbon intensity, in line with Government projections.	<i>MHCLG, BEIS by 2020</i>
Building regulations	9. New-build homes should deliver ultra-high levels of energy efficiency as soon as possible, and by 2025 at the latest. This should be consistent with a space heat demand of 15-20 kWh/m ² /yr.	<i>MHCLG, devolved administrations trajectory set out by 2020</i>
Building regulations	10. Regulations around ventilation and indoor air quality must evolve to keep pace with improvements in the energy efficiency of buildings. Part F of the Building Regulations should be reviewed alongside Part L, with a view to tightening standards and coordinating requirements to fully reflect interdependencies. Where updates affect Part B and vice versa, Government should review the standards as a whole. Steps must be taken to improve the design, commissioning, and installation of mechanical ventilation systems, with further research into how challenges in maintaining and operating them can be overcome.	<i>MHCLG, Defra, devolved administrations 2019</i>
Building regulations	11. It is critical that the 2019 reviews of Building Standards by MHCLG, Scottish Government and Welsh Government: <ul style="list-style-type: none"> • Introduces a new standard or other requirement to ensure that overheating risk is assessed for current and future climates at design stage of new-build homes or renovations. • Ensures that passive cooling measures are installed at build stage where there is a risk of overheating identified. Where active cooling measures are also needed, consideration should be given to potential synergies in the choice and installation approach for heating and cooling systems, for example through the use of air source heat pumps combined with mechanical ventilation. 	<i>MHCLG, Scottish Government, Welsh Government 2019</i>
Building regulations	12. Examine the potential role for new-build standards in encouraging deployment of technologies to support peak management and demand reduction.	<i>MHCLG, BEIS, devolved administrations by 2020</i>

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Building regulations	13. Close loopholes allowing homes to be built which do not meet the current minimum standards for new dwellings. This includes provisions around the expiry of planning permission, and permitted development rights relating to change of use.	<i>MHCLG 2019</i>
Low-carbon homes	<p>14. In our report on <i>hydrogen</i> in November 2018, we recommended that the Government should develop a fully-fledged UK strategy for decarbonised heat within the next 3 years. Subsequently, BEIS has committed to publication of a new heat roadmap within 18 months. It is essential that Treasury should commit now to working with BEIS on development of the roadmap/strategy. This must include clear signals on the future use of the gas grid in the UK and commitments to funding and, as a minimum:</p> <ul style="list-style-type: none"> • A clear trajectory of standards covering owner-occupied, social- and private-rented homes, announced well in advance (including detailed plans on phasing out the installation of high-carbon fossil fuel heating and improvements in the efficiency of existing heating systems). • A support framework for low-carbon heating (heat pumps, biomethane, and networked low-carbon heat). • A review of the balance of tax and regulatory costs across fuels in order to improve alignment with implicit carbon prices and reflect the progressive decarbonisation of electricity. • An attractive package for householders aligned to trigger points (such as when a home is sold or renovated). • A nationwide training programme to upskill the existing workforce. • A governance framework to drive decisions on heat infrastructure through the 2020s. 	<i>HMT, BEIS within the next 18 months - 3 years</i>
Low-carbon homes	15. Following UK exit from the EU, product standards should remain in place or be replaced with equivalent or more ambitious regulation.	<i>BEIS ongoing</i>

