Sandwell Borough Council Emerging Local Plan:

Net Zero Carbon Policy Support

Identification of policy options and evaluation of their relative merits (including in light of the WMS2023)

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Rev 1

Bioregional

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Glossary of terms and acronyms

BC	Borough Council.
Carbon, or carbon emissions	Short for ‘carbon dioxide’ but can also include several other gases with a climate-changing effect (nitrous oxide, methane, refrigerants) that are emitted to the atmosphere from human activities.
Carbon budget	Amount of greenhouse gas that can be emitted before reaching a level of atmospheric carbon that causes severely harmful climate change.
CO_2	Carbon dioxide. Often shortened to ‘carbon’.
CO_2e	Carbon dioxide equivalent. The sum of a mixture of gases, in terms of their climate-changing impact in a 100-year period expressed as the amount of CO_2 that would have the same effect. Often shortened to ‘carbon’.
DESNZ	Government Department for Energy Security and Net Zero.
Embodied carbon	Carbon that was emitted during the production, transport and assembly of a building, infrastructure, vehicle or other product, before the product is in use. As opposed to ‘operational carbon’ which is emitted due to energy use when operating the building / infrastructure / vehicle / other product.
Energy hierarchy	A description of best-practice approach to designing for improved energy and carbon performance. The hierarchy asks the designer to take a series of steps in order within the design process so that the most effective and reliable measures are implemented first, which also optimises the final resulting energy performance. The hierarchy stipulates to firstly maximise energy efficiency (reduction of energy demand) before implementing efficient energy *supply*, then adding *renewable energy*, and then as a last resort offsetting that energy or its associated carbon.
EUI	Energy use intensity, a measure of how much energy a building uses per square metre of floor space.
FHS / FBS	Future Homes Standard / Future Buildings Standard
kWh	Kilowatt-hour. A unit of energy.
LETI	Low Energy Transformation Initiative. A coalition of green building experts working to identify and implement targets for energy use and embodied carbon that would be compatible with the UK’s climate commitments.
LPA	Local Planning Authority.
NPPF	National Planning Policy Framework.
Operational energy use	Energy used for the normal operation of a building. (As opposed to energy used in the production, construction or demolition of a building).
Paris Agreement	An international agreement[i] to limit climate change to no more than 2°C of global warming and pursue a lower limit of 1.5°C, with action to be taken by each country to an extent that would “reflect equity and … common but differentiated responsibilities and respective capacities, in light of the different national circumstances”. This means that greater action should be taken by countries like the UK that are richer and have a greater historic responsibility for greenhouse gas that is already in the atmosphere. The UK is a signatory to this agreement.
Part L	Building regulations section that sets basic legal requirements regarding buildings’ energy and CO_2.
Performance gap	The ‘energy performance gap’ is the difference between the amount of energy a building is predicted to use during design, versus the actual amount of energy it uses. The gap is due to poor prediction methodologies, errors in construction, and unexpected building user behaviour.
PV	Photovoltaics: solar panels that generate electricity.

PHPP	Passivhaus Planning Package – a tool to accurately calculate a building's energy use. It is used to design buildings that seek Passivhaus certification, but can be used without pursuing certification.
Regulated energy	The uses of energy within a building that are regulated by Part L of building regulations. This covers fixed energy uses in the building – mainly space heating, space cooling, hot water, permanent lighting, fans/ventilation and pumps.
SAP	Standard Assessment Procedure – the national calculation method for homes' energy and carbon, used to satisfy building regulations Part L.
SBEM	Simplified Building Energy Model. The national calculation method for non-residential buildings' energy and carbon, used to satisfy building regulations Part L.
Space Heat Demand	A measure of how much heat energy is needed to keep a building at the desired temperature, regardless of how that heat is delivered.
tCO_2 (or tCO_2e)	Tonne of CO_2 (or tonne of CO_2 equivalent). See CO_2 and CO_2e, above.

TER	Target Emission Rate – limit set by Part L of building regulations on CO_2 emissions per square metre of floor.
TFEE/DFEE	Target/Dwelling Fabric Energy Efficiency – limit on space heat energy demand per square metre of floor, set by Part L of building regulations. Based only on fabric; not affected by building services like heating system, lighting, ventilation.
TM54 (or CIBSE TM54)	Method to accurately calculate buildings' energy use. Devised by Chartered Institution of Building Services Engineers (CIBSE).
Unregulated energy	Energy uses within a building or its curtilage but that are not regulated by Part L of building regulations. Examples: plug-in appliances, catering, external lighting among other uses. This can represent 50% of the total energy used at a property, depending on the building type and use.
WMS (or WMS2023)	Written Ministerial Statement. A formal statement of national policy made by a government Minister in the House of Commons or Lords. (WMS2023 refers to the WMS made on 13th December 2023 on energy efficiency standards in local planning.)

Introduction

How this report fits within the local plan carbon suite for Sandwell

This report is provided as part of an appointment to assist the Council in:

- Understanding the local plan's legal duties and mandates to address carbon emissions, and the powers or planning instruments available to deliver carbon savings (as set by legislation and steered by the NPPF and relevant Written Ministerial Statements)
- Understanding the array of precedent policies from other local plans that have used those powers in different ways or extents
- Equipping Sandwell BC with a range of potential policy options for carbon reduction that could be pursued in the next stages of Sandwell's local plan development, and the insight needed to decide between those policy options.

