

The Policy Playbook: Driving sustainability in new homes - a resource for local authorities

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The first iteration of this resource was produced in association with Core Cities UK and was compiled through a combination of workshops, meetings, written consultation and individual feedback from across the built environment sector. The organisation's listed to the right contributed to and endorsed the original publication.

Subsequent updates have been carried out by UKGBC, with input from a range of stakeholders. We are particularly grateful to the work of the following individuals for supporting on various iterations and on different topics:

- Charlene Clear, BRE
- Duncan Price, BuroHappold
- Olof Jonsdottir & Jessica Smith, Rockwool

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What should local authorities do to drive sustainability in new homes and which councils are already doing so?

[Development case studies](#)

Who is demonstrating leadership and how did they do it?

Introduction (1)

Purpose

The component parts of the resource pack that follows are designed to help enable cities and local authorities drive up the sustainability of new homes. We start from a position that national policy is not currently delivering what is required from all new homes across the board, from either an environmental or social perspective.

Aiming for consistency

The intention of this resource is to encourage a consistent approach by local government. A consistent approach:

1. Enables local authorities to benefit from shared learning, common resources and mutual confidence
2. Provides stability for industry around the requirements expected from it across different parts of the country, which reduces potential burdens and provides a stable climate for investment in delivering higher standards
3. Can be aligned with national policy in the future, given the commitments made in the Clean Growth Strategy and 25 Year Environment Plan which demands more from new homes in terms of both carbon and wider environmental standards

Some local authorities want to or already are demonstrating leadership through ambitious policy. We recognise this and propose what we believe is a pragmatic way to enable this, whilst avoiding a patchwork of different approaches.

Introduction (2)

How we intend this resource to be used

This is intended as a hands-on resource, designed to be used and adapted to support the 'day job' of officers with responsibility for sustainability, planning, regeneration, housing etc within local authorities. It may be used in the following ways (and more):

- To inform planning policy in relation to sustainability of new homes
- To inform local authority sustainability requirements as a procurer of new homes
- To help positively engage with developers who want to support a local authority's aspirations
- To offer guidance on an approach to providing evidence when challenged on viability

Definition of 'sustainability'

In this resource we focus on energy & carbon, mitigating overheating risk, the cross-cutting issue of assuring performance and, most recently added - the role of acoustics as an important component of health & wellbeing. We hope to continue adding topics over time. We believe in a holistic approach, in which new homes support regeneration of the natural environment and provide a high quality of life for residents.

Using and contributing to this resource

This is a journey. The intention is for this resource to be a 'live' document. Not only can we add a broader range of sustainability topics over time, but provide additional case studies, more shared tools and resources of different types. We intend this to feel 'co-owned' by users and are actively seeking ongoing feedback and engagement:

Requested actions for local authorities

- Consider how and when the recommendations can be incorporated into policy and associated guidance & give us your feedback
- Add to this resource pack by providing links to policies, documents, case studies and evidence
- Open up or maintain dialogue with UKGBC on the status of your current policy, and plans going forwards

Requested actions for developers

- Consider the implications of the policy recommendations for your projects and business model
- Positively engage with UKGBC through membership, to develop further iterations of policy proposals
- Provide additional case studies

Please email john.alker@ukgbc.org

Policy playbook

- Overview
- National policy & legal context
- Playbook principles

Overview

Purpose

This section provides the core content of the resource. It is intended to provide a common language for use amongst local authorities in respect of setting policy or related guidance on sustainability requirements in new homes.

It takes often highly technical content and attempts to translate it into a usable “playbook” that is neither too time-consuming nor too complex to engage with.

Contents

(click the links to go straight to the section highlighted)

It is structured as follows:

[National policy and legal context](#)

The latest status of key elements of national policy, and how they relate to what local authorities can and cannot do

[Playbook principles](#)

A proposed response to the reality of different local circumstances within which authorities are operating

[Playbook by topic](#)

Recommended requirements, together with guidance on metrics where appropriate on: carbon and energy demand reduction, mitigating overheating risk, acoustics and assuring performance.

National policy & legal context (1)

Introduction

A changing national policy context for housing in recent years has led to confusion and uncertainty about what can and cannot be done at the local level to raise the sustainability of new build homes – particularly for energy and carbon. UKGBC explored this in a [Green Paper](#) published in January 2017. The recent policy history and current situation is summarised over the next four slides.

Recent history

In early 2015 the Housing Standards Review reported and Government announced the withdrawal of the Code for Sustainable Homes, except for legacy projects. As a result, a number of changes to existing Building Regulations were introduced, along with new technical optional standards on Access, Water and Space. At the time, the policy for all new homes to be ‘zero carbon’ from 2016 was still in place (despite unresolved issues as to exactly what that entailed).

In a [Written Ministerial Statement](#) (WMS) in March 2015, Government stated that *‘local planning authorities...should not set...any additional local technical standards or requirements relating to the construction, internal layout or performance of new dwellings.’* The exception was energy performance, where the WMS said that LAs would continue to be able to require energy performance standards higher than Building Regulations up to the equivalent of Code for Sustainable Homes Level 4 *‘until commencement of amendments to the Planning and Energy Act 2008’*.

The amendments in question would have removed the ability of LAs to require energy performance standards for new homes that are higher than Building Regulations. It appeared as though they would be enacted at the same time that Government introduced higher energy performance requirements nationally in 2016, through Building Regulations, which according to the WMS were to be *“set at a level equivalent to the (outgoing) Code for Sustainable Homes Level 4.”* However, after the General Election in 2015, Government scrapped the Zero Carbon policy and the planned Building Regulations uplift. The amendments to the 2008 Act **have not been enacted**.

National policy & legal context (2)

Consultation on Part L 2020 and the Future Homes Standard (Oct 2019)

In the [Consultation on Part L 2020](#) and the Future Homes Standard, government sets out its intention to *'introduce in 2020 a meaningful but achievable uplift to energy efficiency standards as a stepping stone to the [2025] Future Homes Standard. The intention is to make new homes more energy efficient and to future-proof them in readiness for low carbon heating systems.'*

In Para 2.27 the government states: *'As we move to the higher energy standards required by Part L 2020 and the Future Homes Standard, there may be no need for local authorities to seek higher standards and the power in the Planning and Energy Act 2008 may become redundant.'* They therefore requested feedback on when and if the amendments to the Planning & Energy Act 2008 should be enacted.

UKGBC argued strongly in our [response](#) that the government should not commence the amendments to the Planning and Energy Act, and that local authorities should retain the powers to set higher standards, in order to encourage innovation and enable them to meet their climate emergency targets.

In order to avoid the possibility of a patchwork of differing standards across the country, UKGBC also urged the government to act swiftly to publish a forward trajectory for future Part L uplifts, which would allow local authorities to set higher energy performance standards in line with future national requirements. This could fulfil a similar function to the old Code for Sustainable Homes, which clearly set out the future direction of national policy. It would also mean that investment and skills would be directly related to future uplifts in national regulations.

This position was echoed by a number of Council leaders and combined authority Mayors, who signed an [open letter to MHCLG](#) in March 2020.

The Consultation closed on 7 February 2020 and we are awaiting the Government's conclusions on when and if the amendments should be enacted. If taken forward, the amendments could commence in October 2020 alongside the implementation of the new Part L standards, or be delayed until 2025 when the new Future Homes Standard comes into force.

National policy & legal context (3)

In the meantime, the policy outlined in the the revised [Planning Policy Guidance on Climate Change](#), published in March 2019 still stands:

“Can a local planning authority set higher energy performance standards than the building regulations in their local plan?”

Different rules apply to residential and non-residential premises. In their development plan policies, local planning authorities:

- *Can set energy performance standards for new housing or the adaptation of buildings to provide dwellings, that are higher than the building regulations, but only up to the equivalent of Level 4 of the Code for Sustainable Homes.*
- *Are not restricted or limited in setting energy performance standards above the building regulations for non-housing developments.*

The [Planning and Energy Act 2008](#) allows local planning authorities to set energy efficiency standards in their development plan policies that exceed the energy efficiency requirements of the building regulations. Such policies must not be inconsistent with relevant national policies for England. [Section 43 of the Deregulation Act 2015](#) would amend this provision, but is not yet in force.

The [Written Ministerial Statement on Plan Making](#) dated 25 March 2015 clarified the use of plan policies and conditions on energy performance standards for new housing developments. The statement sets out the government’s expectation that such policies should not be used to set conditions on planning permissions with requirements above the equivalent of the energy requirement of Level 4 of the Code for Sustainable Homes (this is approximately 20% above current Building Regulations across the build mix).

Provisions in the [Planning and Energy Act 2008](#) also allow development plan policies to impose reasonable requirements for a proportion of energy used in development in their area to be energy from renewable sources and/or to be low carbon energy from sources in the locality of the development.”

Playbook principles

Balancing ambition, consistency and local context

In the following sections, UKGBC makes recommendations on ‘baseline requirements’ for LAs to introduce, and makes the case for local authorities taking a consistent, collective approach:

- 1) There should be a set of minimum or ‘baseline’ sustainability requirements for all new homes that all cities and local authorities (LAs) are able to set, regardless of local context. This will provide developers with consistency across local boundaries.
- 2) Our recommendations on baseline requirements for LAs to set now are modest and pragmatic. Over time, the baseline requirements should gradually be strengthened to deliver greater environmental and social outcomes.

Their future trajectory should be set out in advance, with clear definitions and interim steps.

- 3) Despite being relatively modest in ambition, the recommended baseline requirements still go beyond what is required through national policy, but in principle national policy should ‘catch up’ and itself provide that baseline.
- 4) We have considered a set of criteria in making our recommendations. The baseline requirements (now and in the future) need to be technically possible, immediately deployable, economically viable, legally sound. For requirements to strengthen over time as we have suggested, local authorities may need additional powers.

5) Some cities and LAs will want to go further, faster (and several are doing so already). This leadership should be supported. However, to use an analogy, we need to get to the same ‘destination’ using the same ‘road’, even if some wish to travel more quickly. We have provided commentary and very high level recommendations on future policy.

6) The experiences of those authorities (and developers) who do progress more quickly should be able to inform future policy, through lessons learned.

7) Standards for local authorities’ own procurement or own land disposal should at least match the baseline requirements set for all homes.

Playbook by topic

Playbook topics currently covered:

1. [Carbon & energy demand reduction](#)
2. [Mitigating overheating risk](#)
3. [Assuring performance](#)
4. [Acoustics](#)

A broadly consistent structure is followed:

- I. [Introduction to the topic](#)
 - General context and policy drivers
- II. [Policy recommendations](#)
 - Recommended policy intervention(s) for ‘baseline requirements’, and any associated metrics
 - Explanation & rationale
 - Recommended policy and/or commentary on future direction of travel (if applicable)
 - Indicative trajectory map (if applicable)
- III. [Policy examples](#)
 - Examples already set by local authorities

POLICY PLAYBOOK: CARBON & ENERGY DEMAND REDUCTIONS

Section contents

I. [Introduction to the topic](#)

- General context and policy drivers

II. [Policy recommendations](#)

- Recommended policy intervention(s) for 'baseline requirements', and any associated metrics
- Explanation & rationale
- Recommended policy and/or commentary on future direction of travel
- Indicative trajectory map

III. [Policy examples](#)

- Examples already set by local authorities

Introduction: carbon & energy demand reductions

The case for carbon reduction measures in the built environment has been proven

In June 2019, the [Government announced](#) that the UK will 'eradicate its net contribution to climate change by 2050' by legislating for net zero emissions – the first G7 country to do so.

To play its part, and given its potential for cost-effective carbon reductions, all buildings need to be net zero carbon by 2050.

However, the Committee on Climate Change has reported that by 2030, current plans would at best deliver around half of the required reduction in emissions, 100-170 MtCO₂e per year short of what is required by the carbon budgets.

