Date: 13th March 2024

Department for Levelling Up, Housing and Communities
4th floor NW, Fry Building, 2 Marsham Street
London
SW1P 4DF

Dear Building Regulation Unit

RE: The Future Homes and Buildings Standards: 2023 consultation

I am responding on behalf of the Greater London Authority to the Department for Levelling Up, Housing and Communities' consultation on The Future Homes and Buildings Standards: 2023 Consultation.

We welcome that the Government is looking to update the Part L (Conservation of Fuel and Power) and Part 6 of the Building Regulations 2010 ("the Building Regulations") to strengthen the requirements around energy efficiency and reduce the carbon emissions of new homes and non-domestic buildings. We are already feeling the impacts of the climate emergency, both here in the UK but also globally, and it is imperative we do all we can to limit our impacts wherever possible. As such, in London we have a 2030 net zero target to reflect the urgency of this. We must also ensure the worst effects are not felt by those least responsible and least able to deal with them.

Given that context, we are disappointed with the majority of the proposals in this consultation as they do not go far enough to address the key issues to achieving net zero buildings in practice. First and foremost, the proposed minimum standards for building fabric are too low and do not do enough to minimise energy consumption. Ensuring new buildings are as efficient as possible will help keep building occupiers' bills low as well as reducing overall and peak demands on the grid. In London, we are already setting and achieving fabric standards higher than those proposed here. We have seen a strong positive response to this, with predicted emissions savings more than 50% of the Part L 2013 baseline from proposed referable applications in 2022. This includes a 17.7% saving solely from energy efficiency measures. That said, we need standards to be still higher to minimise the impacts of new development even further.

Regarding the above, we do not agree with the justifications presented in the consultation – namely that the costs of building to high standards are too prohibitive. The minimum standards proposed in this consultation mean that buildings will most likely need to be retrofitted in the future. This will have a much higher cost overall (borne by the building owner), as well as a greater carbon impact. It also means that energy bills will be higher, a cost borne by the building occupier. The argument of initial costs being too high has always been made and has consistently led to less efficient buildings being built – this is an opportunity to avoid these same past mistakes. As such, we would have welcomed further options that included higher fabric specifications so that we could provide detailed feedback on these.

We welcome the updated HEM model which should result in more accurate results compared to the current SAP methodology. However, we are disappointed that neither the inclusion of a delivered energy metric nor the consideration of unregulated energy in modelling are being consulted on. Delivered energy metrics, such as Energy Use Intensity (EUI) and Space Heating Demand, are more

accurate representations of a building's in-use energy performance and can help greatly with reducing the energy performance gap. While we understand the reasoning that the building developer is not responsible for the unregulated energy use of the building occupier, we still think that reasonable, conservative assumptions could be made in this regard, which would result in a more accurate assessment overall. Modelling a building's energy use already involves multiple assumptions so we believe that unregulated energy should be included as part of these. In the absence of any mandatory approach, we would like to see an option for these metrics to be included voluntarily, so that industry knowledge and understanding can develop in this area. This would also ensure that any local authorities proposing to include this metric in their local requirements can do so in a way that aligns with national policy.

We welcome the inclusion of voluntary post-occupancy monitoring to reduce the energy gap. However, we would like to see this made mandatory to ensure the worst performing buildings are captured.

We welcome the suggested introduction of the sleeving methodology to recognise the importance that heat networks provide, both for building and system level decarbonisation and flexibility in balancing the electricity network. This approach is essential to catalyse the expansion, growth and decarbonisation of heat networks, allowing them to actively support a cost-effective transition to net zero in the UK. In London, we introduced this approach in our London Plan 2021 for the same reasons. We agree with the use of the Products Characteristics Database but do not agree with using peak heat demand in calculations for sleeved low carbon heat sources; instead, we think annual heat demand should be used. We would like further clarity on some of the assumptions used to justify the proposed consultation options. In particular, the benefit-cost ratio of 3.4 in the impact assessment which is quite high given that cost is the reason for not proposing better fabric specifications. We would therefore welcome more information on these assumptions, the relevant references and the justification for this approach.

Lastly, we note that embodied carbon has not been included in this consultation. Government has previously stated that they intended to "consult in 2023 on our approach and interventions to mainstream the measurement and reduction of embodied carbon in the built environment." This has still not taken place and there is no clear timetable. Furthermore, there has been no movement on a consultation to Part G and H, despite previous statements that this would take place. This is extremely important as the impacts of climate change become more extreme and climate adaptation becomes more and more pertinent. An interim report published as part of the London Climate Resilience Review highlights some of the key risks we are facing in London, many of which also apply to the rest of the UK. We must ensure that all future standards properly take account of climate adaptation risks, and that there is a more integrated approach to all regulations and standards related to climate change.

We also wanted to flag the importance of fire risk safety being a key consideration in any proposals related to building materials and design. While we understand this isn't being consulted on specifically, there is potential relevance to building fabric standards and material change of use. It is also worth bearing in mind that the proposed fabric options in this consultation will likely need retrofitting in the future and, as such, this could introduce a further risk through the requirement for using additional materials. Homes and buildings built to the standards set out in this consultation must align and be developed to achieve the highest standards of fire safety. As an example, following the Grenfell fire, the Mayor has long called for a ban on combustible materials in the external walls of residential buildings, no matter their height and he has made this a requirement of his funding programmes. He would urge government to adopt this position.