This appointment will produce four outputs (i – iv below):

1. Assessment of powers, duties and policy options:
    i. Literature Review & position statement: Exploring the powers, duties, precedent policies, and links to Sandwell's existing climate commitments.
    ii. Policy options & 'risk matrix': Devise a range of potential policy approaches to carbon reduction in buildings, and evaluate the relative merits of each of these.
2. Evidence and draft policies:
    iii. Preparation of an evidence base to close any gaps in necessary evidence beyond what was already identified in the Literature Review (part 1.i, as above), as necessary to support Sandwell's chosen policy option (that will have been chosen as a result of stage 1 above) with draft recommended policy wording
3. Future requirements and carbon offsetting
    iv. Evidence and recommendations regarding the possibility of establishing an offset fund to address residual carbon emissions or energy use of new developments that do not achieve net zero on site, including recommendations on pricing, governance and possible types of project this could fund.

As background work during Part 1 (above) there has also been a review of Sandwell's existing draft policy wording on climate and carbon. There is also engagement built into key points during Parts 1-2 to explain the findings to key policy decisionmakers within Sandwell BC and/or to liaise with Sandwell BC's other relevant consultants where needed (e.g. viability).

This document is Output ii. It firstly recaps key points of the previous report (Output i) on the local plan's duties and powers to reduce the carbon impact of new development. It then identifies a range of policy options from most to least ambitious in terms of carbon reduction in new buildings. It then evaluates these against a range of criteria, giving a broad-brush 'score' for how much risk is involved under each criterion for each policy option. This helps to fulfil the NPPF 'test of soundness' requirement[ii] to consider reasonable alternative policies.

Recap of previous report (Literature Review)

The local plan has a legal duty to mitigate climate change (deliver carbon reductions), established in the Planning & Compulsory Purchase Act 2004. National planning policy (the NPPF) confirms that this mitigation should be in line with the Climate Change Act 2008.

The Climate Change Act includes both the 2050 goal for a net zero carbon UK, and sharply declining five-yearly carbon budgets between today and 2050. Analysis by the Committee on Climate Change sets those carbon budgets and reveals the changes needed in order to meet those carbon goals. However, analysis cited in our previous report unfortunately revealed that:

- **Current & future Building Regulations (Part L) do not deliver** the space heat demand needed for UK carbon budgets (15-20kWh/m^2/year) nor make homes zero carbon. Also one of the Government's possible Part L update in 2025 would double heating bills compared to those of a home built to today's current new build standards.
- **Building Regulations (Part L) calculations for energy and carbon are inaccurate** (severely underestimating these) and only cover ~50% a building's energy use
- **Many other changes necessary for the carbon budgets are also off track** – such as the rollout of heat pumps to existing buildings, and the rollout of solar PV generation.

To 'mitigate climate change in line with the Climate Change Act' therefore, local plan policy would need to expedite these changes that are currently lacking in national regulation.

The Planning & Energy Act 2008 grants the local plan the power to require renewable energy provision, and energy efficiency standards beyond those set by Building Regulations.

However, the NPPF also states that local sustainability standards should not be inconsistent with relevant national policy. One such national policy is the **December 2023 WMS**, which urges any local plan energy efficiency policies to be expressed as a % reduction on the Target Emission Rate (TER) set by Building Regulations Part L. Yet, TER is not an energy efficiency metric – which is why three local plans earlier in 2023 had adopted other metrics (space heat demand and energy use).

The WMS2023 also emphasises that any such policy must have a 'well-reasoned and robustly costed rationale [ensuring] development remains viable'. Even prior to WMS this was already best practice for any local policy, but is especially relevant to Sandwell's existing tight viability.

The WMS is a 'material consideration' that must be taken into consideration, like the NPPF. However, **a WMS cannot lawfully inhibit the function of legislation** (such as the climate mitigation duty and energy-related powers, as above). Also, this WMS faces a Judicial Review (heard on 18th June 2023) on the basis that it obstructs those legislations and is unevidenced.

Finally: **the WMS2023 only relates to *energy efficiency*** – it does not constrain policy on the separate issues of *renewable energy* standards or *embodied carbon* requirements.

Current context regarding how far local plan policies can go, in light of the December 2023 Written Ministerial Statement

In the immediate wake of the December 2023 WMS, there was much confusion on the ability of local planning authorities to set energy efficiency standards that exceed Building Regulations, alongside uncertainty of the status and implications of the WMS. It is now **abundantly clear that local authorities retain the power to set local energy efficiency standards that exceed Building Regulations**[iii] – it is just the method in which this is done that the WMS purports to constrain (and the degree of scrutiny that the WMS will bring to such policies during examination giving rise to a need to be even more ready to robustly defend any such policy in terms of necessity, feasibility and viability).

There is increasing rebound confidence in the local planning sector that there is still scope for local authorities to pursue an 'industry best practice' approach that utilises absolute energy metrics, particularly if local circumstances are demonstrated that justify departure from national policy. This is explored in Approach 3.

