

Twinn Sustainability Innovation comments

Page: [Draft New London Plan](#)

Section: [N/A](#)

Cross Strategy issues

It is good that London Plan puts all strategies in one place. But considerable lack of joined up thinking across strategies and policies. For example, integrated policies can help reduce Urban Heat Island temperatures to potentially eliminate Climate Change temperature rises. This involves the reduced heat and noise of electric vehicles and modal switching, that allows operable windows in buildings, which in turn reduces can reduce by as much as a half their energy use and their heat rejection to the atmosphere. This is supported by the cooling of having far larger tree canopy. See policy SI4 comments for more detail and references. Other examples are included in the specific policy comments.

Hard pressed planners

Fundamentally, planning officers have too little time and too little in-depth technical knowledge to make many of the judgements needed at pre-app stage and in support of planning committees. This also includes developments below the threshold for referral to the Mayor. Too much wasting time and money go on thick reports, which as Grenfell, have little meaning other than showing a tick in a compliance process box (eg: current policy asks for assessment but does not define any expectations of minimum deliverable performance standards – hence 50% of homes may fail the BRE daylight criteria – but policy was fulfilled because the BRE methodology was followed). This is the case for daylighting, sunlight amenity, overheating (dwellings and non-domestic), wind & microclimate, actual measured energy use and the performance gap, as well as fire performance, etc.

A change of direction is required

The new London Plan needs to bring in a very definite change, to enable harder-edged updated default numerical standards expectations for very many technical issues (just as it does for 35% better than Part L for energy compliance). This then allows the finite design review time to be spent on architecture, urban planning, and other less numerically defined aspects. Currently, of the very limited time available for design review, too much is side tracked onto these technical issues. Instead developers should provide written statements as part of the planning submission stating they will fully comply with all quantified minimum standards for all homes and other buildings. By exception developers must specifically draw attention to where, in exceptional site-specific situations, deviations occur and what mitigation measures are provided, drawing particular attention to planning officers and planning committees to the extent of these deviations.

My background experience

I have a background of 40 years in building design, building physics, planning and site implementation, formed my own specialist sustainability consultancy following 28 years with Arup - as a director and Arup Fellow. I train planners via Urban Design London and on various design review panels, including Design Council:CABE, Historic England and Haringey, among others. I am an Honorary Fellow of the Royal Institute of British Architects, Fellow of the Chartered Institute of Building Services Engineers, and an EDGE think tank committee member and a LETI contributor. The premise behind much of my current work is that sustainability should cost less than business-as-usual.

My development experience is worldwide and as a result I have policy and regulatory experience from many different countries. My developments including many extra-low resource-use prototypes and exemplars. These include the BedZED project, Portcullis House, CSH6* Kingspan Lighthouse, numerous BREEAM firsts, Kings Cross Central masterplan, and many others. I lived and worked in China for 3 years on a range of Eco-city masterplanning and zero carbon building projects, as well as in Australia and Hong Kong.

Page: [Policy GG1 Building strong and inclusive communities](#)

Section: [N/A](#)

Policy GG1-C. Add: Ensure that trees and greenery are part of the planning. Unfortunately, the proposed new Urban Greening Factor (UGF) is a flawed metric for achieving this – there are better proven alternatives, see comments on **Policy G5-B**.

Page: [Policy GG2 Making the best use of land](#)

Section: [N/A](#)

Policy GG2-B.

Note: Intensifying the use of the land is fine providing it is assembled into blocks that make tower blocks unnecessary as shown by Design for London Housing Guide. There is too much presumption that high density means tall. This is particularly important at masterplan level, because at the individual plot level too often site purchase prices are set based on maximising built floor area within the plot boundary red line.

Policy GG2-E. Add: Encourage developments that are permeable (especially to pedestrians and cyclists), connected to the surrounding city and actively discourage gated or single entry communities

Page: [Policy GG3 Creating a healthy city](#)

Section: [N/A](#)

Policy GG3 Providing a healthy city

Note: Good having healthy streets, providing tall buildings do not induce wind effects that make walking and cycling very difficult.

Further Policy. Add: All new proposed buildings over [say] 10 storeys must submit an environmental wind impact assessment.

*Note: Unfortunately, current assessment methods as described in local policy are inadequate. This should additionally consider wind chill (as Fanger) and local gusting, in addition to Lawson criteria currently used – see also under **Policy D7-F.***

Policy GG4 Delivering the homes Londoners need

Note: It is important to combine land purchase at existing use value and not at the 'hope' value. There should be a development tax on the land value uplift at the point of sale.

Policy GG4-F. Add: Introduce a mechanism for land value capture but in the meantime prevent right-to-buy for RSLs and Local Authority new builds.

Policy GG4-G. Add: Ensure that homes are provided with the supporting infrastructure, including local shops, cafes, schools, health centres, community and leisure facilities, workplaces, allotments, etc. within walking distance. Areas should not become solely residential.