A 36% reduction in UK emissions is required from 2016 to 2030, with approximately a 20% cut in emissions (89 MtCO₂e) required from the buildings sector as a whole. The Committee has made clear that this will require “*stronger new build standards for energy efficiency and low-carbon heat*”.

Furthermore, the latest [IPCC report \(2018\)](#) calls for a limit of 1.5 degrees for global warming in order to prevent the worst effects of climate change. “*Every extra bit of warming matters, especially since warming of 1.5°C or higher increases the risk associated with long-lasting or irreversible changes, such as the loss of some ecosystems.*”

There is a strong precedent for local authorities taking a lead on emissions reductions in new homes.

Section 19 of the Planning and Compulsory Purchase Act (2004), Section 182 of the Planning Act (2008), the Planning and Energy Act (2008), and section 14 of the revised NPPF (2018) all empower Local Planning Authorities to enforce policies which reduce carbon emissions from new homes.

The government's [Clean Growth Strategy \(2017\)](#) specifically highlights the role of local leadership:

*“Moving to a productive low carbon economy cannot be achieved by central government alone; it is a shared responsibility across the country. Local areas are best placed to drive emission reductions through their unique position of managing policy on land, **buildings**, water, waste and transport. They can embed low carbon measures in strategic plans across areas such as health and social care, transport, and **housing**.”* (Clean Growth Strategy, p118. Bold font = our emphasis).

Policy recommendations: carbon & energy demand reductions

Baseline requirements

It is recommended that local planning authorities set a requirement for new homes as follows:

A 19% reduction on the Dwelling Emission Rate (DER) against the Target Emission Rate (TER) based on the 2013 Edition of the 2010 Building Regulations (Part L) whilst meeting the TER solely from energy efficiency measures as defined within the SAP calculation model.

For absolute clarity, the reference to 'solely energy efficiency measures' refers to DER against the TER (i.e. the current requirements of Part L 2013) not to the 19% improvement factor.

In addition, it is recommended that:

Requirements for new homes delivered through local authorities' own procurement processes, and homes built on land disposed of by local authorities should at least match this requirement and where possible act as a trailblazer for higher standards.

Policy recommendations

Explanation & rationale for baseline requirement recommendations

Legally sound

This recommendation is equivalent to the energy performance requirements in Code for Sustainable Homes Level 4. For the reasons outlined in detail in the [section on legal and policy context](#) this recommendation falls well within the legal power of local authorities to implement. Furthermore, a number of local authorities have already incorporated this recommended baseline requirement into policy. This includes Brighton and Hove City Council, Ipswich Borough Council and Cambridge City Council, all of whom have had their policies adopted, which provides a clear precedent.

Built on progressive consensus

Not only is this baseline recommendation legally sound, it has also been arrived at through extensive consultation with UKGBC's network of developers, architects, engineers, product suppliers and local authorities, who represent a progressive consensus of support. To be clear, there may be opposition to this recommendation from many in the wider housebuilding industry many of whom oppose any attempt to move sustainability standards forwards. Local authorities should act collectively and consistently to pursue this recommendation and have confidence that the industry will respond, even if some will only do so reluctantly following a period of challenge.

Pragmatic

This recommendation uses a metric and methodology (i.e. DER, TER, Part L etc) which has limitations, but is understood by policy-makers and the industry alike and is likely to be used in future policy development. The level of stretch required is a subjective judgement based on something that we believe is achievable everywhere, but still moves the industry forward compared to the current national minimum standards. This recommendation is designed to take into account likely land values right across the country.

Policy recommendations

Explanation & rationale for baseline requirement recommendations

Outcome oriented

This recommendation is geared towards overarching carbon reductions in order to focus on outcomes and give the market freedom to design for site specific opportunities and challenges. However, it has an energy efficiency backstop in order to ensure an energy demand reduction first approach in line with the energy hierarchy. We believe this approach is preferable the following:

- 1) Simply asking for design to follow the energy hierarchy, without specific targets designed to reduce carbon and no energy efficiency backstop. This leads to very different interpretations and does not provide clear enough requirements
- 2) Relying **solely** on “Merton Rule” policies which stipulate a percentage of energy from renewable sources. We believe our recommended approach ensures energy is reduced **before** the use of renewables. We also believe our approach can be used in conjunction with Merton Rule policies where viable.

Strong precedent (therefore technically feasible & immediately deployable)

Much of the industry has had considerable experience in delivering the Code for Sustainable Homes Level 4 (and equivalent in energy performance), which does not require a radically different approach to design. Our research shows that as of early 2018 there were approximately 107,000 homes in England built to this standard. The [case studies section](#) of this resource pack provides a snapshot of what is being delivered by leading developers, many of whom regularly exceed this recommended baseline requirement as a matter of course. To be clear, there would still be a period of adjustment for others, but one we believe is long overdue.

Policy recommendations

Explanation & rationale for baseline requirement recommendations (continued)

Economically viable

A 19% improvement beyond Part L 2013 can be achieved entirely through energy efficiency measures (enhanced insulation, glazing, airtightness and high efficiency heating and hot water heat recovery). Our discussions suggest that developers feel this approach might cost between £2-3k for a mid or end terraced home up to £5-6k for a detached house. However, for those building to the Part L 2013 notional specification it is possible to achieve a 19% improvement through the use of photovoltaics (PV) or other renewables. A terraced would need around 0.8 kWp of PV with a detached house needing perhaps 1.2 kWp (depending on floor area). The capital costs of adopting a renewables based strategy are likely to be c.£1,500-£2,000 per home.

We do not believe this will impede housing delivery. A modest increase to build costs can be factored into the cost of land acquisition and/or minimised if not entirely eliminated over time through supply chain innovation and efficiencies. Developers already exceeding the baseline requirements recommended simply see this as the cost of doing business.

Policy recommendations

Explanation & rationale for baseline requirement recommendations (continued)

Economically viable

There are various studies that can be utilised in considering costs.

[Housing Standards Review Cost Impacts](#) (DCLG, 2014)

[Costs of building to the Code for Sustainable Homes](#) (Element Energy/David Langdon, 2013)

[Lessons from AIMC4: Delivery costs](#) (AIMC4, 2014)

LAs can also make use of existing resources produced by other LAs on viability, to help with both proving precedent and providing a guide on structure/process, e.g.:

[Matter Statement \(Climate Change\)](#) (Cambridge City Council, 2016), and

[Cambridge City Council & South Cambridgeshire District Council Local Plans Viability Update](#) (2015)

[Driving energy efficiency through the London Plan](#)

(Buro Happold, 2017)

[Whole Plan Viability Study](#)

(Ipswich Borough Council, 2017)

[Whole Plan Viability Study](#)

(Milton Keynes Council, 2017)

[Whole Plan Viability Assessment](#)

(Old Oak & Park Royal Development Corporation, 2017)

[Additional Information on Viability Assessment](#)

(Reading Borough Council, 2018)

Policy recommendations

Future direction of travel – Net Zero Carbon

Net Zero carbon

It is recommended that local authorities and/or combined authorities and Mayors commit to a future target of:

All new homes (and buildings) to be net zero carbon emissions in operation by 2030 at the latest.

Science based

This target originates from the work of the World Green Building Council and partners, in particular the [Advancing Net Zero](#) programme. It is based on climate change science, and modelling that demonstrates what is required – globally – to meet the commitments set out in the Paris Agreement. It is important to be clear that this target represents a major leap forward - zero carbon emissions in operation includes all energy used for heating/cooling, lighting, hot water use and small power/appliances. This will require a significant and concerted effort by both industry and policy-makers.

Momentum is building

Despite the major challenge this represents, local authorities who adopt this target will be aligning themselves to a global movement of cities, businesses and third sector organisations who are driving a net zero approach. This is something we believe should be taken up by national government, but in the absence of this, local government will need to take a lead. Even if national government does renew its interest, local leadership will still have a key role to play.

Advancing Net Zero

A World Green Building Council global project



WORLD
GREEN
BUILDING
COUNCIL

WorldGBC definition:

A net zero carbon building is highly energy efficient with all remaining energy from on-site and/or off-site renewable sources

100% of buildings must operate at net zero carbon

2050

2030

All new buildings must operate at net zero carbon

GOVERNMENT
ENGAGEMENT

TRAINING &
EDUCATION

CORPORATE
ENGAGEMENT

CERTIFICATION

Key Principles

1. Measure and disclose carbon

Carbon is the ultimate metric to track, and buildings must achieve an annual operational net zero carbon emissions balance based on metered data



2. Reduce energy demand

Prioritise energy efficiency to ensure that buildings are performing as efficiently as possible, and not wasting energy



3. Generate balance from renewables

Supply remaining demand from renewable energy sources, preferably on-site followed by off-site, or from offsets



4. Improve verification and rigour

Over time, progress to include embodied carbon and other impact areas such as zero water and zero waste



Policy recommendations

Defining the target and the trajectory

A UKGBC Task Group has developed a framework definition which sets out the principles for a net zero carbon building in the UK.

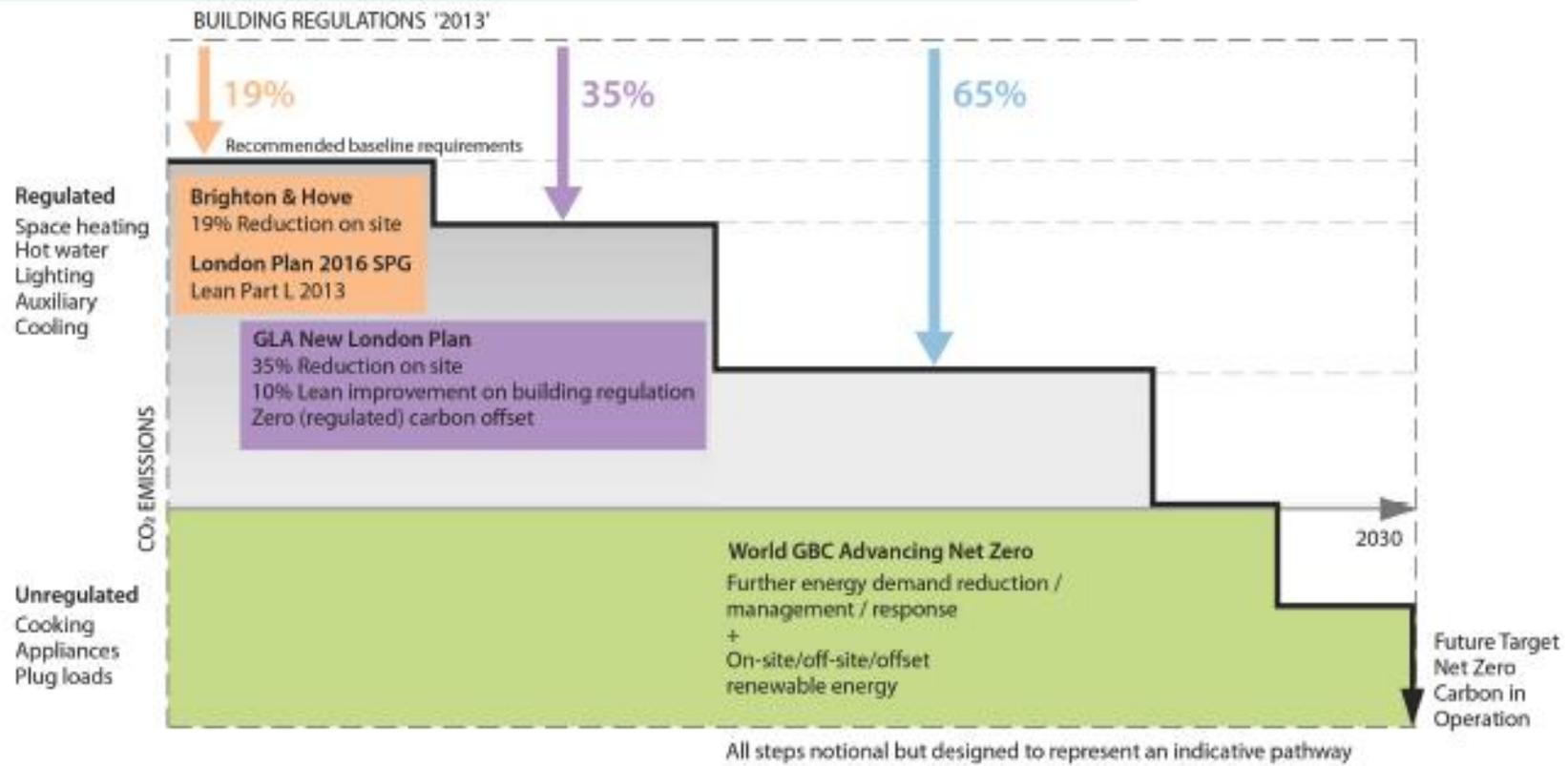
[The framework](#) is freely available for building developers, designers, owners and occupiers to help inform decisions and drive positive action. These different stakeholders may interpret the framework for their own purposes, but central to the framework is a strong industry consensus, enabling a common understanding of how net zero should be defined.