Legal advice has begun to be formed around the 2023 WMS, primarily emphasising[iv] that the WMS is subservient to statute and cannot undermine the primary powers (i.e. Planning & Energy Act 2008) and duties (Planning & Compulsory Purchase act 2008) to act on climate change. The Climate Change Act 2008 is also statute, in line with which local plan policy must deliver carbon reductions, according to the NPPF which should hold at least as much material weight as a WMS does.

Additional lines of argument in the sector focus on the fact that the WMS is unlawful and cannot prohibit local authorities from using their primary powers to mitigate climate change, as required in order to fulfil the Climate Change Act 2008 and the Planning & Compulsory Purchase Act section 19. These debates emphasise that the WMS is contradictory in places, not fit for purpose given its instruction to use unsuitable metrics, and not evidenced in the problem it purports to address (i.e. the thesis that the adoption of local standards would slow down the delivery of housing targets). As noted in the introduction, these points are the basis for the formal legal challenge against the government on the lawfulness of the 2023 WMS (being pursued by the Good Law Project and Rights:Community:Action). Therefore, although uncertainty and further constraints have been inflicted on local authorities, scope remains to challenge the WMS and overcome it.

Nevertheless, the WMS2023 will be an area of focus raised by objectors and the inspector during the Examination in Public. The WMS text even states that such policies may draw direct scrutiny from the Secretary of State (although this may not be followed through if there is a change of government in the upcoming election). As such, for any energy efficiency policy that goes beyond Building Regulations Part L, the WMS2023 does raise the level of risk of rejection, especially for policies that use metrics other than those used in Building Regulations.

In the risk matrix assessment later in this report therefore, we reflect this in the criteria of 'planning acceptability' and 'compatibility with national policy'.

Potential local plan policy approaches in the current national legislative & policy context

Overview

Based on existing powers, duties and mandates in legislation and national policy, we next outline and evaluate the following three broad policy approach options:

1. **Fully WMS-compliant**
2. **Testing WMS boundaries**
3. **Overcome the WMS**

Approaches 2 and 3 look to exploit certain areas where the WMS is unclear or not prescriptive, whilst Approach 1 acts as a WMS-compliant option that is relatively 'safe' in terms of planning acceptability and less complex to defend at examination.

As noted in the introduction, the scope of the 2023 WMS is limited to energy efficiency standards. Therefore, it does not inhibit the existing powers to set local policies on issues other than energy efficiency, for example requiring a proportion of on-site renewable energy generation, or embodied carbon standards (as illustrated in precedents in the previous report).

However, there are interrelationships between energy efficiency and renewable energy requirements. For example:

- There is evidence that in most home types it is feasible to meet a policy requirement to generate renewable energy on site equivalent to 100% of energy use *if* energy efficiency targets are met first. Without the energy efficiency targets, some building type' energy use may be too high to match with PV within the available roof space, and would have to be met partially through offsetting instead. This is part of the reason why organisations like LETI have proposed absolute energy use intensity targets within their 'net zero carbon buildings' definitions (as outlined in the previous Literature Review report and emulated in 'Approach 3' within the current report).
- If there is a requirement for 100% (or other percentage) of energy use to be met with on-site renewable generation, then a decent energy efficiency target will reduce the cost of meeting that renewable energy provision, because the energy efficiency target reduces the energy use that the renewables must match. Vice versa, if a % renewable energy provision is required *without* a target for energy efficiency, the cost of providing that renewable energy would be greater. In all policy options evaluated here, there is a requirement to improve energy efficiency (in light of inadequacies of current and future building regulations to meet the UK's carbon goals as outlined in the Literature Review).

It is also important to note that there exists a multitude of different policy options that Sandwell may consider within or beyond these three approaches. The three approaches we explore in this report reflect professional judgement of the broad categories of approach that exist in existing precedents and industry best practice. Each approach could be adapted by Sandwell to better align with the Council's degree of climate commitment and risk appetite.

Risk matrix approach to policy options evaluation

The three policy approach options will be assessed against the criteria set out in the table overleaf, taking into account the context of the December 2023 WMS as outlined above.

Our previous literature review of planning duties, powers and precedents shows that to achieve net zero carbon buildings within a net zero carbon district and UK, several different requirements can and should be deployed in local plan policy. **These form broad themes**:

- Energy efficiency
- Efficient, fossil-free and renewable energy supply
- Carbon offsetting
- Embodied carbon.

Secondary requirements, in order to reduce the energy performance gap, could consist of:

- Post-occupancy evaluation
- 'Assured performance' schemes
- On-site construction supervision
- Airtightness tests and/or other fabric tests prior to completion.

These themes follow the **energy hierarchy**, plus **offsetting** and **embodied carbon**. An effective policy for zero-carbon buildings would cover all of these themes, allowing none to be neglected or concealed. Planning powers and (pre-WMS) precedents exist for all of them. To deliver the necessary actions for the scale and urgency of the UK's carbon goals, we would need to emulate the more ambitious end of the range of existing precedents, which have been creatively testing the boundaries of the powers available (before the WMS2023).

There is somewhat of a mismatch between local plans' *duty to radically reduce carbon*, versus the potential constraints around:

- The *extent* to which local planning authorities can wield the powers explicitly granted to them require carbon reductions (due to pressures such as the WMS2023),
- Local planning authorities' *duty to enable other outcomes* such as housing delivery.