We have enclosed a formal response to a selection of the consultation questions from Greater London Authority officers. We have already held many useful meetings with officials from the Department for Levelling Up, Housing and Communities to provide a London perspective, and we will continue to offer support in development of their thinking in this policy area.

Yours sincerely,

Philip Graham

Executive Director - Good Growth
Greater London Authority

City Hall, London, E16 1ZE ◆ london.gov.uk ◆ 020 7983 4000

Appendix 1 – Answers to the Future Homes and Buildings Standards Consultation

Question 1. Are you responding as / on behalf of (select all that apply):

Local Authority / Other.

The Greater London Authority (GLA) is a Strategic Authority.

Question 4. If you are responding on behalf of a business/organisation, what is the name of your business/organisation?

Greater London Authority (GLA).

Question 5. If you are responding on behalf of a business/organisation, where is your business/organisation based/registered?

London.

Question 6. When you respond it would be useful if you can confirm whether you are replying as an individual or submitting an official response on behalf of an organisation and include:

Official response on behalf of the GLA.
Philip Graham, Executive Director - Good Growth, Greater London Authority, City Hall, London, E16 1ZE
ZeroCarbonPlanning@london.gov.uk

Question 7. Which option for the dwelling notional buildings (for dwellings not connected to heat networks) set out in The Future Homes Standard 2025: dwelling notional buildings for consultation do you prefer?

Option 1 (higher carbon and bill savings, higher capital cost). The table below shows a sample of performance standards from applications recently referred to the Mayor.

Building Element	Consultation Option 1	Consultation Option 2	Develop-ment 1	Develop-ment 2	Develop-ment 3	Develop-ment 4	Develop-ment 5	Sample average
Roof U-value (W/m^2K)	0.11	0.11	0.11	0.10	0.10	0.09	0.16	0.11
External wall U-value (W/m^2K)	0.18	0.18	0.13	0.18	0.15	0.19	0.18	0.17
Floor U-value (W/m^2K)	0.13	0.13	0.11	0.10	0.10	0.12	0.13	0.11
Window U-value (W/m^2K)	1.2	1.2	1.00	0.85	0.90	0.80	1.20	0.95
Window g-value	-	-	0.40	0.37	0.40	0.40	0.50	0.41
Door U-value (W/m^2K)	1	1	1	0.8	-	1	1	0.95
Wastewater heat recovery	Yes	No	No	No	No	No	No	No
Heat source	Heat pump (system type matches	Heat pump (system type matches	Communal 4th Gen ASHP	Connection to existing masterplan CHP heat	Communal 4th Gen ASHP	Site wide heat network	Site wide heat network	

	actual building)	actual building)	SCOP 2.8 Electric immersion top up (20%)	network. Assumed sleeving arrangement with 100% ASHP contribution at SCOP of 2.8 (not yet agreed with GLA)	(100%) SCOP 3	4th Gen ASHP with electric top up (performance details yet to be provided)	4th Gen ASHP (50%) SCOP 3.15 WSHP (50%) SCOP 5.65	
Airtightness ($m^3/m^2.h$ @ 50Pa)	4	5	3	3	2	2	3	2.6
Ventilation	dMEV	Natural ventilation with intermittent extract fans	MVHR	MVHR	MVHR	MVHR	MVHR	MVHR
Renewable Energy	PV included when under 10 storeys	PV included when under 10 storeys	PV included on all blocks, including greater than 10 storeys (approx 50% roof area)	PV included on all blocks, including greater than 10 storeys (approx 50% roof area)	PV included on all blocks	PV included on all houses and apartment blocks	PV included on most blocks (5 out of 7). One block includes the ASHP for the site wide network and one is overshaded. The tallest blocks (25-30 storeys) have a small amount of PV (5-10% roof area).	
Number of storeys	-	-	6-13	8-12	6-8	up to 6 storeys (Houses and apartments)	8-30	

The sample average is considered representative of a typical application responding to London Plan policy. It demonstrates that a higher energy efficiency specification is proposed when compared with Future Homes Standard Options 1 & 2, including:

- Applicants often propose external wall U-values lower than 0.18 W/m^2K.
- Since the introduction of Part L 2021, triple glazing is now becoming a common route for applicants to meet London Plan energy efficiency requirements.
- Mechanical Ventilation with Heat Recovery (MVHR), along with low air permeability, is proposed in all cases and is the typical approach for developments in London.
- Wastewater heat recovery is not typically proposed as dwellings are often single storey (in line with Option 1 exclusion).
- PV is included on the vast majority of buildings and often over the 40% roof area. Under the London Plan, PV is required to be maximised on all buildings regardless of height and, as shown above, it is included on most buildings over 10 storeys, albeit to a lesser extent as building heights increase. While it is acknowledged that the notional building is one route to compliance,

the exclusion of PV could be seen by developers to imply that PV is not expected for buildings over 10 storeys. Further work should be undertaken to determine suitable PV requirements based on the footprint area for buildings greater than 10 storeys, which could perhaps be proportional to the building height as they increase.

The performance of a typical London Plan compliant building has been modelled using the consultation HEM software. The performance values used for the modelling is outlined in the table below. These performance values are considered to be conservative compared with the more recent application data outlined above.