UKGBC recommends that local authorities:

- Set requirements for modelling of ‘whole life’ carbon impacts for new developments with a view to introducing targets and offsets in the future.
- Set requirements for monitoring and reporting energy performance of major new developments for the first years of operation (also see later chapter on Assuring Performance).
- Set out future requirements that align with the Committee on Climate Change’s recommendations for 2025 which would 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/m²/yr.

Policy recommendations

Future direction of travel – an indicative trajectory map



Policy examples

Local authorities applying/seeking to apply policies beyond Part L 2013.



Local authority	Policy summary	Link	Status
Bedford	<p>Policy 54 – Energy efficiency - Energy efficient buildings will be required as follows: i. New residential development of fewer than 10 dwellings is required to achieve a 10% reduction in carbon emissions below the Building Regulation requirement.</p> <p>ii. New residential development of 10 or more dwellings or on sites larger than 0.3 ha is required to achieve a 19% reduction in carbon emissions below the Building Regulation requirement.</p> <p>These requirements will apply unless it can be demonstrated that they would make the development unviable. These requirements apply to new buildings and not to extensions or renovations.</p>	Bedford Borough Local Plan 2030	Adopted January 2020
Brighton and Hove City Council	<p>CP8 Sustainable Buildings - All development will be required to achieve the minimum standards as set out below unless superseded by national policy or legislation...Residential (New Build) Energy Performance 19% carbon reduction improvement against Part L2013</p>	Brighton and Hove City Plan Part One; Brighton and Hove's City Councils Development Plan	Adopted March 2016
Cambridge City Council	<p>In order to ensure that the growth of Cambridge supports the achievement of national carbon reduction targets...all new development will be required to meet the following minimum standards of sustainable construction...unless it can be demonstrated that such provision is not technically or economically viable: On-site reduction of regulated carbon emissions of 44% relative to Part L 2006. (This is equivalent to 19% reduction on 2013 Edition).</p>	Cambridge Local Plan 2018	Adopted October 2018

Policy examples continued

Local authority	Policy summary	Link	Status
Greater London Authority	S12 C Minimising Greenhouse Gas Emissions – Major development should be net zero-carbon...In meeting the zero-carbon target a minimum on-site reduction of at least 35 per cent beyond Building Regulations is expected. Residential development should aim to achieve 10 per cent, and non-residential development should aim to achieve 15 per cent through energy efficiency measures.	New London Plan	Emerging
Greater Manchester Combined Authority	GM – S 2 Carbon and Energy – a. Be zero carbon from 2028 by following the energy hierarch (with any residual emissions offset)...With an interim requirement that all new dwellings should seek a 19% carbon reduction against Part L of the 2013 Building Regulations...Achieve a minimum of 20% reduction in carbon emissions (based on the Dwelling Emission or Building Emission Rates) through the use of on site or nearby renewable and/or low carbon technologies...	Greater Manchester’s Plan for Homes, Jobs and the Environment (spatial framework)	Emerging
Guildford Borough Council	D2 Sustainable design, construction and energy (9) - buildings must achieve a reasonable reduction in carbon emissions of at least 20%*. This should be achieved through the provision of appropriate renewable and low carbon energy technologies in the locality of the development. Where it can clearly be shown that this is not possible, offsite offsetting measures in line with the energy hierarchy should be delivered. *20% reduction against the TER set out in 2013 building regulations after energy efficiency has been addressed, in line with the energy hierarchy.	Guildford borough Submission Local Plan: strategy and sites	Emerging

Policy examples continued

Local authority	Policy summary	Link	Status
Eastleigh Borough Local Plan	The Borough Council requires that: a. all new build residential development must achieve at the time a Reserved Matters or Full Planning Application is submitted: i. a 19% improvement in predicted carbon emissions, compared with the building regulations standard current at the time, through increased energy efficiency of the building fabric, unless this is superseded by an updated building regulations requirement equivalent to 'zero carbon homes';	Eastleigh Borough Local Plan	Emerging
Havant Borough Council	E8 Low Carbon Design – proposals for residential development will be granted where they achieve reductions in CO ₂ emissions of 19% of the Dwelling Emission Rate (DER) compared to the Target Emission Rate of Part L of the Building Regulations	Draft Havant Borough Local Plan 2036	Emerging
Ipswich Borough Council	DM1 New build residential development should achieve reductions in CO ₂ emissions of 19% below the Target Emission Rate of the 2013 Edition of the 2010 Building Regulations (Part L) DM3 All new build development of 10 or more dwellings or in excess of 1,000 sq. m of other residential or non-residential floorspace shall provide at least 15% of their energy requirements from decentralised and renewable or low-carbon sources. If it can be clearly demonstrated that this is not either feasible or viable, the alternative of reduced provision and/or equivalent carbon reduction in the form of additional energy efficiency measures will be required. The design of development should allow for the development of feed in tariffs.	Local plan core strategy and policies development plan document review	Adopted February 2017

Policy examples continued

Local authority	Policy summary	Link	Status
Milton Keynes Council	<p>SC1 Sustainable Design and Construction - 4.a Achieve a 19% carbon reduction improvement upon the requirements within Building Regulations Approved Document Part L 2013. 4.b. Provide on-site renewable energy generation, or connection to a renewable or low carbon community energy scheme, that contributes to a further 20% reduction in the residual carbon emissions subsequent to a) above. 4.c. Make financial contributions to the Council's carbon offset fund to enable the residual carbon emissions subsequent to the a) and b) above to be offset by other local initiatives.</p>	<p>Milton Keynes Local Plan</p>	<p>Adopted March 2019</p>
Oxford City Council	<p>Carbon reduction in new-build residential developments (other than householder applications): Planning permission will only be granted for new build residential and student accommodation developments (or 25 student rooms or more) which achieve at least a 40% reduction in the carbon emissions from a code compliant base case¹⁷. This reduction is to be secured through on-site renewable energy and other low carbon technologies (this would be broadly equivalent to 25% of all energy used) and/or energy efficiency measures. The requirement will increase from 2026 to at least 50% reduction in carbon emissions. After 31 March 2030 planning permission will only be granted for residential and student accommodation (25 or more non self-contained student rooms) development that is Zero Carbon.</p> <p>¹⁷ Code compliant base case is the amount of reduction in carbon emissions (from regulated energy) beyond Part L of the 2013 Building Regulations or equivalent future legislation. The current code compliant base case means that the developer has to demonstrate 19% less carbon emissions than Part L of the 2013 Building Regulations.</p>	<p>Oxford Local Plan 2036 Proposed Submission Draft</p>	<p>Emerging</p>

Policy examples continued

Local authority	Policy summary	Link	Status
Reading Borough Council	<p>H5: STANDARDS FOR NEW HOUSING New build housing should be built to the following standards, unless it can be clearly demonstrated that this would render a development unviable:</p> <ul style="list-style-type: none">c. All major new-build residential development should be designed to achieve zero carbon homes.d. All other new build housing will achieve at a minimum a 19% improvement in the dwelling emission rate over the target emission rate, as defined in the 2013 Building Regulations.	Reading Borough Local Plan	Adopted Nov 2019
Suffolk Coastal Draft Plan	<p>Policy SCLP9.2: Sustainable Construction All new developments of more than 10 dwellings should achieve higher energy efficiency standards that result in a 20% reduction in CO2 emissions below the Target CO2 Emission Rate (TER) set out in the Building Regulations. Exceptions should only apply where they are expressed in the Building Regulations or where applicants can demonstrate, to the satisfaction of the Council, that it is not viable or feasible to meet the standards.</p>	Suffolk Coastal Draft Plan	Emerging

POLICY PLAYBOOK: MITIGATING OVERHEATING RISK

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- General context and policy drivers

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- Recommended policy intervention(s) for ‘baseline requirements’
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Introduction: mitigating overheating risk

There is strong evidence that excessive or prolonged high temperatures in homes can have severe consequences for occupants

Indoor temperature is not just a subject of comfort. There are approximately 2,000 heat-related deaths each year in the UK whilst the 2003 summer heatwave saw more than 35,000 fatalities Europe wide. Summer temperatures in urban areas are predicted to rise between 2 and 4 degrees by 2050, increasing the existing risk posed to the elderly, the young and the sick (those who typically spend most of their time indoors during the day) of suffering from severe heat stress.

There are clear policy drivers to mitigate overheating risk. This includes the [revised NPPF](#) (July 2018), which states:

“Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures.”

It is also fair to say that increasing levels of building airtightness and fabric efficiency require greater focus on the risk of overheating and strategies to mitigate this. However, we fundamentally believe that it need not be a choice between the two – it is perfectly reasonable to expect efficient, low carbon homes which also minimise

risks posed by overheating. The Zero Carbon Hub published a comprehensive [report](#) on overheating in new homes in 2016.

There are also market trends and drivers which warrant a progressive approach to mitigating overheating risk. Many expect the explosion of consumer interest in health and wellbeing to translate into demand for homes that actively enable positive health outcomes and for this to begin to be a stronger factor in housing choice. See 2016 UKGBC’s [work](#) on this topic.

Policy recommendations

Baseline requirements

It is recommended that local planning authorities develop an overheating risk framework with three core components:

1. Include mitigation of overheating within the local plan, making clear that new development should follow the cooling hierarchy (see existing [policy examples](#)). Provide further guidance on best practice design, either using publications aimed at a national audience ([see examples](#)), or ideally providing locally tailored guidance to take account of climatic and geographical differences.
2. An early screening assessment/score card, used by developers and/or the Local Planning Authority to provide a simple, time-efficient assessment of risk of overheating. This could be locally developed, or could use nationally recognised screening tools such as BRE's temperature reporting

tool, currently used as part of the [Home Quality Mark](#) or the [Passivhaus Planning Package \(PHPP\)](#) – which includes summer comfort calculations. A pro-forma could form an appendix to an SPD.

3. When early screening flags a potential issue, we recommend LAs require a detailed appraisal. This would use full dynamic analysis tools to manage and rectify designs that are at significant risk and would need to adopt the methodologies, metrics and KPIs outlined within [CIBSE TM59: 2017 Design methodology for the assessment of overheating](#).

Future direction of travel

As demonstrated in the introduction, mitigating the risk of overheating is now a key policy concern and can be expected to factor increasingly into consumer choice, as part of a wider focus on health and wellbeing.

Future policy might reasonably be expected to have an increased focus on post-occupancy performance of dwellings, enabling real data, or even 'live' data to very tangibly demonstrate the ability of a developer to provide a comfortable indoor environment, including but not limited to temperature. See following section for discussion of assuring performance.