*Note: The London Plan is far too quiet on the major issue of the existing stock which will be the vast majority of our buildings and our main energy demand in 2050. There is much the GLA can do in this area – see **Policy GG6-E&F** This is also the cause of so much health and wellbeing issues.*

Policy GG4-H. Add: Pilot street-wide zero-carbon retrofit schemes such as Energiesprong (www.energiesprong.eu). Upgrading homes in fuel poverty is

1. socially good
2. starts to create the demand at scale needed for the cost reductions which makes it easier for the able-to-pay and
3. reduces demand on the NHS.

Viability assessments for upgrading the existing stock should be required to consider the wider cost benefits, and not rely solely on energy cost savings as too many currently do.

Policy GG6 Increasing efficiency and resilience.

Note: Note: The London Plan is far too quiet on the major issue of the existing stock which will be the vast majority of our buildings and our main energy demand in 2050.

The introduction of a more ambitious MEES (minimum energy efficiency standards), with practical support for those affected, is imperative to achieving higher levels of retrofit.

Policy GG6-E. Add: Introduce MEES for all developments, including retrofit. This should include a London specific uplift of the current minimum standards and a London specific maximum cost cap.

The national standard is EPC E, London should ask for say EPC 'D' with an enhanced PRS cap of £10k to reflect the locally higher costs and rent levels, inability of occupants to pay (higher living costs), and the need for a defined London-wide existing stock route-map to zero carbon for 2050.

Policy GG6-F. Add: All Part L applicable works in the existing buildings shall be enhanced by 35%. In addition to the new-build Parts of Part L, there are separate parts (1B & 2B) for refurbishment, where the London 35% enhancement overlay should also be applied.

In addition, introduce the previously investigated 'consequential improvement' clauses to existing Building Regulations, eg: the need to upgrade existing building energy use so that a new extension or enhancement does not add to energy use.

Note: Delaying action will result in higher energy use and carbon emissions, therefore action should be ramped up immediately. Maintaining high levels of good quality retrofit is critical to developing a mature supply chain and will bring the costs down. This is illustrated by the GLA's own analysis has shown by zero-carbon new-build (ref GLA housing standards review viability assessment 2015) showing it now costs 1.4%, this compares with 35% for the delivery of BedZED project in 2001.

Note: Given life after Grenfell, there is insufficient in the Plan about enabling occupant empowerment.

Policy GG6-G. Add: Policies specific to Governance with citizen engagement with management of homes are required.

Policy GG6-H. Add: Development should include features that will assist in coping with changing climatic conditions and reduce various forms of pollution.

Note: These might include: street tree canopy, urban greenery, SUDs, green and brown roofs, absorptive materials, building massing futureproofed to avoid dependence on heat discharges from air-con and air-source heat-pumps, etc.

Page: [Policy SD1 Opportunity Areas](#)

Section: [N/A](#)

Policy SD1-B. Add: Boroughs, through Development Plans and decisions, should:

11) Recognise that larger areas can define their own character and density. This particularly applies to riverside developments.

12) Must allow for the contribution of many different players including providers from a range of sectors and a diversity of scales, for example both large and small developers, multi-nationals and SMEs. Single company developments should be actively discouraged or only be permitted with strict planning conditions that require provision of diverse opportunities.

Page: [Policy SD4 The Central Activities Zone \(CAZ\)](#)

Section: [SD4](#)

SD4. Add Policy at O: New developments in the CAZ should enhance the existing tight urban grain and stand-alone ‘object’ buildings within it should be actively discouraged. All buildings within the CAZ should where possible connect and make contact with their immediate neighbours.

Page: [Policy SD8 Town centres: development principles and Development Plan Documents](#)

Section: [N/A](#)

Policy SD8-A.

Note: A town centres first approach is strongly supported (but this should not mean new clusters of tall buildings in these locations, because lower height high density options are available)

Policy SD8-B.4. Add after the first sentence: This should not mean new clusters of tall buildings in these locations.

Design

Note: Generally, this chapter is very good, but the big issue is the design and management capability and capacity of the London Authorities and the boroughs to deliver it, monitor and maintain it all. Following Grenfell and Carillion there must be less reliance on the private sector to deliver this and the Mayor should be making working for London LAs popular again as in '50s and '60s with chief architects, chief planners and chief engineers in house with planning teams to make plans alongside the policies.

Fundamentally, planning officers have too little time and too little in-depth technical knowledge to make many of the judgements needed at pre-app stage and in support of planning committees. This also includes developments below the threshold for referral to the Mayor. Too much wasting time and money go on thick reports, which like the Grenfell recladding, have little meaning other than ticking a compliance process box (eg: current policy asks for assessment but does not define any expectations of minimum deliverable performance standards – hence 50% of homes may fail the BRE daylight criteria – but policy was fulfilled because the BRE methodology was followed). This is the case for daylighting, sunlight amenity, overheating (dwellings and non-domestic), wind & microclimate, actual measured energy use and the performance gap, as well as fire performance, etc.