Building Element	Modelled specification
Roof U-value (W/m^2K)	0.11
External wall U-value (W/m^2K)	0.15
Floor U-value (W/m^2K)	0.11
Window U-value (W/m^2K)	1.2
Window g-value	0.40
Door U-value (W/m^2K)	1.4
Wastewater heat recovery	No
Heat Source	Communal heating system 4th generation heat network SCOP of plant 3.0 Secondary losses 62W per dwelling assumed
Airtightness ($m^3/m^2.h$ @ 50Pa)	3
Ventilation	MVHR (Specific Fan Power = 0.44 & Heat Recovery Efficiency = 91%
Renewable Energy	High efficiency solar PV panels covering equivalent of 40% of ground floor area
Number of storeys assumed	10

The results of the modelling suggest that a typical, but conservative London Plan compliant building will achieve at least a 22% improvement in CO_2 emissions compared with the Future Homes Standard. In addition, the space heating demand is expected to be 19% lower than the Future Homes Standard for a London Plan compliant building, which will ensure that energy bills will be reduced for building occupiers.

Question 8. What are your priorities for the new specification? (select all that apply)

Lower bills, carbon savings.
Prioritising higher carbon savings and, consequently, lower bills is the best and most appropriate long-term approach for the notional building. This is best achieved through setting a high specification building fabric (i.e. higher than currently being proposed in this consultation) to ensure that energy consumption is minimised. As such, we believe there should be additional, higher specification options consulted on. For example, the Future Homes Hub conducted and presented some additional contender specification (CS) options in their 2023 Task Group Report which we would have welcomed as part of this consultation – specifically CS3 and CS4:

- to mainstream recognised low energy techniques and technologies for a very low energy specification, whilst allowing design flexibility
- to minimise space and water heating, drawing on UK and European low energy building best practice

These options prioritise low energy specifications and are the level of ambition we think is necessary to get near to achieving net zero.

Minimising energy consumption and maximising PV provision not only keeps bills low but also reduces the demand on the grid which will be necessary in the future as demand for electricity will continue to increase (e.g. for electric transport and electrified heating). It helps shield consumers from spikes in electricity costs, as has been the case in recent years. Energy usage can account for 40% of a building's running costs over a lifetime, so the more we minimise from the outset, the better and more productive the economy will be. It also allows more flexibility for other industries/sectors of the economy that are more difficult and expensive to decarbonise, such as steel and cement production.

Furthermore, both of the proposed options place a strong reliance on the grid decarbonising which is currently not on track to meet the Government's 2035 target. The Committee on Climate Change's report on Delivering a reliable decarbonised power system states that "*the Government has not yet provided a coherent strategy to achieve its goal nor provided essential details on how it will encourage the necessary investment and infrastructure to be deployed".* For example, regarding the amount of solar and wind required, the report states that "*the build rate this implies for solar remains close to historical peak, for offshore wind it implies annual build rates around 40% higher than emerging data on the 2022 peak".* And alongside this is the need to ensure we pursue "*energy efficiency and efficient electrification across the buildings, industry and transport sectors".* So even in this ambitious decarbonisation scenario, there is still a need to ensure we are maximising energy efficiency opportunities in the buildings sector. The Government has also signalled intent to decarbonise buildings and industry by 15% by 2030, an assumption which is used in this consultation as part of the Clean Heat Market Mechanism Impact Assessment. Therefore, there is a strong need to maximise all opportunities to promote energy efficiency.

Although the cost of building to higher fabric specification is likely to be higher initially, it is still much cheaper than retrofitting buildings in the future and therefore much cheaper in the long run. In the Government's own research study, Building for 2050, it was stated that: "*for developers, the additional capital cost required to design and construct low carbon homes need not be a significant barrier to delivery, as demonstrated by the reported additional capital cost for two schemes of only 1% to 2.5% of the construction cost (see Section 7.5.1)."* Also (from the same study) all wider stakeholders working in real estate investment and development stated that there was now (in 2021) much more finance available to develop low carbon housing compared to a few years ago (see Section 5.3).

In addition, the Committee on Climate Change's UK housing Fit for the Future? Report states that "*New homes should deliver ultra-high levels of energy efficiency as soon as possible and by 2025 at the latest, consistent with a space heat demand of 15-20 kWh/m^2/yr. Designing in these features from the start is around one-fifth of the cost of retrofitting to the same quality and standard. When installed alongside heat pumps in a typical home.*" And, "*Ultra-high levels of fabric efficiency can deliver average bill savings of around £85 per household per year, contribute to reducing annual and peak electricity demand alongside other measures, provide comfort and health benefits for occupants, and create an industrial opportunity for the UK to export innovation and expertise*." "*Ultra-high energy efficiency standards could also help reduce the peak demand associated with heat pumps in new homes (estimated to be up to 15-16 GW)."*

And in the costs and benefits report that sat alongside the CCC study, it is stated that "*Homes with higher heating requirements per m^2 may make a greater contribution to peak energy demand and may have more limited capability to pre-heat their homes as a route to manage their use at peak times. Both these factors are increasingly important where the heating system is electricity-based. Higher peak*

demand will increase overall energy system costs and could increase individual householders' bills in the context of time of use tariffs." Any retrofitting costs will have to be borne by the owner/occupier and will be much more expensive and intrusive compared to building to the required standard from the start. Furthermore, an approach that prioritises building fabric will typically have a lower embodied carbon impact as well.