Policy recommendations

Explanation & rationale for baseline requirement recommendations

Built on progressive consensus

This recommendation has been arrived at through extensive consultation with UKGBC's network of developers, architects, engineers, product suppliers and local authorities, who represent a progressive consensus of support. There is widespread recognition within the industry that risk of overheating is a major issue, and we do not anticipate any particular challenge to LAs taking a leadership position on this topic.

Economically viable

The recommendations are designed to front load the discussion so that developers (public and private) can review and design out risk prior to planning submission. Early consideration keeps project team and build design costs down.

Pragmatic & outcome oriented

The recommendations are set out sequentially, but in reality are a closely related package that together form a risk framework for overheating. The 'core' components described as 'baseline requirements' require some upfront investment of time and resource from local authorities, but are relatively light touch to administer and do not pose undue burdens on developers. Early consideration of overheating can bring significant benefits not only to residents, but to public finances through avoiding the costs of ill-health, and ultimately costly retrofits.

Legally sound

We do not consider there to be any legal limitations to these recommendations. If any concerns remain about the WMS 2015, not only does the revised NPPF 2018 make clear the onus on local authorities to address overheating, but providing guidance on designing out risk and requiring a demonstration that appropriate processes have been followed is clearly not a technical standard or performance requirement.

Some local authorities already require evidence of dynamic modelling in cases where there appears to be significant risk of overheating.

Policy examples

Local authority	Policy summary	Link	Status
Brighton and Hove Council	CP8 Sustainable Buildings, policy 2.G.: All development proposals including conversions, extensions and changes of use will be expected to demonstrate how the development... protects occupant health and the wider environment by making the best use of site orientation, building form, layout, landscaping and materials to maximise natural light and heat, whilst avoiding internal overheating by providing passive cooling and ventilation	https://tinyurl.com/y9e8t87c	Adopted March 2016
GLA	London Plan, policy 5.9: Major development proposals should reduce potential overheating and reliance on air conditioning systems and demonstrate this in accordance with the cooling hierarchy	https://tinyurl.com/yd7tgp2r	Adopted (New London Plan emerging)
Milton Keynes Council	Plan MK, policy SC1: Sustainable Construction. Development proposals for 11 or more dwellings are required to calculate Indoor Air Quality and Overheating Risk performance.	Milton Keynes Local Plan	Adopted March 2019
Cambridge City Council	Overheating requirements are included in the Greater Cambridge Housing Development Agency Housing Design Guide. Guidance on the cooling hierarchy will be incorporated into the update to the Council's Sustainable Design and Construction SPD. Developments at perceived risk of overheating can be required to carry out detailed modelling.	https://tinyurl.com/yb6wd7f3	HDA guide published. SPD update forthcoming
London Borough of Islington	A good example of design guidance and an explanation of the cooling hierarchy can be found in "Low Energy Cooling – Good Practice Guide 5".	https://tinyurl.com/yrcfdatd	Published

POLICY PLAYBOOK: ACOUSTICS

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- Examples already set by local authorities

Introduction: acoustics

Mitigating the impact of noise pollution

With more people living and working in cities than ever before, an increase in high density development and the move towards a 24-hour economy, noise pollution has become a growing issue in the built environment. There are well-documented health risks associated with noise pollution, and our understanding of how it can impact health and wellbeing is growing all the time.

In 2018, the World Health Organisation (WHO) *Environmental Noise Guidelines* estimated that nearly 20% of Europe's population have their health impacted by noise pollution. The *Chief Medical Officer* in the UK puts noise second only to air quality in terms of the impact to public health by a single pollutant.

Studies have shown that exposure to unwanted noise can contribute to sleep disturbance, hypertension, and an increased risk of diabetes, dementia, stroke and heart disease.

The irritation caused by noise pollution can have significant detrimental effects on quality of life, and can contribute to cardiovascular and metabolic *disease*. Noise pollution is also linked to poor cognitive performance in children, as they struggle against the cognitive load it causes. It is therefore important that new residential development is built to mitigate the adverse impacts of noise.

Of course, not all sound is bad for us. Good acoustic design can improve the quality of our environments and our health and wellbeing, by for example, improving our connection to the sound of nature.

Current policy

There is existing policy to mitigate the impact of noise pollution in new homes. Defra's [Noise Policy Statement for England](#) provides the basis for noise policy in the UK and sets Government's aim to:

"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

For planning, the revised NPPF includes provision on noise, stipulating that local planning policies should: *"Mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life."* The NPPF also refers planners to the 'Explanatory Note to the Noise Policy Statement for England ([DEFRA, 2010](#)).'

Approved Document E of the Building Regulations complements this with specific requirements for sound insulation between dwellings in new buildings, as well as conversions. However, these are designed to achieve a minimum standard for the protection of health and safety.

Adhering to these requirements alone will not design out all unwanted internal noise, especially in settings such as cities, where high density living often results in higher than average experiences of noise.

There are also no requirements in the Building Regulations to limit the noise entering buildings from the outside environment. Again, this is particularly significant in urban environments where residential buildings are often subject to significant noise from the surrounding area.

There is therefore a gap between what dwellings meeting the Building Regulations will achieve in terms of noise management, and the ability of those dwellings to meet the requirements of the NPPF and the Noise Policy Statement for England (NPSE) to avoid 'adverse impacts on health and quality of life'. As such, LPAs need to consider how to use their local plans to ensure effective noise mitigation is achieved in residential developments.

Current policy (2)

Agent of Change Principle

The revised NPPF in 2018 embedded the ‘Agent of Change’ principle into planning legislation. Planning policies and decision should ensure that:

“new development can be integrated effectively with existing businesses and community facilities ... Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established.”

In terms of noise mitigation, that means the responsibility for mitigating impacts from existing noise-generating activities will be the developer of the new scheme. For example, if a residential unit is planned in proximity to a music venue, to obtain planning permission the developer of that residential scheme must ensure that residential unit will have effective noise mitigation to avoid complaints about noise to the venue.

The legal mechanism to support this is still evolving, together with its relationship with the law of nuisance, to avoid peoples’ rights, or the vibrancy of areas, being undermined.

Policy recommendations

It is recommended that LPAs:

1. Embed the concept of good acoustic design within the Local Plan, making clear that new development should have considered acoustics from the outset, and provide guidance on best practice design.

[The ProPG Planning & Noise Guidance](#) from the Institute of Acoustics, Association of Noise Consultants and Chartered Institute of Environmental Health sets out an acoustic design process to deliver the good acoustic design for a particular site. The ProPG defines good acoustic design as:

“not just compliance with recommended internal and external noise exposure standards. Good acoustic design should provide an integrated solution whereby the optimum acoustic outcome is achieved, without design compromises that will adversely affect living conditions and the quality of life of the inhabitants or other sustainable design objectives and requirements.”

It also goes on to say that:

“Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided; occupants generally prefer the ability to have control over the internal environment using openable windows, even if the acoustic conditions would be considered unsatisfactory when open. Solely relying on sound insulation of the building envelope to achieve acceptable acoustic conditions in new residential development, when other methods could reduce the need for this approach, is not regarded as good acoustic design. Any reliance upon building envelope insulation with closed windows should be justified”.

Further guidance:

[Residential guidance](#) on Acoustics Ventilation & Overheating is also available from the Institute of Acoustics, Association of Noise Consultants (Jan 2020).

In 2014, the [ISO 12913-1 Acoustics-Soundscape standard](#) was published and it provided a new framework to measure and assess sound that more accurately reflects how it is perceived by the listener in context.

Policy recommendations (2)

2. In authorities where noise is likely to be a significant issue, or where there are sites or building types that may give rise to high levels of noise, the Local Plan should include specific policies and standards for noise protection, and quiet areas that should be protected. This may include:
 - a. Setting requirements above the Building Regulations for certain building types – this has been used by LPAs for example for mixed use development where internal noise may result in high internal noise levels.
 - b. Identifying sites for development where noise will require extra mitigation. For example, some LPAs have used noise mapping to identify sites and areas that will be subject to significant environmental noise, often due to proximity to road, rail or air travel routes, and mandated further standards in the Local Plan. In the worst cases LPAs should also state that residential development will not be granted (see Hounslow policy example).
 - c. Setting minimum standards for developments in their local area. Many LPAs require developments to meet the internal noise levels in BS8233:2014:

BS8233:2014 – Guidance on Sound Insulation and Noise Reduction in Buildings

BS8233:2014 provides guidance for the control of noise in and around a building, dealing with both internal and external noise sources. It contains advice on noise levels, acoustic design and noise control measures that are regularly used by Planning Authorities when imposing planning conditions.

For dwellings, it recommends the following noise levels based on earlier versions of World Health Organisation recommendations:

Activity	Location	07:00 – 23:00	23:00 – 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	-
Sleeping	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

Policy recommendations (3)

Explanation & rationale for baseline requirement recommendations

Legally sound

We do not consider there to be any legal limitations to these recommendations. Good acoustic design is consistent with the provision for good design in the NPPF, which states: *“Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities. Being clear about design expectations, and how these will be tested, is essential for achieving this.”* Further, [MHCLG guidance](#) states: *“Good acoustic design needs to be considered early in the planning process to ensure that the most appropriate and cost-effective solutions are identified from the outset..”* and that “[...] Plans may include specific standards to apply to various forms of proposed development and locations in their area”.

Strong precedent

A requirement for good acoustic design appears in many local plans, for example both the current and new London Plan. There are many examples of LPAs setting requirements for additional noise standards within their local plans and setting the BS8233 standard as a planning condition (see below).

Economically viable

Considering the acoustic environment when designing a home can be more cost effective than mitigating for the impact of noise after the planning application has gone in. Through good design, developers can review and design out risk of noise intrusion prior to planning submission.

Meeting minimum standards for noise in residential development will often come down to design decisions on layout, such as the placement of a bedroom or using the right materials and so additional cost to the development can be minimal. As with overheating, early consideration keeps project team and build design costs down, whilst not making provision early in the process can increase costs and risks.

Further, not dealing with noise can have financial consequences for a local authority. A 2012 UK [Government report](#) examined the cost of dealing with noise complaints, both in terms of time and cost. They found that the average incident costs an authority 4-7 hours and £180-£360 to deal with, with the most onerous scenario up to 135 hours and over £6,000.

Policy recommendations (4)

Explanation & rationale for baseline requirement recommendations

Multiple benefits

Certain solutions to noise mitigation will have multiple benefits. For example, building fabric solutions can achieve greater energy efficiency.

Additionally, concerns around noise and the importance of acoustics are growing in the public consciousness. Defra's 2012 [National Noise Attitude Survey](#) showed that between 2000 and 2012, noise increased from being the ninth environmental priority to the fourth. A recent Policy Exchange report, [Building More, Building Beautiful](#), found that thick, sound resistant walls came top in what people felt would create 'warm feelings' associated with a home. Designing with noise in mind will engage consumers, increasing the desirability of the homes, and designing areas with high quality sound environments will contribute to the creation of desirable places to live.

Built on progressive consensus

There is widespread recognition within the industry that noise pollution is a growing area of concern and we do not anticipate any challenge to LAs taking a stronger position on this topic, particularly in areas where environmental noise has become a local issue, for example where there is proximity to major transport hubs and infrastructure.

Future direction of travel

As with other elements of the building covered in this document, future policy might reasonably be expected to have an increased focus on post-occupancy performance of dwellings, enabling real data to determine the ability of a developer to provide an optimal acoustic indoor environment.

See following section for discussion of assuring performance.

Policy examples

This is a live resource to be used and adapted and we welcome any other case studies of where local plans have examples of where they have increased standards for noise in new dwellings.