This mismatch has caused some ambitious 'net zero' policies to stumble at the hurdle of examination, despite other very similar policies having successfully passed that hurdle.

The well-tested, 'low planning risk' policy precedents tend to rely on requiring moderate reductions against Building Regulations Part L. However, as noted previously, Part L is not well suited to delivering actual energy and carbon reductions in practice.

Because of this mismatch, an approach that is low-risk for planning acceptability and viability is generally high-risk for climate, as it would fail to remedy the status quo of allowing new builds to add to the UK's carbon burden, and expose occupants to high costs of energy bills and future retrofit that almost all existing buildings will need if the UK is to reach its carbon goals. **It is thus necessary to differentiate the level of risk across several topics.** These topics reflect the key debates in the literature on the low carbon transition, emerging practice in local plans, and recent experience working with local authorities and developers.

Key messages

- The local plan has a **legal duty to mitigate climate change, and national policy says this should be done in line with the Climate Change Act 2008**
- **Mitigation in line with the Act 2008** would logically need to deliver the built environment changes **shown to be necessary for the Act's carbon goals**
- National government's current policies (including Building Regulations Part L and the Future Homes Standard) are **insufficient to deliver the necessary changes**
- Local energy efficiency standards **are able to exceed Building Regulations**, as per the power granted by the Planning & Energy Act 2008
- **There are local plan powers that can help deliver the changes**
  - There are perceived limits to how far these powers can be exercised – due to definition of powers, consistency with national policies, and potential to clash with other local plan duties (such as deliverability or viability).
  - Some adopted precedent local plans have now gone as far as necessary (in setting targets for buildings' operational energy in line with the UK's carbon goals), e.g. B&NES, Cornwall and Central Lincolnshire.
- **A local plan policy could be 'low' or 'high' risk** depending on whether we focus on carbon & bills, or on viability & precedent
- We therefore use a **'matrix' to assess risk across multiple topics.**

Table 1: Scope of risk topics for which policy options should be assessed.

Climate (2˚C carbon budgets)	Occupant energy bills	Future retrofit costs/disruption	Electrical grid readiness	Delivery / sector readiness	LPA internal capability	Viability / cost uplift (vs current Part L)	Planning powers / precedents	Compatibility with national approach
Will this policy deliver carbon and energy savings consistent with what the Committee on Climate Change has shown to be necessary for the UK to meet its legislated carbon budgets? Consider also the even more ambitious Tyndall Centre carbon budgets for climate change ≤2 °C (more reliable for the Paris Agreement). Any new build that is not true net zero carbon will worsen the already-huge challenge faced. Any insufficiently energy-efficient buildings will place excessive demands on the region's limited renewable energy capacity (current capacity, and speed/scale at which future capacity can be added).	Might this policy permit or cause the developer to deliver a building that exposes its occupants to unnecessarily high energy costs or energy price volatility? Vice versa, is the resulting building likely to save energy bills long term?	Will this policy induce the developer to deliver a building that is fit for the UK's zero-carbon future according to the Committee on Climate Change's identified necessity for minimal heat demand and low-carbon heat? (i.e. heat pumps or networks, not gas) If not, how disruptive and expensive would future retrofit works be?	Will this induce the developer to minimise the burden that the new building places on the electricity grid, considering that the grid will already face the huge challenge of switching existing buildings and transport from fossil fuel to electricity? Will there be additional grid stress to account for any energy exports from solar PV installed, and electrification (gas-free status) due to the policy, compared to Building Regulations? Might this component induce the delivery of buildings that burden the grid more than they need to – beyond the grid upgrades that will need to happen anyway for the net zero carbon future?	How readily available are the materials, technologies and skills needed to comply with this – including energy calculation skills? How mainstream is this practice or level of performance, and are the relevant workers likely to understand how to deliver it (immediately, or with a reasonable amount of learning)?	Is there sufficient resource and capacity available internally at the local authority to accurately implement the policy and assess information that developers would need to submit? Is there scope to upskill individuals in planning to assess net zero carbon policies? Is it likely that external consultants will be required to assess policy compliance? (Please note: all scores given in this topic are our best estimate of this challenge – only Sandwell BC itself has accurate knowledge of its own capacity to address these issues, or willingness to develop capacity).	Would it cost developers much more to comply with this policy, compared to a business-as-usual new build? (Based on estimates – by central government and evidence bases of various emerging local plans – of cost uplift for various elements of improved building performance, and project experience of the cost of enhanced professional services in energy & carbon.)	Is the local plan explicitly empowered to require this standard, via the Planning and Energy Act 2008, other legislation or formal national policy statement (including the December 2023 WMS)? Is there an existing adopted local plan precedent, showing that this approach can be found sound? If not explicitly empowered but also not explicitly prohibited: • Is there an emerging precedent for this, and how was it justified? • Can it be shown that this is the only reliable way to fulfil the duty for 'radical' carbon reductions in line with the Climate Change Act? (NPPF)	To what extent would this policy component: • Use existing nationally endorsed methodologies / metrics for carbon and energy? (taking into account the December 2023 WMS) • Help or hinder other changes that the government has committed to or intends to achieve with regards to carbon and energy? Such as: ○ Future Homes Standard 2025 (2023 consultation) ○ Net Zero Strategy (2021) ○ Heat and Buildings Strategy (2021) ○ Fully decarbonised electricity grid by 2035.