Regarding embodied carbon, it is imperative that there is some action from Government on policy in this area. The GLA provided evidence at an Environmental Audit Committee (EAC) hearing in 2019 on this topic, and in response to the EAC report, Government stated that they intended to "consult in 2023 on our approach and interventions to mainstream the measurement and reduction of embodied carbon in the built environment." However, no consultation has taken place in 2023 and there is still no clear timetable for Government to begin this consultation, leading to unnecessary uncertainty in the building industry,

Question 9. Which option for the dwelling notional buildings for dwellings connected to heat networks set out in The Future Homes Standard 2025: dwelling notional buildings for consultation do you prefer?

Option 1 (higher carbon and bill savings, higher capital cost).
As highlighted in the response to Question 8, an approach that minimises energy consumption should be prioritised. This will reduce the space heating demand and hot water requirement for heat networks. We also want to note that, in London, we have not seen an existing network be able to provide 100% heat from a heat pump through the sleeving arrangement, so it may be a challenge to meet the notional assumption of 100% heat pump heat with a COP of 3.0. The main reasons we see for not meeting 100% heat are: space constraints for plant; increasing thermal storage to help reduce peak plant requirements; existing ESCO agreements that are based on plant to be installed and heat tariffs; and potentially negative impacts on the performance of existing plant through changes in temperatures. The above reasons are especially challenging for existing masterplan networks that have been partly built out, which is why we think this will be a challenge to realise in practice.

The specification for the energy efficiency of the buildings should be the same as with a site wide solution. Developments connecting to heat networks should have more roof space available for PV if heat pumps are located on the energy centre.

Question 10. Which option do you prefer for the proposed non-domestic notional buildings set out in the NCM modelling guide?

Option 2.
Our reasoning here is the same as provided in Question 8 and 9.

Question 11. What are your priorities for the new specification?

Lower bills, carbon savings.
Our reasoning here is the same as provided in Question 8 and 9.

5.Metrics

Question 12. Do you agree that the metrics suggested above (TER, TPER and FEE) be used to set performance requirements for the Future Homes and Buildings Standards?

No, we think delivered energy should be used.
We support the aims of protecting occupiers from high bills and reducing energy demand. Although we recognise that the updated Home Energy Model (HEM) methodology should be more accurate than the current SAP model, we believe that an approach that focuses on minimising energy usage is key to ensuring buildings designed to reach net zero can actually achieve this in the real world. As such, we believe the inclusion of unregulated energy is key to helping achieve this goal, and that this should be expressed as an absolute metric (e.g. in kWh/m^2/yr).

The advantages of this approach our outlined in the consultation document. For building design to improve in accuracy and thus for the performance gap to be closed, there must be consideration of all energy consumption activities. Furthermore, including this could enable building design that could minimise this consumption, therefore reducing the overall emissions associated with the building.
We recognise the arguments around the inclusion of unregulated energy; however we do not believe this means it should be completely ignored. It would still be possible for the design stage calculations to make some conservative assumptions on the in-use energy consumption habits, and there are tools already available that can help with this (e.g. CIBSE TM54). An option could be that this is included on a voluntary basis, with guidance provided on how to conduct this analysis. This would help build industry knowledge and consistency without it being required for compliance.

This also has the added benefit of keeping metrics simpler and making it easier to compare in-use performance to design stage calculation. This will also help building occupiers understand more about their consumption of their building, as was highlighted in the Government's own Building for 2050 research - *Case study residents had an expectation of lower energy bills, although for many of them, this wasn't the case in practice. A focus on running costs at the design stage, design simplification and better co-ordination, greater on-site experience, and improved handover processes will help to mitigate this.*

In London, we are currently requesting that applicants report EUI and space heating demand as part of our 2022 Energy Assessment Guidance. which sits alongside the London Plan. We have not set any specific targets but have instead provided best practice values to aim for. As discussed, this is helping build up industry knowledge and understanding in this area. Furthermore, some local authorities across the country are already asking for reporting of these metrics as they recognise this is an important next step to building more energy efficient buildings in their local areas. Therefore, it is important that Government does not halt progress on this where councils have already developed a strong evidence base, and in fact these new building regulations present an opportunity to capitalise on this head start. The Government's approach must provide clarity and long-term certainty to businesses wanting to invest in net zero ready homes.

6.Updated guidance and minimum standards

Question 22. Do you agree that lifts, escalators and moving walkways in new buildings (but not when installed withing a dwelling) should be included in the definition of fixed building services?

Yes, and we want to provide additional suggestions or information to support my view.

Yes, we agree that including the energy use from lifts, escalators and walkways should be included within fixed building services. We generally welcome the inclusion of as many aspects of a building that uses energy as possible.

7.Material Change of Use

Question 25. Should we set whole-building standards for dwellings created through a material change of use?