The new London Plan needs to bring in a very definite change, to enable harder-edged default numerical standards expectations for all of these such issues (just as it does for 35% better than Part L for energy compliance). This then allows more design review time to be spent on architecture, urban planning, social issues and other less numerically defined aspects. Currently, of the very limited time available for design review, too much is side tracked onto these technical issues. Instead developers should provide written statements as part of the planning submission stating they will fully comply with all quantified minimum standards for all homes and other buildings. Then by exception developers must specifically draw attention to where, in exceptional site-specific situations, deviations occur and what mitigation measures are provided, drawing particular attention to planning officers and planning committees to the extent of these deviations and mitigation.

Policy 3.1.10.

Note: 'Designing for adaptability' needs qualification. In the eyes of too many developers 'design for adaptability' means fully sealing buildings and putting full air conditioning in - oversized to cope with the worst of climate change scenarios. This is certainly not what is wanted because it adds to energy use, climate change, local heat rejection/UHI and embodied carbon. Adaptability of use is sensible, but appropriate (i.e. satisfying the full breadth of policies) adaptability for a warmer climate and unnecessary overheating is needed. This is illustrated by buildings with external shutters and using simple techniques like ceiling mounted fans learned from already warmer countries!

London's form and characteristics

Policy D1-A6.

Note: Active frontages are fine but not every ground floor can be active. Consider the Toronto City ordinance that prevents the use of blinds on the ground floor in the City centre to promote oversight and increase security (1990's or earlier, perhaps under the influence of Jane Jacobs)

Policy D1-A. Add subclause (9): The affects of wind induced by building form and layout, both the force of the wind and noise, and of waste heat should be fully considered.

Note: Currently the Lawson criteria for wind is a 1970s health and safety limit, not a proper comfort-based amenity standard and has proved insufficient for todays 'café culture' higher expectations for full use of public space. It does not take into account wind chill factor (Fanger based comfort) or local gusting.

Nowhere in the London Plan is there anything about a trajectory to close to zero waste heat omissions to the atmosphere. Waste heat is a pollutant and we should be on notice that over the medium to longer term this needs to be eliminated – see comments under Policy SI-1.

Policy D1-B. Add subclause (at 4): No demolition should be allowed of a building over 3 storeys unless a carbon account can demonstrate that the new building will have a lower whole life carbon footprint.

Change to achieve high sustainability standards and low environmental impact, verified by monitoring in use performance.

Policy D1-B. Add (at 7): Developments should positively contribute to the grain and connectedness of the locality. The continuous and connected character of London's streetscape should be encouraged and developments that seek to break this discouraged.

Policy D1-B. Add (at 8): Entrances (and multiple entrances) to buildings directly from 'the street' are strongly encouraged.

Page: [Policy D2 Delivering good design](#)

Section: [D2](#)

Delivering good design

Policy D2-C. Add: All buildings above 30m high should be modelled for visual, environmental/microclimatic impacts and whole life carbon assessments at the pre-application stage.

Policy D2-F. Add: The tall building design review should include the submission of whole life carbon assessment for each tower. Insert '....design review.... inform design options early in, and through, the planning process'

Policy D2-H. Add (at 5): requiring predictions of actual measured energy use and energy bills to be made available to occupants. This enables occupants, allowing them to question the performance gap and help bring the industry to account. Note: this needs the requirement to present energy assessments in terms of kWh (not just carbon), so that the same numbers (metrics) can be compared with meter readings by non-technical building operators.

Policy D2-H. Add (at 6): requiring an ongoing management structure, which retains responsibility for every aspect of the building's performance during its lifetime.

Page: [Policy D4 Housing quality and standards](#)

Section: [N/A](#)

Housing quality and standards

Policy D4-D Private outside space. Add (at 11): Secure, covered external storage with a minimum area of 2m² and at least 1m² per person should be provided for cycles etc. in a convenient location.

Policy D4-D Private outside space. Add (at 12): Provision should be made for secure and appropriately designed storage for deliveries, etc. for periods when homes are unoccupied.

Policy D4-E. Insert: Dual aspect should mean facades on opposite sides of the building, not just a bay window or similar. *Note: too often developers present bay windows as providing ‘dual aspect’.*

Policy D4-E. Add: A required methodology should be referenced here together with the minimum performance standard expected by using the methodology e.g. overheating mitigation will be provided in accordance with the CIBSE TM59 methodology. *Note: there is a gap here between the developments where the design has progressed into sufficient detail for a TM59 assessment, and outline applications which set little more than massing, orientation and fenestration. These are absolutely critical for avoiding dwelling overheating in high density developments. A simple tool to a assessment of these aspects at pre-app state is needed but is not currently available*

Policy D4-F. Add: Fully glazed buildings will only be permitted if guaranteed in-use energy performance is provided in metrics that occupiers can understand.

Note: The current lack of transparency of Part L method allows those using it to manipulate the compliance results – this is why we are still getting gas-guzzling all glass towers, consistent overheating, increasing use of air-conditioning and an ever-increasing Performance Gap. The first stage in countering this lack of transparency is to ensure designers and technical consultants use metrics others in the design, construction and operation can understand ie: the kWh metric instead of just carbon. So, non-technical occupiers and facility managers can use this compare this with their Smart Meter reading

Page: [Policy D7 Public realm](#)

Section: [D7](#)

Public realm.