Beyond the **themes** themselves (previously listed), there are several different possible ways in which a local plan policy requirement could address each theme – using different mechanisms, calculations, standards, and required degree of energy and carbon performance improvement. These differ in their climate effectiveness and alignment with national policy.

The risk level would then change again depending on:

- *The means by which* each theme is addressed, e.g. –
    - Using national building regulation calculations for energy and carbon (lower risk in planning terms, but higher risk for climate due to these methods' inaccuracy)
    - Using far more accurate calculation methods (lower risk for climate but higher risk in planning terms, as these differ from the WMS2023 stipulation, may require specialist skills that are not abundant, and some methods may lack certainty on whether they fall within Energy & Planning Act powers)
    - Replicating an existing precedent for offsetting (lower risk in planning terms)
    - Devising a more effective mechanism for offsetting (medium risk in planning terms due to fewer precedents; but lower risk in terms of climate outcomes).
- *The extent to which* the improvement is required, e.g.–
    - the amount and type of on-site energy and carbon improvement,
    - the offset price per tonne of carbon payable by developers.

We therefore assess a range of potential '**policy components**' that each represent a *means* and *extent* of requirements under each theme. These are arranged along the vertical axis of our full risk matrix (overleaf).

Each of these 'policy components' is scored against the full range of risk topics – climate, bills, retrofit, sectoral readiness, cost, powers/precedents, and consistency with national policies. (The topics 'powers' and 'national approach' overlap somewhat, as some legislated powers refer to national policy, and some national policies[v] purport to constrain those powers.)

A short note on viability via the 'build cost' risk topic

Our scoring in the 'build cost' risk topic reflects whether each policy component would drive the uptake of features that other recent analyses show are more costly than the current building regulations minimum, ie:

- Heat pumps (albeit these will become the norm from 2025 via the FHS)
- Fabric improvements (based on national government cost uplift figures)
- Solar panels beyond existing Building Regulations specification (and how many – to meet total energy, or just regulated)
- Cost to offset any remaining residual carbon or energy
- Cost of specialist energy modelling or energy performance verification, where known.

Our 'build cost' risk evaluation was based on prior experience of the % cost uplift that these combinations of measures tend to add to a typical base build cost, based on studies from central government and other local plans' evidence bases. The actual impact on *viability of development in Sandwell* will depend on the land values, sales values, and regional build costs and labour. There is some evidence that home sale value rises in more energy-efficient buildings, but we also note that Sandwell's recent viability work indicates viability constraints across the Borough, albeit expected to improve with grant-funded regeneration.

About risks relating to a carbon offsetting policy in a local plan

Local plan offsetting usually means collecting payments from developers per tonne of carbon their building will emit, or per kWh of the building's total operational energy use that is not matched with on-site renewable energy generation. This is then ringfenced to be spent on local projects to save the same amount of energy or carbon. 'Climate' risks arise if the amount paid is not enough to deliver the required verifiable amount of carbon savings, or if the Council does not spend the funds effectively. Risks also arise in the topics 'occupant' and 'future retrofit' because offsetting might be used in lieu of creating an energy-efficient building.

About the ongoing changing situation in terms of precedents – how this affects 'planning acceptability'

Please note that several highly ambitious local plans have been adopted with ground-breaking net zero carbon policies that have thoroughly tested existing planning powers and the limits of such powers (albeit all prior to the WMS2023). The most notable are the local plans of Bath & North East Somerset, Cornwall, and Central Lincolnshire Council. However, some other local plans (e.g. Salt Cross Area Action Plan, and Lancaster) have had similar policies rejected at examination, which suggests that risks and uncertainty remain over net zero planning powers. Yet, the rejection of Salt Cross was recently[vi] overturned in court as it was an unlawful interpretation of a previous WMS made in 2015. Also, there is now a High Court challenge against the WMS2023 itself[vii] because it tries to prevent such net zero policies.

Numerous other local authorities are either at examination or have emerging ambitious net zero carbon policies at Regulation 18 and 19 consultation stages. As more of these receive their examination reports, additional clarity and consistency will emerge regarding local authority net zero planning powers and the extent to which these can be used.

About levels of risk relating to planning powers/precedents and compatibility with national approach

These two columns incorporate consideration of any limitations placed by the NPPF, PPG, WMS2023, and legislation, on the acceptability of the use of local authorities' powers to reduce buildings' carbon. The WMS2023 makes the risk levels in these two columns higher than they would have been previously. However, an element of uncertainty remains on whether the WMS really increases risk to such a level. This uncertainty is expected to shrink once a number of local authorities put policies through examination with the WMS2023 in place. Those examinations should clarify the status of the WMS in balance against the climate mitigation duty. For the purpose of this exercise, the risk level is

set at the higher end of the possible range, to ensure Sandwell BC is not underinformed of the potential associated risk.