No, for another reason (please provide justification).
We are supportive of stronger requirements for dwellings created by change of use. While some changes of use may be subject to planning permission and any relevant planning policies relating to energy efficiency, many homes created by change of use will happen through permitted development and there is evidence these homes can be of poorer quality. Having an improved baseline requirement here would be beneficial as there are a number of risks that this can present. Firstly, this can incentivise prioritising 'easy wins' / 'low-hanging fruit' at the expense of dealing with more challenging issues, most commonly around building fabric. This would likely lead to some elements of the building performing worse than others. Overall this would result in a poorer quality building that may need to be rectified in the future. Furthermore, this approach could provide an opportunity for some specific planning policy requirements not being met in certain circumstances.

These risks were highlighted by the Government's own research in 2020 which stated that "*Given these considerations, we would conclude that permitted development conversions do seem to create worse quality residential environments than planning permission conversions in relation to a number of factors widely linked to the health, wellbeing and quality of life of future occupiers.*"

There needs to be a consistent approach to applying standards to help ensure all homes created through MCU provide good standards of accommodation. It is important these homes have good levels of energy efficiency and ventilation to protect occupiers from the risks of damp, mould, overheating and high energy bills.

8.Real-world performance of homes

Question 40. Do you think that we should introduce voluntary post occupancy performance testing for new homes?

Yes, and we'd like to provide further information.
Yes, it is well understood that there is a performance gap between the design and operational energy use of buildings, as highlighted in the Government's Building for 2050 study. This is putting the net zero target at risk and increasing energy bills for households and businesses. A key way of understanding this issue further is to undertake post-construction evaluation of buildings to measure the in-use performance and compare this to the design calculations.

In London, we are exploring this through the GLA's 'Be Seen' policy. This requires planning applicants to commit to providing data at set stages – the Planning Stage, the As-Built Stage and then for each year in-use for a minimum of five years. It is the applicant / developer's responsibility to ensure this data can be provided at the various required stages, and it is up to the applicant to decide the level of granularity this data is provided in (there is a de minimis threshold for data protection considerations). We also

recommend that a predicted analysis of unregulated energy consumption is carried out as part of this exercise.

In addition to collecting energy data through the be seen policy, Post Occupancy Evaluation (POE) will be a contractual requirement of housing providers receiving grants from the Mayor's latest Affordable Housing Programme. Housing partners are required to ask residents about the experience of their homes to gain a better understanding of how homes meet residents' needs and establish whether or not they are fit for purpose. This data will be collected and reviewed London wide to make improvements in design and delivery of housing. By requesting the POE data for a sample of schemes, partners are incentivised to think more long term about quality of their schemes during the design and construction phase, making the output of this proposal far more widely reaching than the data output.

A voluntary system is a start but will only attract the better performing developers. Therefore, we strongly support this requirement becoming mandatory over time. Otherwise it's very likely this kind of reporting will continue to not be undertaken. This should all help drive industry to improve their practices by creating feedback loops so that wider industry can learn from findings and be generally more accountable. This in turn should improve consumer confidence in new buildings.

Question 41. Do you think that the government should introduce a government-endorsed Future Homes Standard brand? And do you agree permission to use a government-endorsed Future Homes Standard brand should only be granted if a developer's homes perform well when performance tested? Please include any potential risks you foresee in your answer.

Yes, but we think there are risks associated with introducing a government-endorsed brand.
Yes, although there must be clear definitions around what this brand signifies and clear definitions of relevant responsibilities. For example:

- Will this be solely related to carrying out post occupancy evaluation or will each dwelling need to meet a specific standard?
    - Would this standard be in relation to achieving net zero, or it is just in relation to matching its design stage performance?
    - If the requirement is not to reach net zero, what standards must be met and how are these determined?
- Who will carry out the assessment and will they be independent?
- How will data be collected and processed? Will this be public?
- How will this relate to the EPC rating?
- Would it not be expected that all buildings meet this standard? And if they don't, what does that mean? Could this create a tiered system of housing?

Furthermore, there will need to be clear communication to building occupiers regarding what this means compared to buildings which do not meet the brand requirements. And regarding the managing of the brand itself, anything that gives confidence and ensures quality is a good idea, but it must be ensured that there is adequate support to comply with requirements, and that requirements do not exacerbate supply chain issues.

9.Heat networks

Question 53. Do you agree that new homes and new non-domestic buildings should be permitted to connect to heat networks, if those networks can demonstrate they have sufficient low-carbon generation to supply the buildings' heat and hot water demand at the target CO_2 levels for the Future Homes or Buildings Standard?

Yes, and we'd like to provide further information.
Heat networks are critical to creating a low carbon and flexible energy system that is capable of delivering London's net zero ambitions. London's preferred pathway to net zero requires 460,000 properties (both new and existing) to connect to heat networks[1]. In London all referable planning applications must demonstrate how their energy systems will exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly to reduce CO_2 emissions. This includes a requirement to connect to existing or proposed heat networks in the area. To comply with London Plan Policy, developments in Heat Network Priority Areas (HNPAs) should have a communal low-temperature heating system, a single consolidated energy centre and a single point of connection, which will allow them to connect to an existing area-wide district heating or means they will be 'future proofed' for connection to a future planned heat network.

Where a heat network exists in the vicinity of the proposed development the applicant must prioritise connection to that network provided that:

- The network does not exceed the CO_2 emission and primary energy factor limits set out in Part L 2021.
- The network operator has agreed a decarbonisation strategy with the GLA and the relevant borough, or is in the process of doing so. This strategy must align with London's 2030 net zero target.