Local authority	Policy summary	Link	Status
Cambridge City Council	<p>4.46 The internal and external acoustic environment and good acoustic design in and around new noise sensitive and noise generating development should be considered as early as possible in the development control process. This shall include:</p> <ul style="list-style-type: none"> • consideration of the feasibility of relocating or reducing noise from relevant sources; • adequate distance separation from noise sources; • site and building layout/orientation; • internal room configuration; • provision and retention of acoustic barriers or other screening; • acoustic insulation of buildings/noise sources; • building ventilation strategy; • noise limits at site boundaries; <p>4.48 'Important Areas' for road and rail have been identified within Cambridge and an indicative plan of these areas can be viewed at http://extrium.co.uk/noiseviewer.html (England Noise Map Viewer).</p> <p>4.49 These areas give a good indication of those places that are exposed to the highest levels of existing road and rail transport noise. Proposals for new residential development in these locations need to be carefully considered and opportunities to reduce noise levels in these areas should be secured to improve the acoustic quality of the environment.</p>	Cambridge Local Plan	Adopted

Policy examples continued

This is a live resource to be used and adapted and we welcome any other case studies of where local plans have examples of where they have increased standards for noise in new dwellings.

Local authority	Policy summary	Link	Status
Greater London Authority	<p>Policy D13 6) where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles.</p> <p>3.13.3 The management of noise also includes promoting good acoustic design of the inside of buildings. Section 5 of BS 8223:2014 provides guidance on how best to achieve this</p>	The New London Plan	Emerging
Liverpool City Council	<p>Policy CC24 All residential developments within the City Centre (as defined on the in the local plan), must meet the highest standard of acoustic sound insulation and specifically the internal noise levels for as set out in BS8233:2014.</p>	Liverpool Local Plan	Emerging
London Borough of Hackney	<p>LP58 N - All residential development proposals shall minimise the potential adverse noise impact on and between dwellings through housing layout, design and materials.</p> <p>New development will only be permitted where the locations of lift and circulation space is designed to limit the transmission of sound to noise sensitive areas. They should be adequately separated from major noise sources or designed to mitigate the impact.</p>	London Borough of Hackney Local Plan	Emerging

Policy examples continued

Local authority	Policy summary	Link	Status
London Borough of Hammersmith and Fulham	<p>10.24 + 10.27. Notes Approved Document E of Building Regulations is minimal acceptable levels only and requires sound insulation above the Building Regulations (with specific levels set in the appendix) when:</p> <ul style="list-style-type: none"> in all parts of adjoining dwellings is unsuitable, where residential and commercial uses will share separating floors, ceilings or walls <p>22.1 Requires the internal ambient noise levels for habitable rooms ... in terms of the overall level LAeq as indicated in ... BS8233:2014 are met.</p>	Planning Guidance Supplementary Planning Document 2017	Adopted
London Borough of Hounslow	<p>Policy EQ5 The LPA expects new residential development to be located outside the outside of the 69 dB LAeq 16hrs noise contour of Heathrow Airport. Between the 69dBA LAeq and 63dBA LAeq contours there will be a presumption against family housing, whilst other smaller one bed and studio housing will only be accepted where high levels of sound insulation and ventilation are provided.</p> <p>In addition, between 63 and 57dBA LAeq contours all new built development, including residential extensions, should have high levels of sound attenuation and acoustically treated ventilation.</p>	London Borough of Hounslow Local Plan	Adopted
London Borough of Richmond (in conjunction with LB Hounslow and LB Hillingdon)	<p>Detailed guidance for the control of noise in new development, including:</p> <p>3.1 Outlines the general approach that encourages good acoustic design in the planning process.</p> <p>5.0 Details a noise assessment process for noise sensitive developments that includes a noise risk assessment, requirements for internal noise levels (to BS8223:2014 levels in noise sensitive rooms) and external amenity areas.</p> <p>8.0 Encourages applicants to adopt higher standards than the Building Regulations, particularly where certain types of commercial use adjoin residential use.</p>	SPD on Development Control for Noise Generating and Noise Sensitive Development	Adopted

POLICY PLAYBOOK: ASSURING PERFORMANCE

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IV. [Independent Assessment Frameworks](#)

- How tools and systems can help to achieve desired outcomes

Introduction: assuring performance

New homes should perform as intended to

In reality, we know this is not the case at present. Energy used by buildings in operation can regularly be three times higher than predicted at design stage. Although the issue is often highlighted by disparities in energy and carbon performance, this is a cross-cutting problem which equally applies to other sustainability issues – not least those relating to occupant health and wellbeing such as overheating and indoor air quality.

This is an issue which the construction sector has recognised for a long time (and is a topic on which the [Zero Carbon Hub](#) did much to engage the industry), but there remains a long way to go to close the ‘performance gap’. Local authorities can play a crucial role in incentivising industry to overcome this problem and drive an assured performance process, which is essential if policy – including the recommendations we have set out in previous sections – is to have the impact intended.

We are at a time when there is an increased focus on quality for new build homes, most recently the Independent Review of Building Regulations and Fire Safety by Dame Judith Hackitt, but also from consumers (enabled by social media). Standards must be set in a way that supports the culture change required in taking greater responsibility for the performance of homes that are built.

The proposals that follow do not attempt to provide a comprehensive response to this challenge, but are designed to be complementary to the recommendations made in previous sections, and would also complement further iterations of this resource, if expanded to address other issues.

Policy recommendations

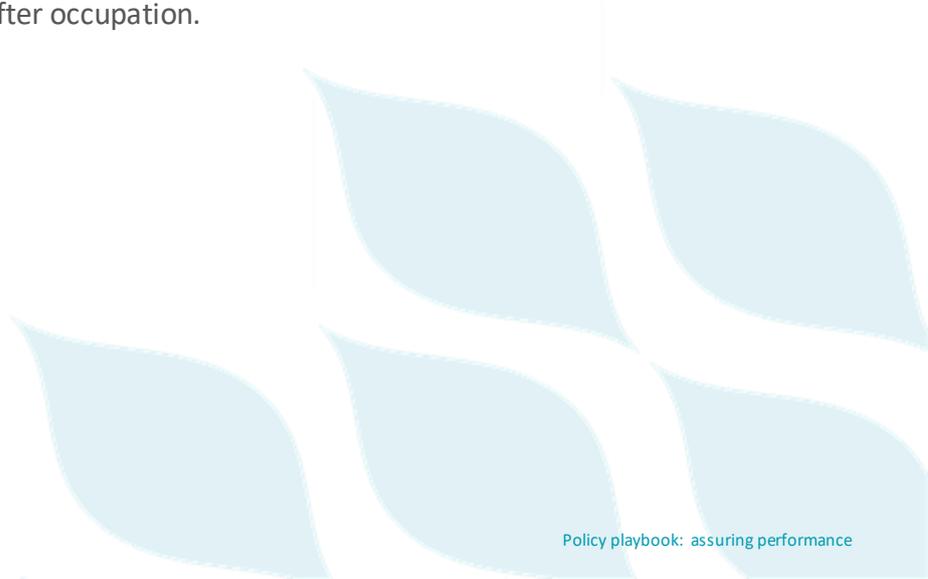
Baseline requirements

It is recommended that local authorities require developers to demonstrate that they have acted to close the performance gap. This may be done through:

- a) Demonstration of a developer's own internal processes and quality controls
- b) Demonstration of working within a third party process or system to ensure that standards are met on site. This might include the [BEPIT Better Building Tool Kit](#) or [NEF's Assured Performance Toolkit](#)
- c) Demonstration of certification against independent assessment frameworks would also provide clear evidence of taking performance seriously, e.g. the [Home Quality Mark \(HQM\)](#) and/or [Passivhaus](#) and/or [Energiesprong](#)

Future direction of travel

It is recommended that local authorities signal a commitment to introducing a system of in-use testing and reporting. This would require further consultation and a period of transition, but in essence a proportion of homes in a new development would be tested to gather in-use data and provide a performance report on key factors including but not limited to energy performance, indoor air quality and thermal comfort for a set period of time after occupation.



Policy recommendations

Explanation & rationale for baseline requirement recommendations

Built on progressive consensus

This recommendation has been arrived at through extensive consultation with UKGBC's network of developers, architects, engineers, product suppliers and local authorities, who represent a progressive consensus of support. There is widespread recognition within the industry that assuring performance is a major issue, and progressive developers will support this position – many of whom are pro-actively addressing it through their own POE commitments.

Multiple benefits

Encouraging greater transparency on in-use performance is vital in engaging consumers, while providing clarity to local authorities and investors, and in general creating demand for more sustainable homes.

We believe that reputation will be a key driver for developers in addressing any shortcomings, perhaps ultimately acting as a more effective driver than regulation. Analysis of the data can help all stakeholders make progress on this issue.

Pragmatic & economically viable

The 'menu of options' included in the recommended baseline requirement is a light-touch approach, that carries little or no burden for developers who take the performance gap seriously. The recommended future direction of travel would constitute a significant leap forward for many local authorities and developers, and would need to be done after further detailed consideration of the most cost-efficient means of implementation. Nevertheless, many leading developers are already on this journey with no adverse impact on delivery.

Legally sound

We do not consider there to be any legal limitations to the recommendations on baseline requirements, for a similar reason to that set out in the section on [overheating](#). It is designed to encourage the following of appropriate processes and cannot be considered a technical standard or performance requirement given that evidence of a developer's own internal processes is included as an option. It could be argued that local authorities, through Building Control, are on the front line in assuring performance anyway, and these recommendations are consistent with that role. The recommendation on in-use testing would require further investigation from a legal perspective (i.e. in relation to WMS 2015, and in relation to data protection issues). We applaud the leadership demonstrated by [Milton Keynes](#) in including a far-reaching policy on this topic within its adopted Plan:MK.

Policy examples

Local authority	Policy summary	Link	Status
Milton Keynes Council	Plan MK, policy SC1: Sustainable Construction. "Implement a recognised quality regime that ensures the 'as built' performance (energy use, carbon emissions, indoor air quality, and overheating risk) matches the calculated design performance of dwellings...Put in place a recognised monitoring regime to allow the assessment of energy use, indoor air quality, and overheating risk for 10% of the proposed dwellings for the first five years of their occupancy, and ensure that the information recovered is provided to the applicable occupiers and the planning authority."	Milton Keynes Local Plan	Adopted March 2019
Cambridge City Council	The Housing Design Guide contains guidance on Minimising the performance gap and post construction monitoring and Evaluation, which applies to schemes brought forward by Cambridge City Council	https://tinyurl.com/yb6wd7f3	Published
Newcastle City Council	Newcastle are developing Planning Guidance to support their Climate Change Policy. This includes making provisions to minimise the performance gap and to involve a third party check on post completion performance.		Consultation imminent
East Hants District Council	Planning Guidance was developed for the Whitehill and Bourdon green town development. This included requirements to adopt the Assure Performance process, to mitigate the performance gap.	www.assuredperformanceprocess.org.uk	Established for the specific development

Independent assessment frameworks

Introduction

Paragraph 129 of the revised NPPF (2018) encourages local authorities to use assessment frameworks as tools for improving design quality. This section briefly outlines some of the most commonly used or those which have generated most interest amongst local authorities. It is important to note that these are not necessarily mutually exclusive.

We would welcome additional material and suggestions for tools to include in this section. UKGBC is independent of any one tool, framework or system. The information on the following pages is based on information provided by the tool provider:

1. [Home Quality Mark](#)
2. [Passivhaus](#)
3. [Energiesprong](#)

Home Quality Mark

Overview

The Home Quality Mark (HQM) is part of the BREEAM family of schemes that aim to deliver quality and sustainability in an holistic manner. HQM is consumer-oriented, intended to allow developers to differentiate their homes whilst providing policy makers and specifiers confidence that standards have been met.