Matrix of all policy components (note: each approach will combine a selection of these – not all of them)

Scope	Policy requirements	Climate (2˚C carbon budgets)	Occupant energy bills	Future retrofit costs/ disruption	Electrical grid readiness	Delivery/sector readiness	LPA internal capability	Build cost	Planning powers/ precedents	Compatibility with national approach
Energy efficiency	63% improvement on Part L 2021 (residential)/19% improvement on Part L 2013 (non-residential) TER, *from energy efficiency measures**	3	3	3-4	2	1	3	2	2	1
	No fossil fuels (i.e. heat pump required)	0	2	0	2	1	1	1	1	0
	SAP Fabric Energy Efficiency (FEE) *guideline* limit 15-20kWh/m^2/year	2	2	2	0	2-3	2	4 (due to lack of existing cost data)	3	1
	EUI *guideline* targets and mandatory reporting	No impact	No impact	No impact	No impact	3	2	No impact	No impact	4-5
	EUI limits using PHPP/TM54 (Homes: 35kWh/m^2/year; Non-residential: varies by typology)	0	0	0	0	3-4	2	3	5	5
	Space heat demand limit of ≤15-20kWh/m^2/year (predicted with PHPP/TM54)	0	0	0	0	3	2	3	5	5
Performance gap	Apply any one of several named proven processes to remedy the performance gap	0	0	0	0	3	3	2	2	2
Renewable energy	On-site renewable energy to match 100% of annual *regulated-only* energy use (residual regulated energy use after the required reduction from energy efficiency)	3	3	2	3	2-3	2	2	2	2
	On-site renewable energy to match *total* energy use (i.e. on-site net zero energy); or ≥120 kWh/m$^2_{\text{building footprint}}$/yr	0	0	0	3	2	2	3-4 (higher in flats; lower in houses)	2-3	4

Scope	Policy requirements	Climate (2˚C carbon budgets)	Occupant energy bills	Future retrofit costs/ disruption	Electrical grid readiness	Delivery/sector readiness	LPA internal capability	Build cost	Planning powers/ precedents	Compatibility with national approach
Offsetting	Offset 30 years' worth of regulated emissions at £269/tonne (DESNZ annual carbon valuation) via S106 fund (not tested to meet cost of local carbon saving schemes)	4	4	3	No impact	2	3	2	1	1
	Offset any shortfall in on-site renewable energy generation to match total energy use (via S106 or direct investment); at the estimated cost of delivering that renewable energy (set as £/kWh)	1	1-3	1-3	3	1	2-3	2-3 (higher in flats; lower in houses)	3	3
Embodied carbon	Embodied carbon reporting-only, for major development, using RICS WLC methodology	4	No impact	No impact	No impact	2	2	1	2	No impact
	Embodied carbon reporting for major development using RICS WLC methodology; target 900kgCO_2e/m^2 GIA set for large-scale development	3	No impact	No impact	No impact	2	3	1	3 (powers not defined thus not constrained)	3
	Embodied carbon reporting for major development using RICS WLC methodology; LETI-aligned[1] targets set for large-scale development	0	No impact	No impact	No impact	3	4	3	3-4 (precedents are emerging only; powers not defined)	No impact (lack of embodied carbon national policy to align with)
**In residential buildings, this policy would count heat pump installation an energy efficiency measure not a renewable energy measure. In non-residential buildings, the type of building heating system would not make a difference as the Part L TER reflects type of heating system that is actually proposed, unlike in residential buildings. Non-residential buildings can still achieve reductions on the TER by using a heating system that has a higher efficiency than the standard efficiency that Part L sets for that respective heating system type. All kinds of buildings can also achieve TER reductions through other efficiency improvements, including insulation/glazing, airtightness, lighting, heat recovery from wastewater/exhaust air, and fans and pumps.*									

Actively reduces risk	0
Low risk	1
High risk	5

[1] LETI is the Low Energy Transformation Initiative. In addition to their work on setting energy targets aligned with the UK's carbon budgets, they have also done the same with embodied carbon targets (which they have in turn aligned with the similar target setting/benchmarking conducted by RIBA, the Royal Institute of British Architects). Their optimal recommended targets (especially for future years) represent significant improvement on current typical practice.

About this matrix

The matrix orders the policy components by theme from top to bottom according to the energy hierarchy: energy efficiency measures, energy supply measures, offsetting. Separately and after this, the final theme is embodied carbon.

Three potential policy approaches are presented overleaf: Approach 1 (comply fully with the WMS2023); Approach 2 (comply with but test the boundaries of the WMS2023); and Approach 3 (diverge from the WMS2023 on justification of more effectively fulfilling the climate duty).

It should be noted that although the majority of policy components outlined above apply to both residential and non-residential development, the risk scores in the topic of 'planning powers' primarily reflect *residential* development. This is largely because the WMS2023, which is the main source of planning risk, focuses mainly on residential. The WMS2023 does appear to refer to buildings in general, but the metric calculation method it prescribes ("a dwellings Target Emission Rate … using a specified version of SAP") are residential, thus logically cannot apply to non-residential buildings. Therefore, although Approaches 1 and 2 (overleaf) placate the WMS by using the TER metric within their respective energy efficiency requirements for all building types, our opinion is that the WMS2023 brings only minimal additional planning risk to Approach 3 for non-residential policies. Still, policies for any type of building may still see additional scrutiny because of the general presence of the WMS2023 and its emphasis on a "*well-reasoned and robustly costed rationale that ensures… that development remains viable*".