As such, we believe a similar approach could be followed nationally. Further information on the GLA's approach can be found in Section 9a of the 2022 Energy Assessment Guidance.

We have responded to the Department of Energy Security and Net Zero (DESNZ)'s Heat Network Zoning consultation and have stated in that response the importance of ensuring large new developments being required to connect to a local heat network, using the Products Characteristics Database (PCDB) to co-ordinate a common approach to sleeving and for annual, not peak, heat demand of new developments to be used for calculating the capacity of new or unused existing low carbon heat sources.

To ensure effective implementation it is essential that you work closely with DESNZ to develop shared approaches so that the outcomes we all want, large-scale heat networks delivering fairly priced low carbon heat to consumers, are possible and supported.

Question 54. Do you agree that newly constructed district heating networks (i.e., those built after the Future Homes and Buildings Standard comes into force) should also be able to connect to new buildings using the sleeving methodology?

Yes, and we'd like to provide further information.
In London we are already allowing applicants to make use of sleeving to enable connection to existing heat networks and we support your proposal to introduce this approach. We agree with the use of the PCDB to co-ordinate compliance with the Future Homes and Buildings Standard and urge you to engage with DESNZ to ensure that a common and coherent approach is developed for sleeving generally. We believe that it is important to use 'annual heat demand' and not 'peak heat demand' when calculating

the amount of low carbon heat capacity required for new developments that are being connected. This is the approach that we take in London.

We also want to highlight that the PCDB must be made available well before the adoption of Future Homes and Buildings Standards, ideally accompanied with guidance and training for network operators, consultants etc. This is because decisions on connecting to heat networks are made very early in the design process and uncertainties around heat network performance meeting building regulation requirements is a common reason not to connect.

Please see below a summary of the relevant requirements that we required for our approach:

CO_2 emissions

- The CO_2 emission intensity of the sleeved heat must be competitive with a London Plan policy compliant communal system (i.e. development-site-only counterfactual) to enable the applicant to maximise on-site CO_2 emission reductions under Part L 2021.
- Sleeving proposals must be additional i.e. sleeving should only be used for new building connections and result in the installation of newly installed, low carbon energy generation capacity that would otherwise not have been installed.
- Sleeving must not be used as a substitute for the decarbonisation of the network itself. Therefore, a Decarbonisation Strategy setting out the network's long-term decarbonisation plans will be required as part of any sleeving agreement.
- Sleeving should help support the decarbonisation of existing connections by identifying opportunities to develop new low carbon heat sources on the routes to, or sites of, new connections. Any new development site connecting to a heat network should also be thoroughly investigated by the developer and the heat network operator for opportunities to develop out additional low carbon heat sources to support the ongoing decarbonisation of the network. This should include assessing the potential for incorporating local waste heat sources (for example from building or industrial processes), local secondary sources of heat (for example ground or water sources) and available space for additional low carbon heat generation technology (e.g. available roof area for heat pumps).
- All sleeved heat should be predominantly from low carbon and/or waste (secondary) heat sources. Any fossil fuel generated heat will therefore be either from existing plant supplying the heat network or from existing plant on the site of the new development connection itself providing peak demand and back-up.

Calculation methodology

- Low carbon plant should be installed to provide sleeved heat to new building connections as they come on stream. This may have a proportion of (non-sleeved) heat provided by the network to meet peak demand, and that will have an implication for the carbon intensity of the heat supplied by the network to the development. The total amount of heat will have a net balance over the course of a year e.g. total low carbon generation and blended network heat, if applicable, equals total volume of heat delivered to sleeved customers, and the carbon intensity will be calculated accordingly.
- To enable tracking of progress and performance of the sleeved heat, each proposal should clearly outline the new developments that are expected to connect to the heat network (development name, location and quantum of heat) if this is known; along with their expected associated heat loads (both peak heat load and total annual heat load required in kWh/year) and the low carbon generation plant to be installed (output, efficiencies, system losses). It should

also include if known, the proportion, if any, of heat being supplied from the network or associated peaking plant.

Timescales

- Low carbon plant should ideally be installed by the time the first 'sleeved' new connection is made to the plant or at the soonest available time thereafter.
- A Heat Network's Decarbonisation Strategy, that is a pre-requisite for sleeving, should set out the network's longer-term decarbonisation plans as well as the specifics around sleeving. This should include their low carbon heat source installation dates against development connection dates for those developments being supplied with sleeved heat.

Regulations / Planning Permission

- Part L 2021 does not include a methodology for the use of sleeving. Therefore, the overall performance of the network will need to meet the CO_2 intensity of heat for existing heat networks as set out in Approved Documents L1 and L2.
- It is possible that Part L of the Building Regulations will be updated with changes to energy and CO_2 emission minimum standards for heat networks. Therefore, heat network operators must ensure that these updates are regularly reviewed and, where necessary, update their heat network plant mix to ensure that developments can continue to achieve Building Regulations Approval.