Policy D7-H. Add: Proposals for the maintenance and governance of planting schemes should be submitted as part of the planning application.

Tall Buildings

Policy D8-C.1 Visual impacts. Add subclause at b): They should not reduce the pedestrian permeability of the city at street level.

Policy D8-C.1 Visual impacts. Add subclause at c): The developer must demonstrate the governance measures that will guarantee this. This should include the provision of a 'sinking fund' to ensure long-term maintenance and, in due course, replacement of significant components like cladding. The UK demolished so many towers in the recent past because the maintenance budget and revenue stream (from occupants) was insufficient.

Policy D8-C.1 Visual impacts. Add subclause at g): Nor should they cast shadows that significantly adversely affect other buildings or the public realm.

Policy D8-C.1 Visual impacts. Add subclause at h): The base of all new and extensively refurbished tall buildings should be designed so that it contributes to the streetscape, provides active frontages and connects with its context and environment.

Policy D8-C.1 Visual impacts. Add subclause at i): Appropriate long term mechanisms must be established and demonstrated to ensure that tall buildings will be well-maintained and regularly upgraded for the duration of their design life.

Policy D8-C.1 Visual impacts. Add subclause at j): All tall buildings proposals should be submitted with a statement that describes the preparations that will put in place and the measures to be taken when tall buildings reach the end of their design life

Policy D8-C.2 Functional impact. Add subclause at a): Buildings should not have a larger whole life carbon balance, per useable square metre, than a lower building would have.

Policy D8-C.3 Environmental impact

Note: The assessment of these and the minimum standards are not well defined. For example, requiring wind ‘assessments’ (Lawson criteria) does not consider wind chill factors which can make the local comfort temperature as much as 6°C or local gusting.

Policy D8-C.3 Environmental impact. Add subclause at c): Noise created by air...should not detract... for open spaces... and balconies and other amenity spaces

Page: [Policy D10 Safety, security and resilience to emergency](#)

Section: [D10](#)

Policy D10-C. Add: Developments dependant on sealed façades and on air-conditioning shall submit an assessment of how long they will be able to operate and maintain acceptable and safe conditions for occupancy during an electrical power failure.

Note: This builds on the New York post-Sandy experience and as an example see LEED assessment method BD+C New Construction v3 2009 Passive Survivability and Functionality During Emergencies

Page: [Policy H1 Increasing housing supply](#)

Section: [H1](#)

Policy H1-B.2 d) Add after ‘public sector owned sites’: not including woodland, parks and open spaces.

Page: [Policy H2 Small sites](#)

Section: [H2](#)

Policy H2-I. Add: Large developments should include provisions for multiple small site developments within them aimed at both small developers and, where possible and appropriate, individual builders/householders.

Page: [Policy E1 Offices](#)

Section: [E1](#)

Offices

Policy E1-G. Add sub-clause 4: examine smart IT and new working practices to significantly reduce small power, lighting and any need for air-conditioning.

Note: Alternatives to the conventional BCO institutional standards shall be considered. BCO standards are now contributing to over-design, inefficient oversized M&E, unnecessary additional embodied energy, and the energy Performance Gap. Instead there are the opportunities offered by new smart IT and new working practices to significantly reduce small power, lighting and hence air-conditioning and occupational costs. New tablet-based IT offers the opportunity for small power of less than 5W/m² (USB power-draw is typically 2A at 5v), LED task lighting can be less than 1W/m², both more than 80% reductions on BCO standards. This offers the potential for far more office type buildings to become naturally ventilated and hence typically half the energy use of air-conditioning (ref: ECON19).

Page: [Policy G1 Green infrastructure](#)

Section: [G1](#)

Policy G1-D. Add: The network of green spaces, street trees, green roofs and other major assets such as natural or semi-natural drainage features must be planned, designed and managed in a more integrated way to meet multiple objectives including: promoting mental and physical health and wellbeing; supporting learning and development in children and adults, adapting to the impacts of climate change; improving air and water quality; encouraging walking and cycling; and conserving and enhancing biodiversity and ecological resilience alongside more traditional functions of green space such as play, sport and recreation.

Page: [Policy G2 London's Green Belt](#)

Section: [N/A](#)

Note: The continued protection of London's Green Belt is strongly supported

Page: [Policy G3 Metropolitan Open Land](#)

Section: [N/A](#)

Note: The continued protection of MOL is strongly supported.

Page: [Policy G4 Local green and open space](#)

Section: [N/A](#)

Note: The continued protection of London's local green and open space is strongly supported.

Page: [Policy G5 Urban greening](#)

Section: [G5](#)

Urban greening

Policy G5-A. Add (at the end of A): Proposals must include governance and maintenance plans at the time of submitting for planning consent.

Policy G5-B. Add (after 'local circumstances'): provided green space is provided on site or within close proximity. Replace 'target score' with 'as a minimum acceptable score'.

Policy G5-B.