- A star rating (out of 5), with three performance indicators (scaled 1-5); My Cost, My Wellbeing, My Footprint, designed to offer consumer-friendly ways of messaging performance
- A flexible framework designed to drive better outcomes for consumers and for use as a tool by the financial sector, clients, investors, planners, product manufactures and more
- A holistic approach to address unintended consequences (such as poor temperature control) whilst ensuring that other issues (energy/carbon, water, air quality, materials, ecology and site management etc) have been addressed
- Minimum entry requirements for star ratings and back stop performance levels for the indicators to provide assurance to specifiers and consumers.



Ratings and indicators

The scheme addresses a broad spectrum of sustainability issues which can be targeted to drive performance and contribute to the overall star rating. To meet certain levels on the indicators (which are generated in parallel to the star rating), specific aspects have to be address to a prescribed level of performance. If they are not met, the indicator score will be capped despite the overall star rating achieved. These backstops are outlined within Appendix A of the HQM technical manual.

Home Quality Mark

Assuring performance

In addition to the confidence provided by its third party certification process, a number of other elements of HQM are designed to help minimise performance gap related issues.

- Calculation methodologies are intended to be more accurate than standard practices, particularly in relation to energy and carbon calculations (see opposite)
- A focus on better inspection, commissioning and testing including detailed planning and scheduling to ensure homes are being reviewed throughout the whole delivery process
- Requirements which reward smart home solutions, better aftercare, accessible controls and home information for occupiers to encourage good in-use behaviours
- An integrated approach to project preparation and post occupancy evaluation; helping encourage the transfer of learning from one site to the next
- Outcome focused assessment criteria and an 'each home' certification process whereby every home has its own certificate which represents its individual ratings and indicator scores reducing the risk of averaged assumptions

Relationship with Playbook recommendations

BRE advise that achieving Level 4 of the My Footprint indicator will enable developers to meet the recommended baseline requirements in the energy & carbon section of the Playbook.

HQM Energy Engine

HQM Energy Engine - The HQM energy engine 'triple metric' approach looks at primary energy, CO2 emissions and heating & cooling demand holistically. An overview of the methodology can be found here and the BRE intends to publish more on this in due course. However, in the meantime please contact hqm@bre.co.uk for more information.

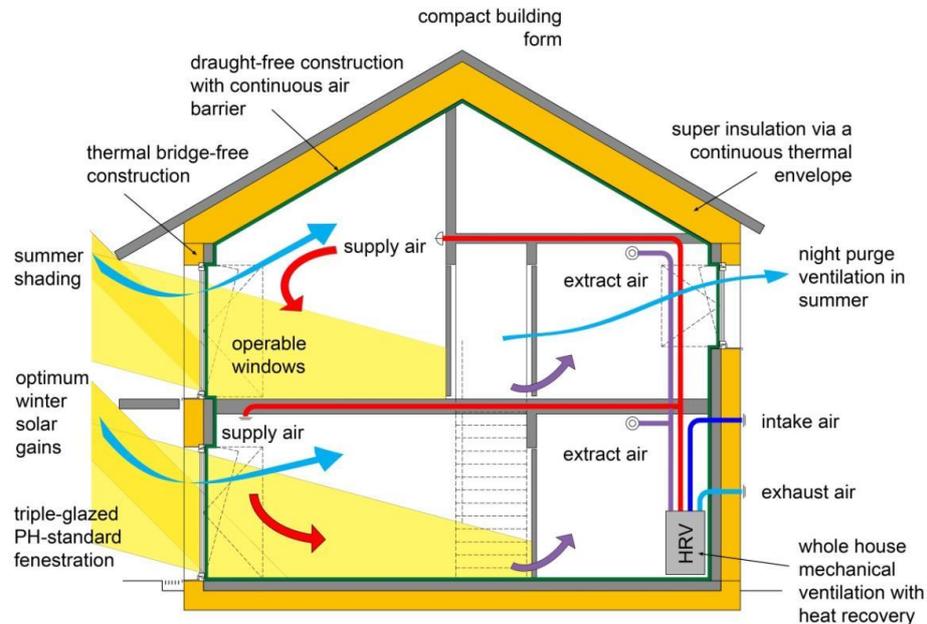
Passivhaus

Overview

Passivhaus is an energy performance standard, with its origins in Germany in the early 1990s. The core focus of the Passivhaus standard is to dramatically reduce the requirement for space heating and cooling, whilst also creating excellent indoor air quality and comfort levels.

Features

- Super-insulated fabric and windows
- Very low air-leakage
- Mechanical ventilation (with heat recovery)
- Use of solar and internal heat gains for heating
- Manages summer comfort
- Accurate modelling through the Passivhaus Planning Package (PHPP)
- Quality assured process & components



Assuring performance

Passivhaus certification is a quality control process that aims to ensure that buildings will perform as designed.

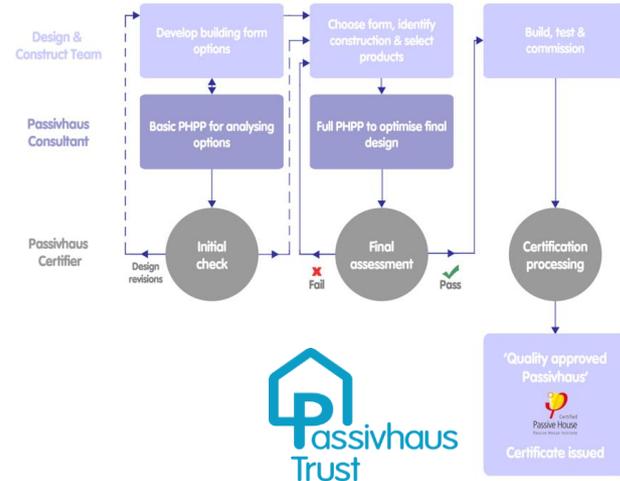
The standard aims for certainty of performance by providing certification for:

- Products/components
- Designers/consultants
- Tradespeople/installers
- Buildings

The process is to:

- Check design
- Check construction
- Check commissioning

Certification Process:



Relationship with Playbook recommendations

The Passivhaus Trust advise that achieving Passivhaus certification will enable developers to meet or exceed the recommended baseline requirements of this Playbook. For more information on the Passivhaus standard and certification process, click [here](#).

Energiesprong

Overview

Energiesprong is intent on changing the way new build housing is procured. The aim is to create a net-zero energy home with a lifetime cost that is no more than a building regulations compliant home of today. 8,000 Energiesprong homes are in planning for delivery in 2018 in the Netherlands of which 4,000 are new build.

Principles

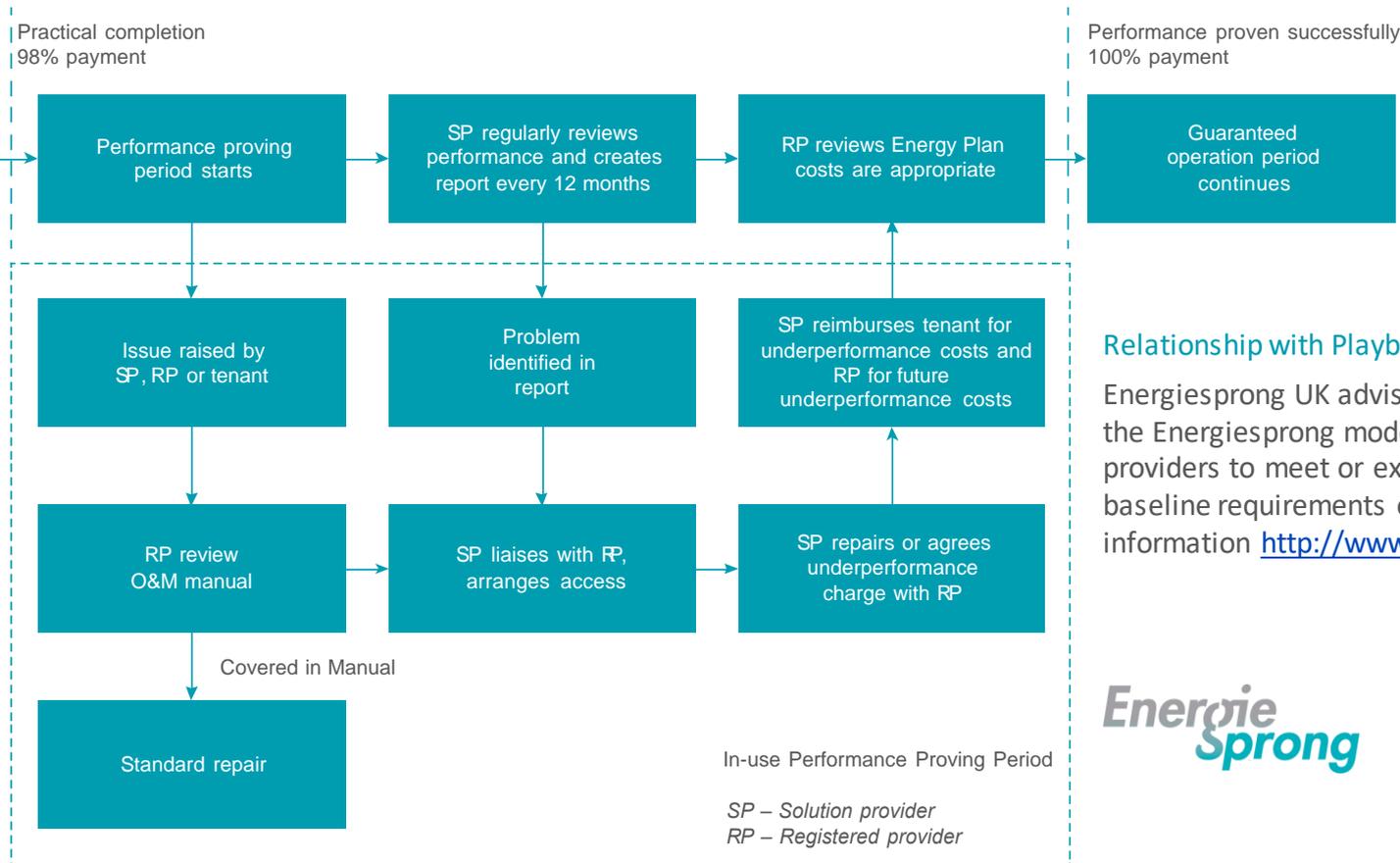
1. A performance outcome specification, rather than a 'design compliance' approach
2. Backed by a performance guarantee of 30 years
3. Technology agnostic (compatible with, for example, Passivhaus components and thinking)

The initial energiesprong model is aimed at social landlords, with the higher upfront costs funded by an additional charge made possible due to the guaranteed lower tenant energy bills. By aggregating demand to create scale, costs are driven down which leads to the same level of financial viability as the much lower performing building regulation-compliant option.