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Low-carbon homes	16. Develop new policies to support a substantial increase in the use of wood in construction. This will need to focus on overcoming a range of cultural, skills and financial barriers in the construction sector. Undertake low-regrets action to support the assessment and benchmarking of whole-life carbon in buildings with a view to informing the future policy framework.	<i>MHCLG, BEIS, devolved administrations new policies for wood in construction in 2019, with groundwork on whole-life carbon by 2024</i>
Low-carbon homes	17. BEIS, Ofgem and National Grid should implement the remaining actions set out in the Smart Systems and Flexibility Plan, alongside the continuation of wider improvements that are already underway. Actions include encouraging suppliers to offer smart tariffs and capitalising on EV potential to provide demand-side response and storage services.	<i>BEIS, Ofgem, National Grid actions implemented by 2022</i>
Low-carbon and resilient homes	18. Improve consumer access to data and advice by implementing the Green Task Force proposal on Green Building Passports, improving EPCs and access to data underpinning EPCs and SAP, and identifying options to go further in particular to include resilience measures. Water efficiency, flood resilience and other resilience measures should be considered in digital 'green passports', and resilience surveys or Flood Protection Certificates developed alongside EPCs.	<i>BEIS, HMT, devolved administrations 2019-2020</i>
Low-carbon and resilient homes	19. Implement GFT recommendations around green mortgages and fiscal incentives to encourage uptake and support financing of upfront costs. To help drive the market for resilient products and services the Government should also look to widen the scope of green finance to include resilience.	<i>BEIS, HMT 2019</i>
Overheating	20. Further action should be taken to better understand when overheating occurs in existing homes in order for passive cooling measures and behaviour change programmes to be targeted effectively.	<i>Department of Health and Social Care, MHCLG, Scottish Government, Welsh Government, by 2020</i>

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Overheating	21. In England the Government must ensure that Planning Guidance is updated to clearly require local authorities to include overheating risk in Local Plans, as set out in the updated National Planning Policy Framework. Guidance should contain a requirement for local authorities to include an assessment of overheating risk as part of the planning process. This should require developers to carry out an initial assessment of the strategic features that increase risk, such as site location, building layout, façade, green space availability, and introduce appropriate mitigation measures at the early planning stages.	<i>MHCLG by 2020</i>
Water efficiency	22. Local authorities should include water efficiency measures in energy efficient retrofit programmes. Water efficiency should be included in social housing standards (such as the Decent Homes and Welsh Housing Quality Standard).	<i>Local authorities Ongoing</i>
Water efficiency	23. Defra should set a per capita consumption target which can address future supply-demand deficits resulting from both 2 and 4 degree climate change scenarios. Further research should be undertaken to understand the costs and benefits of targets between 50 and 100 litres per day by 2050. The devolved administrations should consider whether it is necessary to introduce similar targets. As a first step to meeting a target and improving water efficiency in homes, the UK Government and devolved administrations should: <ul style="list-style-type: none"> • Enable water companies to implement compulsory metering beyond water stressed areas by amending regulations before the end of 2019 and requiring all companies to consider systematic roll out of smart meters. • Review new-build regulation standards to allow local authorities to set more ambitious standards, especially in current and future water-stressed areas. • Introduce compulsory water efficiency labelling of household water products. • Work with water companies and local authorities to run partnership retrofit and behaviour change programmes in existing homes. 	<i>Defra by 2021</i>

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Property level flood protection	<p>24. Defra should develop a long-term strategy to manage flood risks in each part of the country (as first recommended in 2015), so that as Flood Re is withdrawn properties can remain insurable at reasonable costs. This should include:</p> <ul style="list-style-type: none"> • Continuing to support the industry round table in communicating risk and possible adaptation actions to households and communities that are expected to remain or become at high flood risk by the 2030s. The Flood Re database should be used to initially target those at risk. • Pilot schemes to test and increase understanding of potential PFR options and their benefits to homeowners and landlords. • The introduction of resilience surveys and Flood Protection Certificates which can be used by homeowners, insurance companies and lenders. The UK Government should work with BRE to further develop and widen the use of the Property Flood Resilience database tool. • Detail of how the new Code of Practice will ensure skills are improved and better compliance and enforcement of installing measures. • Plans to work with the insurance industry to ensure they have the evidence needed in order to confidently make informed judgements about which resilience and resistance measures installed in properties lead to reduced risk. Insurers should insist that resilience and resistance measures be implemented during post-flood repairs as a condition of continuing insurance cover. 	<p><i>Defra, Environment Agency, Insurance companies</i></p> <p><i>by 2020</i></p>
Property level flood protection	<p>25. MHCLG and the devolved governments should examine the potential for regulations on flood protection approaches for both refurbishment and new-build homes.</p>	<p><i>Defra, MHCLG, devolved administrations</i></p> <p><i>by 2021</i></p>