Note: Having read the background references, the new Urban Greening Factor (UGF) is a flawed metric for incentivising vegetation in dense urban areas. It is in effect only a 2-dimensional ground permeability. It does not incentive the three-dimensional potential of vegetation and particularly the urban tree canopy benefits advocated by other policies. For example, trees provide almost six times the leaf area of lawns - but are rated the same in UGF. Leaf area, evaporate cooling effects and microclimate effects are as a result so much greater for trees. In addition, they provide solar shading and hence pedestrian microclimate benefits compared with grass. They also allow simultaneous uses to occur under them, doubling up of uses, an important consideration for a dense urban environment. A simpler and more effective alternative is the Singapore Leaf Area Factor, which has a proven track record having been in use for more than 10 years.

It may be possible to combine the benefits of both systems into one. Both are based on site area. So, a Greening Factor of say 0.3/3 could be required of all sites - meaning 0.3 of the site is required to be permeable, with a vegetation leaf area of 3 times the site area. This latter scale of leaf area is quite easy to achieve using the 3-dimensions of tree leaf area, and could be delivered as new street trees / for public green spaces, where building footprint does not permit this on-site. Interesting Singapore has in practice achieved leaf areas of as much as 6 times the site area on some sites using their Green Mark assessment tool. It would also help to incentivise the provision of continuous street tree canopy which is so much better at keeping the microclimate below cool – instead of the too widely spaced trees currently provided by most development

Policy G5. Add clause (at C): A target of two trees per resident (or worker) is recommended for all boroughs and neighbourhoods. *Note: the aspiration for increasing to 50% is too weak, besides sending the wrong message. In typical political-speak terms the 50% policy does not say what London has already, namely in excess of 47%.*

Policy G5 Add clause (at D): 25% of all trees provided to be of species recognised to thrive in 2degC warmer climate. *Note: this reflects the fact that most trees take many decades to mature by which time the effects of climate change compounded by UHI would be with us.*

Page: [Policy G6 Biodiversity and access to nature](#)

Section: [G6](#)

Policy G6-A. Add: including Sites of Metropolitan Importance and all ancient.

Page: [Policy G7 Trees and woodlands](#)

Section: [N/A](#)

Trees and woodlands

Policy G7-A. *Strengthen as follows:* Trees and woodlands should be protected, and new trees and woodlands should be planted in appropriate locations in order to increase the extent of London's urban forest – the area of London under the canopy of trees to ensure minimum canopy cover levels over the whole Greater London area of 20%. The strongest possible protection should be given to 'veteran' trees and ancient woodland, especially where these are not already part of a protected site.

Page: [Policy S11 Improving air quality](#)

Section: [N/A](#)

Improving air quality

Note: The London Plan with its time horizon of 2041 gives no longer-term trajectory for air quality aspects and hence does not help industry with a view of where to make long term investments in products and services. For example, there is no mention of the need to phase out urban combustion because it is such a major pollution source. Waste heat is already limited as a pollutant for discharges into water courses and into the groundwater (ref: Environment Agency), and so given the number of summertime excess deaths there is grounds for establishing a trajectory for limiting waste heat discharges. The latter would then help the long-term future of district heating as needs to evolve from combustion-based heat generation towards low temperature networks, hence being able to accept waste heat from commercial chillers and providing the heat source for domestic hot water using heat-pumps.

Minimising greenhouse gas emissions

Note: The aim of zero carbon buildings and a zero carbon London by 2050 is strongly supported.

However, a Zero Carbon building as currently defined, is an untruth. The Zero Carbon policy and definition for new buildings is flawed because:

- 1. It does not do what is on the label and will not deliver zero carbon emissions from energy consumption in these buildings*
- 2. It excludes the significant 'unregulated' energy use of buildings*
- 3. There is in addition, a significant Performance Gap between code compliance predictions and subsequent actual meter readings*
- 4. There is no responsibility on those doing carbon prediction compliance to deliver a building that actually performs to these levels.*
- 5. The Part L calculation incentivises oversized and operationally inefficient 'regulated' energy systems - not least because their size is based on inflated assumed 'unregulated' energy use.*
- 6. End users cannot check their building performance against predictions and so question developers for non-performance, because carbon metrics are not transparent compared with kWh meter readings*
- 7. Policy SI-2 A is incorrectly worded. Zero Carbon as currently defined, does not include emissions from construction or peak energy demands.*

Policy SI2-A. Amend to read: Major development should be net zero-carbon for in-use energy consumption. In addition, they should reduce carbon dioxide emissions from construction and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

- 1) Be lean: use less energy and manage demand during construction and operation.
- 2) Be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly.

Note: As already covered at policy level by SI-3, omit the sentence: 'Development in Heat Network Priority Areas should follow the heating hierarchy in Policy SI3 Energy infrastructure'

3) Be green: generate, store and use renewable energy on-site.

Note: Add the following as step 4 in the hierarchy:

4) BE SEEN: monitor, verify and publicly report on energy performance in-use, reconciled against design predictions

Note: Add the following to end of **Policy SI2-A**: This policy will be progressively updated during this Plan period to include 'unregulated' energy carbon emissions and embodied carbon emissions within the definition of zero-carbon.