Assuring performance

- Energy performance model – a solution provider's decision, not contractual, but must demonstrate competence
- As-Built performance - solution provider to demonstrate that dwelling meets agreed specification for: hot water availability, internal noise, air movement
- In-Use performance - solution provider to demonstrate that dwelling meets agreed specification* in-use for: net energy, energy cost, CO₂, space heating, overheating. * Normalized for external / internal temperatures, hot water, small power consumption, actual tariffs
- Performance gaps - addressed through pre-agreed contractual resolution plan including: opportunity to resolve issues, where not possible / as agreed, pay the NPV of the financial detriment for 30 years or a fixed pre-agreed penalty
- In use monitoring – including: space heating energy, hot water energy & use, internal & external temps, small power consumption, renewables performance etc

Energiesprong



Relationship with Playbook recommendations

Energiesprong UK advise that procurement through the Energiesprong model would enable housing providers to meet or exceed the recommended baseline requirements of this Playbook. For more information <http://www.energiesprong.uk>



Miscellaneous additional resources

Designers Handbook

(The Buildings Hub, 2016)

<http://thebuildingshub.co.uk/wp-content/uploads/2017/03/TBH-DesignGuide-Screen.pdf>

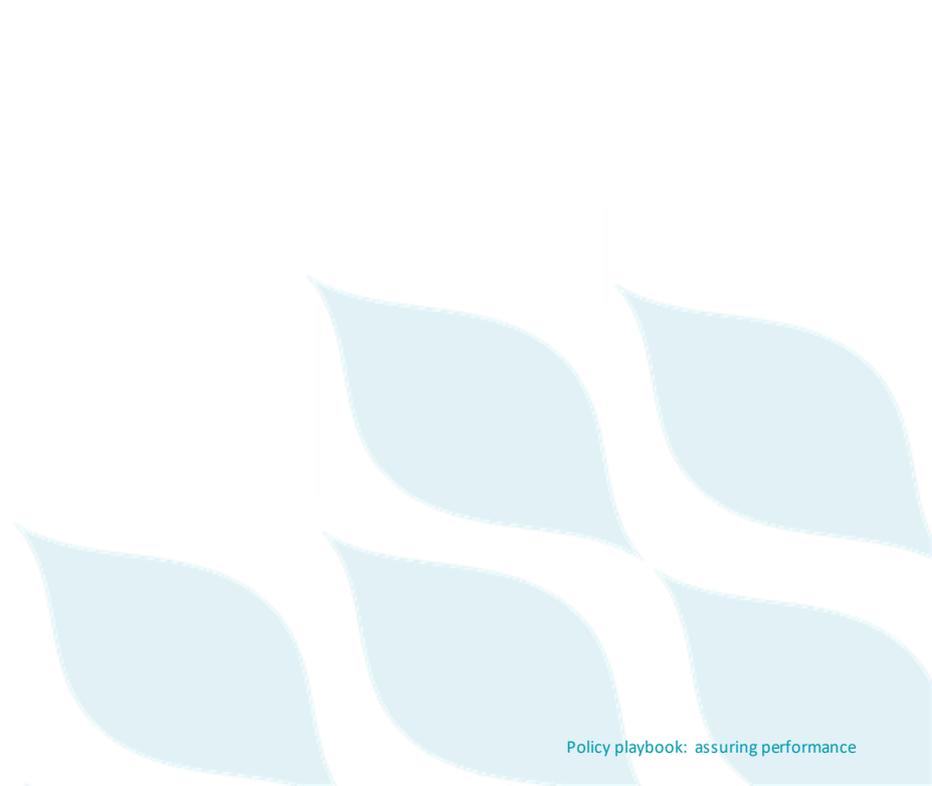
Zero Carbon Hub (various)

<http://www.zerocarbonhub.org/full-lib>

Environmental Design Pocket Book

(Sofie Pelsmaker, Second Edition 2015)

<http://www.environmentaldesignpocketbook.com/>



DEVELOPMENT CASE STUDIES

Case studies

Introduction

Case studies bring to life the ambitions and recommendations contained in this resource. The small number of examples that follow have been chosen because they offer variety:

- Long established communities
- Schemes that still have phases in development
- Projects based on new business models using innovative production methods
- Geographical diversity
- Diversity of tenures
- Different procurement/partnership models
- Different drivers (policy, social purpose, industry leadership)

We are actively seeking further additions. Email john.alker@ukgbc.org

Contents

Follow the live links to be taken straight to the case study. The name in brackets refers to the organisation which provided the information to UKGBC. In some cases the schemes were joint ventures.

1. [The Meadows, Nottingham \(Blueprint\)](#)
2. [One Brighton \(BioRegional\)](#)
3. [Graylingwell Park, Chichester \(Clarion Housing Group\)](#)
4. [Hungate, York \(Lendlease\)](#)
5. [Gallions Reach and Dominion Doncaster \(ilke Homes\)](#)

The Meadows, Nottingham (Blueprint)

Introduction to developer/client

Blueprint is an East Midlands based developer that specialises in the development of sustainable homes and sustainable workspaces. It is a private limited partnership wholly owned by Aviva Investor's igloo Regeneration Fund and Nottingham City Council and marries the strengths of both the public and the private sector.

Blueprint is passionate about great design and genuine sustainability and not just about new buildings. Blueprint builds new homes, new workspaces, new opportunities and new places, all whilst delivering fair returns to its investors.

Through a collaborative approach, Blueprint has built relationships with

both universities and industry experts to push boundaries in building fabric, community energy and urban design.

Blueprint is the developer behind No.1 Nottingham Science Park, Phoenix Square in Leicester, Green Street in Nottingham and Trent Basin, the £100m regeneration of Nottingham's Waterside.



Introduction to the development

Blueprint's vision to develop in the Meadows has been a catalyst for sustainable regeneration in one of most deprived residential areas in the UK. Having developed 132 new homes and with more planned, the regeneration of the Meadows has been a huge success, with Blueprint attracting people from both within and outside of the existing community.

Hobart & Pitcairn, the third phase of the wider Meadows development, was secured through a competitive bid process instigated by Nottingham City Council, jointly with Asra Housing Association and William Davis. The Council has held a long term commitment to regenerate the Meadows and to replace empty and dangerous accommodation. The development at Hobart & Pitcairn comprised 73, low energy 2-5 bedroom homes.

Hobart & Pitcairn represented a significant challenge from a community point of view. Although Blueprint had become an established name in the area, the Hobart & Pitcairn development meant demolishing existing housing to make way for new ones. Because of this, Blueprint undertook extensive community consultation throughout the planning and design process including regular visits to the Meadows Partnership, Meadows Tenants and Residents Association and consultation sessions in the local community centre over a six month period.



Sustainability standards

From the start, design quality and sustainability were the defining attributes of Hobart & Pitcairn. Local architects, Marsh Grochowski, worked tirelessly to achieve Blueprint's vision. During design development of all the phases, the team pushed the boundaries to ensure the project enhanced the local area and followed the established street pattern and design aesthetic established at other developments.

Very early in the project, Blueprint chose to self-impose higher building standards on the project, aiming to achieve the AECB Silver Standard. This environmental building standard is aimed at achieving high-performance buildings in order to reduce overall CO2 emissions by 70% compared to the UK average. The project also met Code for Sustainable Homes level 4. This allowed Blueprint to tap in to the emerging market of energy conscious buyers in Nottingham.

The development at Hobart & Pitcairn represents one of the largest AECB Silver Standard housing development in the UK, showing the mainstream market that improved sustainability can be achieved commercially.

The project focuses on air tightness, reduction of energy usage and energy cost savings for the user. The homes at Green Street Phase II and Hobart & Pitcairn include super-high levels of insulation, whole-house heat recovery, industry leading levels of air tightness and maximum use of natural light. A combination of simple energy efficient measures guarantees that buyers would be using significantly less natural resources resulting in savings on energy bills, as much as £100 a year.

The scheme has won two awards 2015 – Sustainable Development of the Year East Midlands Business Link, 2016 – Residential Development of the Year Insider Midlands.

How/why standards were set

Blueprint subscribes to Footprint™, a leading sustainability policy developed by the igloo Regeneration Fund – the world’s first responsible real estate fund. Within the Policy there are four key themes – Regeneration, Urban Design, Environmental Sustainability and Health, Happiness & Wellbeing and all of Blueprint’s projects are independently scored by external guardians of the policy, Urbed, against these themes.



Over four rounds of scoring during the project life, Blueprint aims to improve the development through not only the fabric of the building, but the way the buildings are occupied, the landscaping and proximity to services and local amenities, to name a few. In order to reach a minimum of Best Practice, the project is reviewed by both internal and external industry experts to find a solution which is both commercial viable, but also pushes the boundaries of deliverability.

Blueprint will only progress projects that meet specific performance criteria, both in terms of profitability and also Footprint scoring. Having belief that houses could be delivered in a commercial setting using the AECB Silver Standard, Blueprint delivered the scheme with significant sales success – all homes were sold off-plan.

There was a particular focus on health and well-being with daylighting and overheating analysis as part of the design process. In addition, a post-occupancy survey of homeowners have been undertaken. With highly encouraging responses on energy performance and on well-being particularly in relation to natural light and air quality.

One Brighton, Brighton (BioRegional)

Introduction to developer/client

One Brighton was developed by joint venture company Crest Nicholson Bioregional Quintain. Crest Nicholson is one of the UK's largest housebuilders. Bioregional is an international sustainability charity and social enterprise while Quintain is the developer behind London's giant Wembley Park project surrounding the world-famous stadium.

One Brighton's designers were Fielden Clegg Bradley Studios, the architects of Cambridge's Accordia, the first housing project to win RIBA's Stirling Prize. The team came together with the aim of creating a One Planet Community – a mixed use development planned and managed post-completion using Bioregional's One Planet Living sustainability framework.



Introduction to the development

One Brighton consists of 172 homes in two eight and 12-storey apartment blocks plus nearly 2,000m² of community and work space in the heart of Brighton, close to its main railway station. The project is part of a wider eight-hectare regeneration plan, the New England Quarter, including new homes, a supermarket, community facilities, offices and other work space, a language school and two hotels.

In 1999, Bioregional were approached by a community group opposing redevelopment of ex-industrial land next to the station as a supermarket with large car park. With Bill Dunster, architect of the pioneering BedZED ecovillage in Sutton, south London, Bioregional proposed a more sustainable solution – a smaller supermarket underground with housing, offices and other commercial development above. This helped kickstart a new process led by planning authority Brighton & Hove City Council, urban planning specialists Urbed and the landowner’s agent leading to the New England Quarter plan.

The Ethical Property Company PLC, which rents low cost space to social change organisations, won the contract to operate the quarter’s community space. It suggested Bioregional put together a proposal to develop the residential and commercial elements of the block where a community centre would be based. Bioregional won a small grant for a feasibility study; this was then used to secure Quintain and Crest Nicholson’s investment to purchase and develop the site as a One Planet Community. This project team had a strong commitment to delivering a commercially successful development while setting high sustainability standards. Construction began in 2007 with completion in 2010.

Sustainability standards

One Brighton's guiding sustainability standard is its One Planet Community status. Design, construction and use are framed by a sustainability action plan based on ten One Planet principles covering areas such as waste, water, carbon emissions, the health and happiness of building users and support for the local economy. The One Planet Living framework emerged from Bioregional's experience as a partner in developing the BedZED eco-village.

One Brighton has high insulation levels, a clean-burning wood-pellet fuelled boiler and its own energy services company purchasing renewables-generated power backed by REGO certificates, supplemented by rooftop PV. In 2014 annual carbon emissions from heating, hot water and electricity consumption were estimated at one third of the average for a UK home, despite being heated by gas at the time with its biomass boiler out of service. This has since been replaced with a new biomass boiler, leading to further carbon savings.

The development's embodied carbon was lowered by innovations such as low carbon concrete in its frame and floors and external walls built with clay blocks fired at low temperatures.

One Brighton has only 14 parking spaces, nine for disabled users and five for car club vehicles, and benefits from excellent public transport access. It has rooftop allotments, vegetable and fruit growing plots on its generous roof terraces. These were a first for a new development.

17% of One Brighton's units are for social rent and 14% for shared home ownership. In addition, it has 19 highly compact 'Eco-studio' apartments aimed at the 'intermediate market' – people who do not qualify for social housing but are unable to afford to rent or buy on the open market.

Using the BREEAM sustainability assessment scheme for buildings, One Brighton achieved a score of 79.9 points on completion, at that time the highest score achieved by an apartment development at post-construction evaluation.

How/why standards were set

One Brighton's standards were developer led, with support from the planning authority. The project team was headed by mainstream commercial developers who were persuaded that new apartment homes with exemplary sustainability standards were viable in Brighton's housing market. At the same time, the team were determined to contain any additional costs associated with achieving these standards. The near-absence of car parking spaces, reflecting the site's central location, helped lower costs and allow more units to be built on the site.