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Green infrastructure	<p>26. Policy is needed in England to address the outstanding barriers to deliver high-quality, effective green SuDS in new development and retrofit:</p> <ul style="list-style-type: none"> • The Planning Guidance for England must be updated urgently to encourage multi-benefit SuDS in all developments, to bring together other aspects of planning related to green infrastructure and to help address skills and knowledge gaps. • Defra should update the non-statutory standards using latest evidence on the full costs and benefits of SuDS. To promote water company adoption of SuDs Defra should consult with Water UK to ensure that standards are aligned to the most up to date 'Sewers for Adoption'. • The automatic right to connect new development to the existing sewerage network should be made conditional on national SuDS standards being met or by water company agreement. • A clear policy is required on who should maintain and adopt SuDS by default, unless agreed otherwise. • Improved information on the implementation of green SuDS across the UK. 	<p><i>Defra, MHCLG and local authorities</i></p> <p><i>by 2020</i></p>

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Green infrastructure	<p>27. The UK Government and devolved administrations should take steps to monitor and reverse the decline in urban greenspace through clearer policy and more support for schemes that deliver multiple benefits:</p> <ul style="list-style-type: none"> • The UK Government should set a national target for increasing the area of urban greenspace, as part of the 25 Year Environment Plan metrics. New standards for green infrastructure should be set in England (as actioned in the 25 YEP) and embedded within planning policy. • The UK Government should assess the need for a national green infrastructure retrofit strategy to help guide local authorities and water companies in creating and including green infrastructure in drainage and local plans. • Options for funding schemes tailored to multi-benefit green infrastructure schemes. This could include providing funding pots that multiple partners can bid into together. • The devolved administrations should monitor changes in urban greenspace over time, and if declining should also take steps aligned with those suggested for England to reverse the decline. 	<i>Defra, devolved administrations by 2021</i>
Transport	28. Sub-national transport bodies should play a role in coordinating regional housing plans and sharing good practice across local authorities.	<i>Sub-national Transport Bodies by 2021</i>
Transport	29. The Government should review the powers of planners and develop mechanisms to fund costs of building high-quality walking, cycling and public transport infrastructure, even when outside the immediate housing site boundary.	<i>MHCLG, DfT, devolved administrations by 2020</i>
Transport	30. MHCLG and DfT should explore the potential for new rail stations, and light rail, tram and bus (including bus rapid transit) routes to unlock areas for housing development whilst mitigating transport impacts.	<i>MHCLG, DfT by 2020</i>
Transport	31. Local authorities must consult the bus industry at the Local Plan stage to ensure new housing areas can be serviced by commercially viable routes.	<i>Local authorities by 2020</i>

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Transport	32. For areas within walking distance of high-quality public transport (such as local rail, trams and bus rapid transit), MHCLG and DfT should set minimum density guidelines to ensure local authorities concentrate housing in these areas wherever possible.	<i>MHCLG, DfT by 2020</i>
Transport	33. Government must strengthen the importance of sustainable transport plans that are integrated into the development throughout the design process, including the development of walking and cycling routes and early consultation with public transport providers.	<i>MHCLG, DfT, devolved administrations by 2020</i>
Transport	34. To encourage uptake of electric vehicles, the government should immediately consult on regulations to include appropriate cabling ready for installation of electric vehicle chargers or electric vehicle chargers themselves in all new parking spaces for housing developments with off-street parking.	<i>OLEV by 2020</i>
Local action and planning	35. MHCLG must clarify the rights and obligations of local and regional authorities in relation to climate change mitigation and adaptation. This includes clear statutory duties, and clarification of how far local and regional authorities are permitted to go in setting tighter new-build standards.	<i>MHCLG 2019</i>
Local action and planning	36. Fund local and regional authorities adequately to drive and influence emissions reductions and adapt their localities to a changing climate, and to discharge their responsibilities in relation to the enforcement of building regulations and wider Government policy.	<i>HMT 2019 spending review</i>