Most policy components have either a lower risk for climate and consumers but higher risk for build cost/planning powers, or vice versa. This is because of the current constraints on powers granted to local plans, and the fact that this is a cutting-edge emerging policy area with few precedents that reduce emissions sufficiently to be in line with the Climate Change Act.

Key reasons for higher risk to climate and occupants are:

- **Failing to require use of accurate methodologies** to predict a building's actual carbon emissions in use (SAP and SBEM are not accurate)
- **Requiring only % improvements on carbon and energy limits set by Building Regulations** (which fail to account for unregulated energy, and fail to incentivise thermally efficient building shape) instead of absolute energy and carbon targets
- **Failing to require steps to deliver energy performance as designed and predicted** (that is, failing to confront the energy performance gap)
- **Failing to ensure that the offsetting mechanism delivers** measurable and certain carbon savings that count towards the local area's carbon account and would not have happened otherwise, and that the offsetting is truly a last resort. Overly cheap offsets disincentivise the developer from making the feasible on-site energy and carbon improvements – raising the risk of new buildings that have high energy bills and need expensive, disruptive retrofit later.

Key reasons for higher planning risk are:

- **Setting requirements that are not based on the national calculation methodology** of building regulations (Part L SAP/SBEM), instead using more accurate methodologies
- **Higher (or unknown) cost of certain measures** – in particular, PV solar panels and some kinds of low carbon heating – although this may change as these become more mainstream and economies of scale take effect (e.g. due to the fact that these technologies are part of the latest Future Homes Standard draft specifications)
- **Workforce skills at scale to deliver the higher standards** – but this will improve as the industry improves its normal practice in response to demand and regulation. This is a good rationale for promoting growth of green construction skills within the Borough area and wider region.
- **Non-compliance with the WMS2023**: any residential energy efficiency target that uses a metric other than Target Emissions Rate in SAP will have higher planning risk.

The right combination of policy components is vital

It is important to note that none of these policy components is enough on its own to achieve new buildings that deliver the required energy and carbon performance that is needed to support the national and local carbon budgets. Any effective net zero carbon buildings approach in a local plan would need to adopt a suite of requirements covering all of the following topics:

- Energy efficiency improvements in design
- Energy performance gap
- Fossil-free energy supply
- Renewable energy supply
- Offsetting
- Embodied carbon.

Not all of the policy components are compatible with all others – the combinations in the policy approaches shown are designed to be internally compatible. There is a degree of pick and choose available to Sandwell BC, but policy components must be carefully selected to ensure a holistic and complete policy suite that is internally consistent. Sandwell BC must therefore decide which combination of requirements it is willing to pursue, prioritising either the risk of challenge/delay to adoption, or the risk of failing to achieve the carbon reductions required by climate science and legislation. (However, the 'embodied carbon' requirements are independent from the energy performance requirements and therefore could be swapped between the three different approaches). The three potential approaches that we have explored in this report are summarised overleaf.

The diagram to the right summarises the three approaches that are assessed in detail below. Each approach is devised into 5 sections that follow the energy hierarchy themes as previously explained:

- **Energy efficiency**
- **Reduction of energy performance gap**
- **On-site renewable energy generation**
- **Carbon/energy offsetting**
- **Embodied carbon**

As previously mentioned, it is only the energy efficiency boxes (orange) that are *directly* impacted by the WMS2023. The on-site renewable energy generation boxes (green in this diagram) are indirectly impacted by the yellow boxes (energy efficiency) because energy efficiency will control the amount of renewable energy required to become 'net zero carbon' (by the respective definition of each approach – Approach 1 covers only regulated energy, whereas Approaches 2 and 3 cover total energy use).

Embodied carbon emissions (light blue boxes in this diagram) are not constrained by the WMS2023 and there is no defined national approach to embodied carbon. Therefore, embodied carbon requirements increase from Approach 1 to Approach 3 in order of ambition, but these are reflective of existing precedents and planning powers, instead of being controlled by the 2023 WMS.

Please note again that the different levels of embodied carbon requirement are assigned to different Approaches here purely so that the level of ambition is consistently stepped up from Approach 1 to 2 to 3 across all policy themes. But in practice, the embodied carbon requirements of each Approach could in fact be swapped between different Approaches if Sandwell chooses, as the embodied carbon requirement is independent of the type of energy performance metrics.

Please note that the colours shown here are used to group components by theme, while the colour coding system used in the rest of this report is instead used to express levels of risk. See key at the bottom of each risk matrix table.