Accountability

- A mechanism will need to be agreed to track performance of network decarbonisation.
- GLA agreements with heat network operators on sleeving proposals will be reviewed periodically to ensure that the networks are bringing on new low carbon heat sources as per their commitments and decarbonisation strategy, and decarbonising as agreed. The GLA reserves the right to remove any sleeving agreements if the decarbonisation strategy is not achieved.
- Double counting of energy generation from low carbon plant must be avoided e.g. each kWh generated must be attributed to either a single customer or the network. Sleeving proposals should set out the process that will be used to track the volume of low carbon heat generated and how that heat is allocated and supplied to new connections to avoid double counting.
- The sleeving agreement is for the purposes of calculating CO_2 emission performance against London Plan policy for new planning applications only. Should the sleeving agreement be intended to be used for any other purpose, this must be declared to and agreed with the GLA e.g. for ESG reporting by the network operator and/or connected building owners, or for discharging existing planning conditions etc.
- Should the heat demand for new developments/connections exceed the proposed quantity of low carbon heat available for sleeving then the network operator will need to commit to bringing on a new low carbon heat source and update the sleeving element of their decarbonisation strategy accordingly.
- Network operators must work with building owners to develop an agreement that enables alternative heating strategies should the sleeving proposals not be delivered as expected. This could be in the form of planning permission conditions that include clauses to enable developers the option of alternative heating solutions in the event that the network does not decarbonise in line with the agreement or if the network operator is not able to guarantee compliance with future versions of Building Regulations (when these are confirmed).

Costs

- Costs to occupants for heat supplied should be fair and market comparable. For any new connection the network operator will be required to sign up to the Heat Trust (or equivalent) in order to provide consumer protection. Network operators should ensure that existing customers are not unduly impacted by sleeving proposals and they will be expected to outline how this will be achieved.
- Best practice design and specification standards for primary, secondary and tertiary systems comparable to those set out in the CIBSE/ADE Code of Practice CP1 should be achieved in the build out of the network. Where the developer is responsible for system design and installation (e.g. secondary or tertiary systems) the network operator will need to be involved in the specification, commissioning and testing of those systems prior to connection to ensure compatibility and optimise network performance.
- Developers will be required to meet the London Plan net zero target and minimum of 35% improvement on Part L 2021 regulated emissions; this can involve cash-in-lieu contributions to the Local Planning Authorities CO_2 offset fund. As outlined above, sleeving proposals are expected to enable developers to be able to achieve similar levels of CO_2 emission reductions as would be the case if they had progressed an on-site solution. Offset payments should therefore not be significantly different to the counterfactual site solution and the level of off-set payments will ultimately need to be agreed with the respective Local Planning Authority.

Question 55. Do you agree with the proposed guidance on sleeving outlined for Heat Networks included in Approved Document L, Volume 1: Dwellings and Approved Document L, Volume 2: Buildings other than dwellings?

No (please provide justification).
In general, we agree with the process proposed in the guidance on sleeving outlined for Heat Networks, included in Approved Document L, Volume 1: Dwellings and Approved Document L, Volume 2: Buildings other than dwellings, however, we do not agree with the proposed use of diversified peak heat demand. As mentioned in the sections above, we agree with the use of the PCBD but we believe the guidance should propose the use of annual heat demand as a more appropriate and efficient way to calculate the amount of heat needed to be supplied to the development through the sleeving of low carbon heat. Annual heat demand is how heat networks identify the optimum combination of heat sources to supply their consumers overall heat demand so that they are sized appropriately and in a combination that helps them to meet heat demand whilst minimising the cost of heat that will ultimately be charged to their consumers.

Question 56. Do you agree that heat networks' available capacity that does not meet a low carbon standard should not be able to supply heat to new buildings?

Yes.

Question 57. What are your views on how to ensure low-carbon heat is used in practice?

It is important that there is a process to verify the use of low carbon heat sources to maintain confidence and integrity in the sector. We would welcome the requirement on heat network operators to report, and evidence, their energy plants' operation on an annual basis across their network and therefore what the proportion of each of their heat sources are actually being used to supply heat in their network throughout the year. This would allow Ofgem, the heat network regulator, to assess their performance and carbon intensity as part of their regulatory approach. This would allow the carbon factor of the heat network to be monitored against the trajectory set out in their decarbonisation strategy, and where the

carbon factor is higher than planned this would need to be explained and justified, with additional measures proposed to help bring this down and back in line with their decarbonisation strategy.

12.Legislative changes to the energy efficiency requirements

Question 65. Do you agree that Part L1 of Schedule 1 should be amended, as above, to require that reasonable provision be made for the conservation of energy and reducing carbon emissions?

Yes, and we'd like to provide further information.
We agree with this amendment in principle, but as we have mentioned in our response to Question 12, we believe it is important to maintain a reference to minimising energy consumption, ideally through a delivered energy metric. We also think that an additional reference to targeting the delivery of net-zero buildings could be a useful addition.

Question 66. Do you agree that regulations 25A and 25B will be redundant following the introduction of the Future Homes and Buildings Standards and can be repealed?

No (please provide justification).
No, we do not agree that these regulations will be redundant in the proposed form of the Future Homes and Buildings Standards. This is because we are not confident that the current proposals will actually deliver net-zero buildings, and do not agree with the assumption that these regulations will automatically be met.