Policy SI2-B. Amend to read: Major development should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy and energy performance of the operating building will be monitored and reported.

Note: remove the 'expected to' to prevent ambiguity

Policy SI2-C. Amend policy to: A minimum on-site reduction of at least 40% beyond Building Regulations is expected. Residential development should [text removed] achieve a minimum of 15%, and non-residential development should [text removed] achieve a minimum of 20% through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided:

1. through a cash in lieu contribution to the relevant borough's carbon offset fund, and/or
2. off-site provided that an alternative proposal is identified, and delivery is certain.

Note: The evidence base reports for establishing the consultation suggested 35% and 15% are flawed. Firstly, they are written by those who have a vested interest in maintaining and writing the Part L methodology (with its inherent flaws) or they assume that practical improvements are limited to those defined by this same methodology.

The Code for Sustainable Homes illustrated how industry could deliver stretch targets if given a suitable timeline and defined long-term trajectory. On the basis establishing this trajectory will take some preliminary work, in the meantime, instead of relying on what has already comfortably been delivered (the basis of the evidence base reports), the London Plan should re-establish the principle of continuous improvement by increasing both these numbers by a modest 5% and put industry on notice that this will be progressively updated. The NABERS experience from Australia (see item c below) and the continued construction of all-glass gas-guzzlers illustrates there is considerable scope for further improvement.

The Part L non-domestic methodology is a 'black box' compliance process. Even the software suppliers state it is not appropriate for predicting actual energy use. Outputs can be changed by adjusting obscure input parameters independent of the building design. Thus, an air-con building with an EPC 'B' carbon rating can emit twice the carbon of a naturally ventilated alternative despite the same rating. The ratings basis is so obscure that most in the industry cannot work out how 'all-glass' gas guzzlers are still gaining compliance. So, while Germany has many natural ventilated high-rise examples, the UK has none.

Similarly, the domestic Part L needs updating for high density urban homes. For example, it puts too much emphasis on winter solar gain, yet the low winter sun is mostly obscured in high density homes. The result is oversized windows to capture theoretical winter heat-gains but delivering summer overheating.

The following are proposed to address the above (and other) shortcomings:

- 1. More transparent metrics should be used instead (or alongside) of carbon. This should be in kWh (just as most of the rest of the world and everyone's domestic electric meter). This allows all these other non-energy stakeholders to start to understand how a building should and could performance. This underpins the 'BE SEEN' suggested addition to the energy hierarchy.*
- 2. A minimum 'fabric energy efficiency' target for non-domestic buildings should be introduced. This is to help stop the current Part L gaming and the use of tinkering of short-life M&E systems for alleged carbon benefits. The conventional assumption that non-domestic buildings generate so much internal heat that they need poorly performing façade to get rid of heat should no longer be appropriate. A fabric energy efficiency rating could be similar to the Hong Kong OTTV code. It must be simple and transparent to avoid hidden 'gaming'.*
- 3. A change towards a 'outcomes based' energy requirement for development (new and refurb) to deliver a verified measured energy performance based on achieving actual energy meters readings, instead of a Part L compliance which does not relate to in-use performance. This Australian NABERS system (www.nabers.gov.au) does this and now sees in-use energy use as much as 4x better than London. Initially this could be alongside a conventional energy assessment.*

Policy SI2-C. Add to the end of policy: Where the monitored performance of the building falls short of the predicted performance upon which the offset was based, further offsets equivalent to the monitored shortfall shall be provided.

Policy SI2-E. Add policy: Referable Schemes should undertake a nationally recognised lifecycle carbon assessment.

Page: [Policy SI2 Minimising greenhouse gas emissions](#)

Section: [9.2.9](#)

Clause 9.2.9 *Note: Amend wording from “demand” to “consumption” for improved clarity and include clarification on monitoring and reporting techniques in the SPG.*

Amend to read: a) The move towards zero-carbon development requires comprehensive monitoring of energy consumption and carbon emissions to ensure that planning commitments are being delivered. Major developments are required to monitor and report on energy performance [text removed] to the Mayor for at least five years via an online portal to enable the GLA to identify good practice and report on the operational performance of new development in London.

Clause 9.2.10-j *Note: amend wording to include a 2030 zero carbon requirement. This sets a realistic trajectory for the inclusion of 'unregulated energy' and improved demand reduction.*

Amend to read: i. Proposals explaining how the site has been future-proofed to achieve zero-carbon on-site emissions in operation by 2030.

Clause 9.2.10-g. *Note: Amend wording to encourage innovation and include less proscription. Simply Installing a 'smart meter' does not in itself deliver. The word 'response' to be replaced with the word 'management' to make this a more proactive process. There also needed to be a measurable requirement, otherwise most developments simply providing a normal BMS can be assumed to comply. The SPG could do this by specifying that the building peak energy demand (from the Part L assessment) should not occur during January or August (deemed to be the months of current maximum and/or future peak Grid demand). In due course, more specific requirements can be developed, including time-of-day. Similar approaches already taken by other authorities like California could be explored.*

Amend to read: g. To anticipate infrastructure capacity challenges for a growing London, submit proposals for energy demand management and reductions in peak energy demand.