The scheme was devised before the 2007 financial crisis. One Brighton's homes were being marketed during the subsequent fall in house prices and the difficult market conditions meant that there was no opportunity to charge purchasers any green premium for the development's low energy bills and other eco-features. Even so, the development achieved a 10% return on capital employed (ROCE).

More information at

<https://www.bioregional.com/one-brighton>



Graylingwell Park, Chichester (Clarion Housing Group)



Introduction to developer/client

Clarion Housing Group is an equal partner with Linden Homes under a Limited Liability Partnership Agreement (LLP). Clarion Housing Group includes the country's largest housing association with 125,000 properties nationwide and over 360,000 residents. As a developer, Clarion's target is to build 50,000 new homes in ten years across the full range of tenures.

In addition to new homes, Clarion works to transform existing communities through sustained regeneration, helping people to access employment and training opportunities and giving young people a better start in life.

Linden Homes is the housebuilding division of Galliford Try. The company strives to create sustainable new developments.



Introduction to the development

Graylingwell Park is a multi-award winning development located in Chichester, West Sussex. With a Gross Development value of around £300m, the development has transformed a derelict former hospital site to provide 792 mixed tenure new build and refurbished homes to meet the needs of a range of family sizes and income levels, along with extensive community facilities and commercial units.

Clarion and Linden jointly negotiated the Development Agreement with English Partnerships and the acquisition of the site. There are five phases to the scheme, four of which are complete. To speed delivery, a hybrid approval for outline and a detailed planning approval for Phase 1 were granted in March 2009. There were only fourteen objections to the Graylingwell planning application and the planning department described the application as an exemplar approach to public consultation.

Clarion has an excellent relationship with the local authority having been a development partner with the authority for more than 40 years. The relationship is sustained by regular meetings on both a formal and informal basis which has led to continued co-operation and support of their activities. Clarion has relationships operating at different tiers with the planning department, housing department and economic development teams. Extensive efforts have been made to build relationships with local councillors, Resident Association members and local residents interested in our vision for Graylingwell. This is demonstrated by the success of the Community Development Trust and the willingness of local residents to get involved.

Sustainability standards

All new homes were built to Code for Sustainable Homes Level 4 standards (and Code Level 6 energy performance), with the flat conversions in the retained Victorian hospital buildings being certified to Ecohomes Excellent. The main focus of the development was on carbon reduction, with it having the label of the UK's largest carbon neutral development. Some 60% of the carbon reduction comes from on-site actions, with the remainder from off-site renewables investment.

The carbon reduction was driven by the inclusion of a central energy centre in the old hospital water tower providing heating and hot water to the homes. Originally designed to contain a combined heat and power unit, the final solution includes biomass boilers, helping to decrease carbon emissions by up to 37%. 16kW of photovoltaic panels were installed on the energy centre roof, providing around half of the energy centre electricity demands.

The heat network is operated by an ESCO – Graylingwell Energy Services. The homes were built with thermally efficiency building fabric, with improved insulation, air tightness of less than $3 \text{ m}^3/(\text{hr} \cdot \text{m}^2)$ and enhanced junction details reducing the heat lost through thermal bridges. The homes also have mechanical ventilation with heat recovery and photovoltaic panels to further reduce the carbon emissions. Feedback from the first

phase of the development was that the PV was saving residents between £1,100 and £1,350 per customer per year.

A strong emphasis on placemaking includes:

- Sports facilities, including the current sales office which will convert to a sports pavilion and café once sales conclude
- Preservation of green space within the original landscape design of the hospital
- Provision of allotment space, lined with fruit trees for residents to pick
- Fruit trees and crops within the gardens of individual homes to promote healthy eating
- A number of play areas across the site to encourage activity and healthy living

How/why standards were set

Sustainability is at the centre of the Graylingwell development and this includes the placemaking approach. Alongside the commercial appeal that this would bring to the scheme, the approach recognised the need to facilitate the development of a large new community and help that community put roots down in its location. The original plan was to establish many of the placemaking elements of the development at an early stage. However, the financial challenges caused by the recession of 2008 led to some of these having to be delayed until later in the development. Many are now in place and are providing residents with a pleasant environment in which to live which promotes healthy living.

A successful new community is growing with the assistance of the Community Development Trust established by the LLP. The income from the community assets will be transferred to the Community Development Trust to help ensure its future financial viability. The income from the commercial units will be retained by the LLP.



Hungate, York (Lendlease)

Introduction to developer/client

Lendlease is a leading international property and infrastructure group with operations in Australia, Asia, Europe and the Americas. Their vision is to create the best places; places that inspire and enrich the lives of people around the world.

Lendlease was ranked as the UK's most sustainable housebuilder under the NextGeneration benchmark for the second year in a row in 2017, as well as winning Sustainable Housebuilder of the Year at the Housebuilder Awards.

Introduction to the development

Hungate is a development of approximately 1,100 homes within the old city walls of York, situated next to the River Foss. A residential development, it has a mixture of 1, 2 and 3-bedroom apartments spread over 6 phases. The development is being delivered in phases and is due to complete in 2022.

The project brief states: “Hungate will create a natural sustainable environment which aims to increase ecological value by introducing and enhancing green infrastructure within the local heritage of the City of York”. Within the centre of the scheme will sit a newly created St John’s Square providing open community green space and a connection through the development from the River Foss through to the centre of York.

Hungate was purchased privately back in 2006 for a multi-phase residential-led mixed use scheme.

Sustainability standards

The sustainability standards across the scheme have improved as the phases have progressed. City of York Council originally required EcoHomes for phase 1 and then Code for Sustainable Homes Level 3 as standards progressed. However, for the latest phases of Hungate, Lendlease is going further in line with its own internal 'Sustainability Standards for Residential'. The energy and carbon reductions for instance, in the latest phases of Hungate, far exceed the energy and carbon requirements for Code for Sustainable Homes Level 4.



A broad range of sustainability and design standards include the following (many of which Lendlease is committed to as a minimum standard on any project it works on):

- Energy Demand Reduction: U-values of Walls 0.17W/m²K; Roof 0.13; Windows 1.3; Ground Floor 0.14
- Carbon Reduction: 35% reduction in CO₂ emissions against Part L 2013
- Indoor Air Quality: All paints and sealants specified to be no or low-VOC as part of the contract specification
- Overheating: Designed using CIBSE TM52
- Air Pressure Tests to help assure performance
- 20% of car parking spaces to have access to electric charging points
- 75% of available roof space to be green / brown roofs and a verified increase in ecological value

How/why standards were set

Most standards went beyond the requirements of the LA, so were led by Lendlease because they have established internal Sustainability Standards for Residential to ensure that all projects achieve a level of performance which Lendlease are happy with, irrespective of geographical location. Whilst there will always be differences with projects and some which take sustainability innovations to the next level, Lendlease do not believe any should fall below a baseline position which in most cases goes beyond the regulatory expectations.

The development of Lendlease's internal Sustainability Standards for Residential and long-term compliance with CfSH Level 4 has resulted in a more consistent product from a sustainability perspective which in turn allow for greater levels of design and construction efficiency and therefore reduced cost.

Lendlease has a desire to exceed minimum regulatory standards in order to separate them from the competition and to create the right legacy for this part of York – such as job creation, homes delivered with a lower environmental footprint and an increase in ecological value.



Gallions Reach and Dominion Doncaster (ilke Homes)



Introduction to developer/client

ilke Homes aims to address the UK's shortage of affordable housing by delivering consistently high-quality, energy-efficient, modular homes at scale to the people that need them most. Through specialist offsite manufacturing methods, ilke Homes will deliver up to 2,000 homes per year within the next two years from its Yorkshire factory. Working with housing associations and local authorities, onsite preparation works and build manufacturing are undertaken simultaneously, so ilke Homes can be ready in half the time of traditional build homes.

ilke Homes was originally established as a joint venture between Keepmoat Homes and Elliott but incorporated as an independent entity in October 2017, its roots in the JV allows it to leverage its respective partner's experience in the design, manufacture and installation of quality residential and offsite buildings to deliver desirable, high-quality homes.



Introduction to the development

Following the installation of two zero carbon show homes at Gallions Reach, London, ilke Homes has manufactured and installed its first two homes for open market sale with Keepmoat Homes at its Dominion site at Carr Lodge, Doncaster. This development boasts 172 traditionally built homes and was Doncaster's first low carbon community, with all homes designed to the Government's Code for Sustainable Homes level 3.

Available for open market sale alongside Keepmoat's traditionally built homes, the ilke Homes team worked closely with Keepmoat Homes throughout the planning and design stage to ensure its individual specifications were met and the modular homes blended seamlessly with the existing street scene and surpassing the sustainability merits required for the site.

The houses were built off-site in Knaresborough by ilke Homes before being transported fully finished to the Dominion site in January 2018. The homes were installed across several hours on one day, causing minimum disruption to the existing residents on site.

ilke Homes worked closely with the NHBC to gain an NHBC Buildmark warranty for the homes and the LABC on building control approval. As part of its BOPAS approval, Building Life Plans (BLP) has also confirmed the durability and maintenance requirements of ilke Homes are similar to that of traditionally built homes.



Sustainability standards

ilke Homes look and feel like traditionally built homes, while also delivering enhanced performance and in many cases enhanced financial viability. All ilke Homes have a high-performance building fabric which exceeds building regulations by 20% as standard due to the air tight, super-insulated and thermal bridge free design:

Typical semi-detached house Dwelling Fabric Energy Efficiency (DFEE) = 46.3kWh/m² (Vs SAP Target TFEE = 57.3 kWh/m²);

Air tightness: Test results 2.5 to 3.5 m³/hr/m² at 50Pa, 5 m³/hr/m² input in SAP (Part L1a 2016 minimum = 10 m³/hr/m² at 50Pa).

U-values:

Walls 0.15-0.17 W/m²K (Vs Part L1a 0.30 W/m²K).

Floors 0.12 W/m²K (Vs Part L1a 0.25 W/m²K).

Roof 0.13 W/m²K (Vs Part L1a 0.20 W/m²K).

Doors 1.1 W/m²K (Vs Part L1a 2.0 W/m²K).

Windows 1.4 W/m²K (Vs Part L1a 2.0 W/m²K).

Thermal bridging: average Psi-value 0.055 W/m²K (Vs Part L1a 0.15W/m²K).

Typical semi-detached house Dwelling Carbon Dioxide Emission Rate (DER) = 17.26 kgCO₂/m² (Vs SAP Target TER = 19.34 kgCO₂/m²); With 3.6kWp solar PV DER < 0 kgCO₂/m² (SAP 100).

All ilke Homes have a 2.5m floor to ceiling height with large windows as standard which provide excellent daylight. Acoustic testing has also shown ilke Homes to be a third quieter than traditionally built homes.

All ilke Homes are expected to have lower running costs than traditionally built new homes and due to the high-performance envelope with factory built quality control. The specification used at Dominion can also be tailored to feature an integral tiled roof with solar PV fitted “in roof” to further boost the homes’ sustainability credentials.

How/why standards were set

ilke Homes has set a base specification above building regulations and industry standards in a number of areas in a cost-effective manner. This differentiates and future-proofs the product from future changes in building regulations.

Beyond housetype, internal layout, internal and external specifications and finishes. ilke Homes can be further upgraded with the following options:

- Solar PV – factory installed roof integrated solar PV to meet zero carbon standard
- Solar PV and storage – as above with the inclusion of a battery storage system
- The inclusion of sprinkler systems
- Efficient electrical heating, hot water and cooking solutions (so no mains gas)
- Smart Home pack – including smart thermostat and alarm

ilke Homes are working with partners to fund the capital cost of these enhancements.

As a result of the factory build quality control, achieving high fabric performance and repeatable performance is significantly easier than with traditional construction. Reductions in defect rectification and maintenance costs are also anticipated.