We believe that the Regulation 25A consideration of decentralised energy sources could be an important step to help promote the implementation of different energy sources that could help reduce demand on the electricity grid. Furthermore, regarding Regulation 25B, as stated in our response to Question 12, we believe that a focus on minimising energy demand is key to achieving net zero buildings in practice. Therefore, the inclusion of this regulation will help highlight this.

13.A review of our approach to setting standards

Question 67. Do you agree that the Home Energy Model should be adopted as the approved calculation methodology to demonstrate compliance of new homes with the Future Homes Standard?

Yes, and we'd like to provide further information.
Yes, we understand that the HEM is a big improvement on the existing SAP methodology. However, as stated in our response to Question 12, we believe it is still missing the inclusion of a delivered energy metric, and/or consideration of unregulated energy. Therefore, we believe there should be space for these to be voluntary inclusions at this stage (with mandatory inclusion later on) if it is not able to be mandatory in this instance.

Question 68. Please provide any comments on the parameters in the notional building

As stated in our response to Question 2, we believe the notional building should have much higher fabric specification as a minimum.

Question 69. Minimum standards already state that heat pumps should have weather compensation and we would like to understand if stakeholders think this is enough to ensure efficiency of heat pumps under the varying weather conditions across England. Should the notional building use local weather?

Yes.

Question 75. Do you agree with the methodology outlined in the NCM modelling guide for the Future Buildings Standard?

We welcome changes to make modelling more realistic. Improvements to how heat pump efficiencies are calculated are also welcomed as this is we often see applicants commonly overestimate this which requires a lot of conversations.

14.Transitional Arrangements

Question 78. Which option describing transitional arrangements for the Future Homes and Buildings Standard do you prefer? Please use the space provided to provide further information and/or alternative arrangements.

Option 1: a 6-month period between the laying date of the Future Homes and Buildings Standard regulations and publication of full technical specification and the regulations coming into force.

Question 80. Do you agree that the 2010 and 2013 energy efficiency transitional arrangements should be closed down, meaning all new buildings that do not meet the requirements of the 2025 transitional arrangements would need to be built to the Future Homes and Buildings Standards?

Yes.

15.Part O – Call for Evidence

Question 82. Part O does not apply when there is a material change of use. Should it apply?

Yes.
We are particularly keen that there are overheating risk reductions for any residential uses, as well as anywhere more vulnerable people might be present, e.g. schools and hospitals/care homes. There must also be a prioritisation on passive cooling measures to mitigate the risk of increased energy usage through active cooling

Question 86. Do you consider there to be omissions or issues concerning the statutory guidance on the dynamic thermal modelling method for demonstrating compliance with requirement O1 for all residential buildings?

Yes, (please provide justification).
In London, we still do not see major developments proposing external shading (shutters, blinds etc) despite ensuring applicants prioritise these measures from the outset (we ask applicants to follow a cooling hierarchy outlined in Section 8.2 of the GLA 2022 Energy Assessment Guidance.

Developments in London are mainly using low g-value (average of 0.42 in 2022 approved applications) and then, due to the restrictions of Part O, move to some form of active cooling where Part O limits restricts window opening, for example due to external noise. In instances where security, air quality or noise concerns pose limitations to the opening of windows, applicants are required to demonstrate that all passive design measures have been thoroughly investigated. This should include technical and cost feasibility assessments of the following fixed shading devices: external shutters; external blinds; awnings and ventilated louvres. Should natural ventilation not be proposed due to opening limitations, applicants are required to submit two separate overheating analyses: one with openable windows and one with closed windows. This will ensure that passive measures have been maximised and the façade design has been optimised regardless of the constraints posed by the site's location. Applicants should demonstrate that the assumptions of the overheating model are aligned with the noise and air quality assessments.

It would be good to include the openable windows scenario as a requirement of building regulations (currently only section 2.11 of Part O asks to demonstrate that passive measures have been used before mechanical cooling). It would be also good to add that more 'passive' active ventilation methods should be used and only peak lopping solutions are acceptable rather than full cooling - set points and controls should be included to show that the system will not be used for comfort cooling. Without the adoption of more passive solutions, we risk exacerbating the problem by expelling waste heat outside to where it is already very hot. In London, this is a particular concern as it contributes to the urban heat island effect. Applicants should quantify the number of units that will require temperature lopping and the expected cooling load associated. They should clarify if trim cooling is required in all units, or if only certain facades will be affected by noise restrictions. Ambient loop systems that propose heat share should quantify the benefit and ensure that the active cooling will not be used for comfort.

16. Equalities and impact assessments

Question 95. Please provide any feedback you have on the impact assessment.

High benefit-cost ratio
We note that the benefit-cost ratio in the Future Homes Standard Impact Assessment for Option 1 in Question 7 is relatively high (£10,274m / £3,058m = 3.4). Given that the cost impact of a higher fabric scenario is the primary justification for not proposing this approach, we would expect a lower value than 3.4 for the benefit-cost ratio, especially as the impacts of lower efficiency standards will be felt directly by the building occupiers through higher bills (and potentially retrofit costs). This seems high in the context of the Future Buildings Standard Impact Assessment (£3,188m / £2,359m = 1.4) and the 2021 Future Homes and Buildings Standards Consultation (£7,275m / £4,548m = 1.6). Therefore, we would welcome more information regarding what benefit-cost ratio is deemed acceptable for further fabric improvements to be justified.