Clause 9.2.10-h. *Note: Remove "proposals for" and ask design teams to "demonstrate". Swap the word "demand" for "consumption". Add the words "monthly and reported" for clarification.*

Amend to read: h. Demonstrate how energy consumption and carbon emissions post-construction will be monitored monthly and reported annually (for at least five years).

Clause 9.2.10-k. *Note: Strengthen wording to consider the whole life-cycle of materials as well as the initial embodied carbon. Consider bringing life-cycle carbon into policy through the addition of a clause in policy SI2.*

Amend to read: k. Report on embodied carbon and provide proposals to minimise whole life cycle carbon.

Note: Embodied Energy has been largely overlooked by the London Plan and the London Environmental Strategy, yet as we head for 2050 it is highly likely the energy / carbon emission embodied into the materials we use will need to be factored into London's overall carbon targets. We should be starting preparations for this. While accepting that embodied energy knowledge is in its infancy, there is some clear guidance that can be given for building and infrastructure development. The following is a proposed 'Embodied Energy Hierarchy':

- i. 'Reduce' the volume of material used (for example, using half the amount of materials halves the amount of embodied energy).*
- ii. 'Reusing' by designing for longer useful building life (for example, doubling useful life can halve the amount of embodied energy).*
- iii. 'Calculate' the development's embodied energy content using industry best-practice tools to feed into improving the knowledge (This builds evidence for defining future policies).*

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Policy SI3

Note: In future energy supply terms the roof area of our buildings is a key infrastructure for London delivering its own renewable energy. Yet there is no policy mention of the need to make roof areas available for immediate use for PV or futureproofed for it (perhaps by permitting community energy companies to use the roof areas). There are vast roof areas on many new buildings that are not being used. Indeed, PV can easily be the actual waterproofing layer (being glass), but there is no policy context to incentivise this. It should be noted that about 4 storeys of almost any low energy building can become zero-carbon, even if the building is high rise. At the very least policy should identify the need to harness the full roof space for energy generation and export surplus to the grid.

Note: Policy SI3 appears predicated on providing relatively high temperature district heating infrastructure. This is now acting as a break on improving demand reduction (level 1 of energy hierarchy). Instead, new high-density homes can easily be 'Heat Autonomous' with no need for expensive (capital & operating) district heating. These source all their heating and hot water from waste heat gains of occupants/appliances/cooking using exhaust-air heat-pumps. The advantage of high-density apartments is having less than half the exposed facade area of standalone Passivhaus houses, so they can achieve the same heating standards but using more modest double glazing with insulation. So, while heat networks may be appropriate for existing lesser insulated buildings, this is not the case for new housing with enhanced insulation standards.

There is a widespread concern in the industry that the policy requirement for district heating on new developments, together with out-of-date Grid carbon factors, is locking us into 50 years plus of high temperature combustion. Not only is this propagating gaseous and particulate pollution, but also flue heat air pollution (see air quality comments) as well as higher than needed carbon emissions. So, while Europe is investigating the next step towards heat sharing 5th generation networks, London is locking itself into 3rd generation high temperature systems. Instead, 5th generation pipe networks operate at far lower temperatures, so they can take waste heat from cooling offices and then deliver it to homes requiring domestic hot water.

Policy SI3-B6. Amend: 'how the heat network evolves to zero fossil energy sources and zero combustion by 2030'

policy SI3-D requirement for all developments to have community heating is too proscriptive and the heating hierarchy needs updating. Ideally policy SI3-D should be completely reviewed to instead focus on the high-level objectives and move the technology prospective aspects into the SPG. However, if the policy is to remain largely as it stands, the following is recommended. Rephrase introduction to permit 'heat autonomy' using building/dwelling waste heat and other demand reductions, swap clauses a. and b. and re-phrase to include energy sharing and efficiency measures. Merge clauses c. and d. Merge clauses e. and f. and re-phrase.

Amend to read: Major development proposals within Heat Network Priority Areas should have a communal heating system unless they can demonstrate lower energy use and carbon emission by alternative means

- 1) the heat source for the communal heating system should be selected in accordance with the following low carbon heating hierarchy:
 - b) connect to an energy sharing network through the capturing and using of waste heat and/or use of available local secondary heat sources.
 - c) connect to a local existing or planned heat network where it is demonstrated to be running efficiently, the cost of heat to occupants is comparable to national new-build average heating fuel costs, and there is a zero-emissions transition plan in place to ensure that the development achieves zero carbon emissions in operation (if it is not already fossil fuel free).
 - d) generate clean heat and/or power from zero-emission sources (examples include: solar technologies, heat pumps and energy storage powered by renewables).
 - e) use low emission combined heat and power (CHP) (where suitable for size and demand of development) or ultra-low NOx gas boilers (in areas where legal air quality limits are exceeded all development proposals must provide evidence to show that any emissions related to energy generation will be equivalent or lower than those of an ultra-low NOx gas boiler). If the development uses fossil fuels, then a zero-emissions transition plan must be in place to ensure that the development achieves zero carbon emissions in operation by 2030.

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Managing heat risk

Note: The London Plan, like the London Environmental Strategy is still not very good at joining up policies across different Strategies. In Climate Change / UHI / heat risk, research is now emerging showing how an integrated range of policies crossing different strategies can help reduce Urban Heat Island temperatures to an extent to potentially eliminate Climate Change temperature rises for 2050. This involves integrating green infrastructure policies, transport policies, building design policies, and understanding how they work together.

Research for Manchester (see summary: www.bit.ly/2mn9NnB) illustrates the scale needed of more urban trees to reduce their urban summer temperatures towards neutralising expected climate change effects. To get development to implement on this scale for London would need the proposed Urban Greening Factor modified to include a site leaf area requirement (see Green Infrastructure comments) instead of just a site permeability factor. This can be used as the means to achieve continuous tree canopies and continuous protective microclimate along public thoroughfares instead of the current intermittent too widely spaced street trees.

Related research (Fan and Sailor, 2005) shows waste heat put into the urban air contributes between 1 and 3°C to the heat island effect. Buildings are the dominant emitter of waste heat energy, contributing some 60% of the total, with vehicles also contribute some 32% and human metabolic heat emissions 8% (Smith, Lindley and Levermore, 2009).

Direct drive electric vehicles emit almost 90% less heat at the point of use than internal combustion vehicles. Hence this transport policy direction also helps reduce summer peak temperatures. But additionally, this makes the streets quieter and more pollution free, allowing operable windows permitting all buildings to also significantly reduce their energy use. Policies to futureproof all buildings to be able to capitalise on this are needed.

All building energy consumption eventually ends up as low-grade heat lost to the local atmosphere, be it by way of heat reject plant, ventilation discharge or via envelope conduction and convection. So, a halving of building energy use about halves the building's contribution to UHI. There is considerable data (ref ECON19, etc) showing natural ventilated buildings typically use half the energy of non-domestic air-conditioned buildings. Policies should be considered requiring all new non-domestic buildings to be futureproofed ready to operate naturally ventilated in future (even if they initially operate sealed with air-con). See comments and policy suggestion for Policy D10-C : Developments dependant on sealed façades and on air-conditioning shall submit an assessment of how long they will be able to operate and maintain acceptable and safe conditions for occupancy during an electrical power failure.

This should also include the requirement for room exposed thermal mass for future passive cooling (even if initially covered up with the air-con) and building depths to allow natural cross ventilation. These requirements would also be applicable to high-rise for which there is a growing experience elsewhere worldwide for operable windows up to 50 stories (ref: CIBSE AM10 revision in draft, also: Natural Ventilation in High-Rise Office Buildings publication by CTBUH).

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Policy SI4-A Add to end: and the provision of appropriate vegetation.

Note: This should be cross reference to Policy G5 for the provision of urban greening. See also comments on G5-B about the Urban Greening Factor needing to be amended.

Policy SI4-B. Between hierarchy items 4 and 5 add: 'provide enhanced passive cooling (eg: ceiling mounted fans).

Note: Learning from warmer climates abroad, the cooling hierarchy should specifically mention ceiling mounted fans as enhanced passive ventilation, before consideration of mechanical ventilation or active cooling systems. Ceiling fans can deliver 3°C of cooling at less than 10% of the energy use of mechanical systems. They also cost less, and occupants more easily understand how to control and use them only when required. Unfortunately, standard HVAC engineer software and training in the UK does not have this as a cooling option because it harnesses body evaporative cooling effects instead of air temperature control.

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Page: [Policy SI5 Water infrastructure](#)

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Policy SI5-C.1. Amend: from 105 litres to 80 litres.

Note: Just as London requires development to have an extra energy policy overlay above national minimum standards (35% better than Part L) where it would not economically discourage development, we should be expecting similar higher domestic water standards. In modern high-density apartments, hot water is now becoming the biggest energy demand. It is also, by far, the largest domestic peak heat demand and hence dictates the size of heat network pipes, and unnecessarily large domestic heating boilers (20yr ago average boiler size was 12kW, now it is 32kW, while Europe best practice is now 1.5kW). 80 litres maximum per person was easily achievable under the Code for Sustainable Home and so should now be introduced as the minimum London standard. It has become easier because the EU has just agreed a new water outlet rating system (www.europeanwaterlabel.eu) – including shower heads which tend to be the largest hot water demand in a home.

Page: [Policy SI13 Sustainable drainage](#)

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Sustainable drainage

Note: There is no explanation that SUDS is the responsibility of all of us, including those outside flood risk areas. We are all in the catchment areas that feed into the flood risk areas.

Note: SUDS assessments are the preserve of large developments only. There is a lack of advice for smaller scale developments on appropriate small-scale SUDS measures where the costs of preparing a full SUDS strategy are not warranted. To assist the boroughs, the GLA could prepare information on these so that SUDS could be applied more widely. For example: all hard standing be over 300mm of no-fines hardcore so the cavities between hardcore can temporarily hold runoff. This sort of measure would be applicable to retrofit, ie: adding garden parking spaces.....!