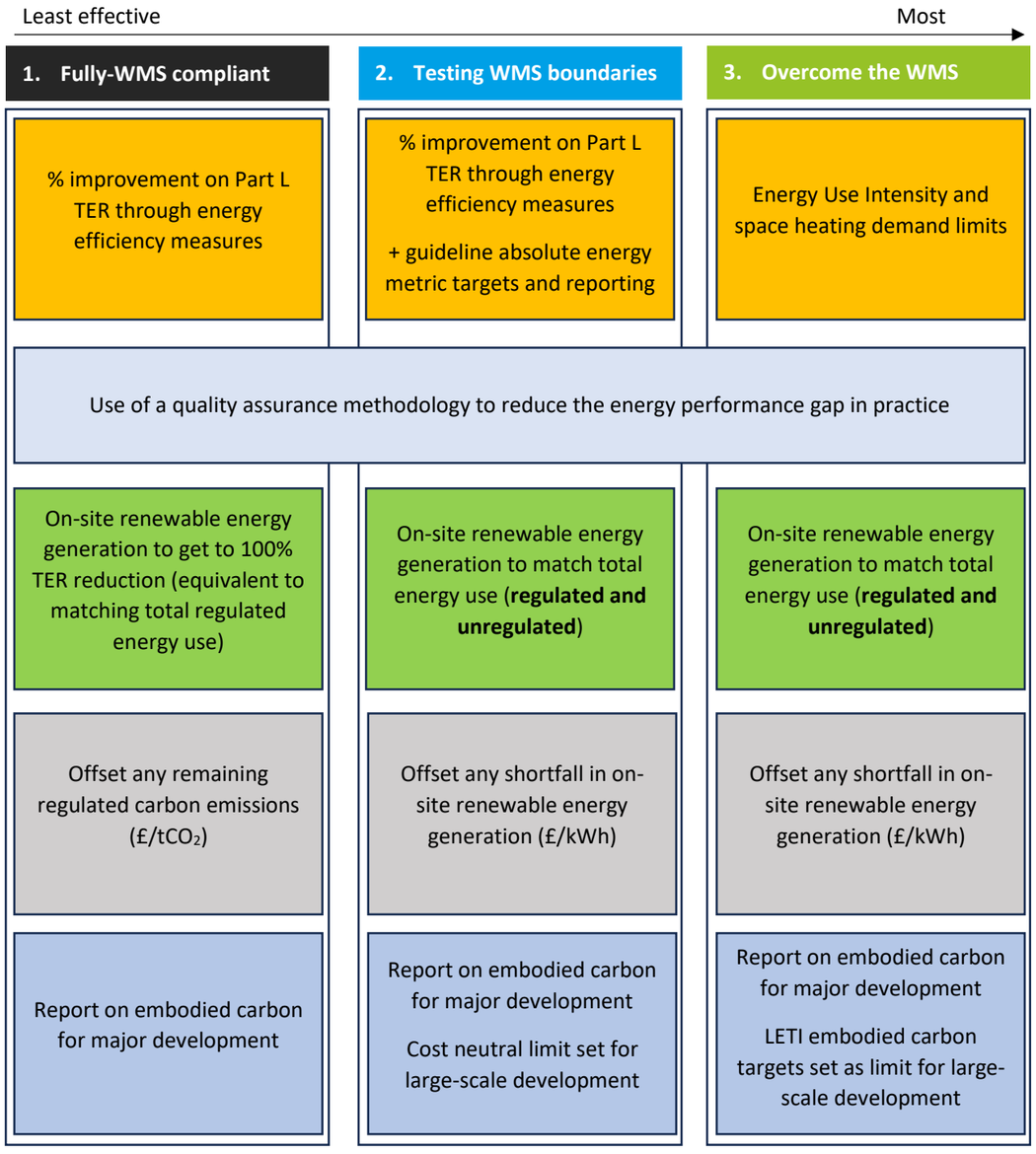

Figure 1: Overview of the three broad policy approach options devised.

Approach 1 – Fully WMS compliant

Medium-high risk for climate, low risk for planning

Scope	Policy requirements	Climate (2˚C carbon budgets)	Occupant energy bills	Future retrofit costs /disruption	Electrical grid readiness	Delivery / sector readiness	LPA internal capability	Build cost	Planning powers/ precedents	Compatibility with national approach
Energy efficiency	63% improvement on Part L 2021 (residential)*/19% improvement on Part L 2013 (non-residential) TER *from energy efficiency measures*	3	3	3-4	2	1	3	2	2	1
	No fossil fuels (i.e. heat pump or similar required)	0	2	0	2	1	1	1	1	0
Performance gap	Apply any one of several named proven processes to remedy the performance gap	0	0	0	0	3	3	2	2	2
Renewable energy	On-site renewable energy to match regulated energy use	3	3	2-3	3	1	2	2	2	2
Offsetting	Offset 30 years' worth of regulated emissions at £269/tonne (DESNZ annual carbon valuation[viii]) via S106 fund (not tested to meet cost of local carbon saving schemes)	4	4	3	No impact	2	3	2	1	1
Embodied carbon	Embodied carbon reporting for major development using RICS WLC methodology	4	No impact	No impact	No impact	2	2	1	2	No impact

**Heat pump installation in residential would count as an energy efficiency measure not a renewable energy measure. In non-residential, Part L incorporates the heating system type into the baseline. Non-residential can still gain TER reductions by using a heating system that has a higher efficiency than Part L's standard efficiency for that respective heating system type.*

Actively reduces risk	0
Low risk	1
High risk	5

Approach 1 acts as a **policy approach that is fully compliant with the December 2023 WMS** and confidently sits within the bounds of mechanisms already adopted by local plans to date, whilst maximising ambition as far as possible. It follows the structure of several 'net zero carbon buildings' policy precedents in local plans that have passed inspection and been successfully implemented with good compliance rates (e.g. London Plan 2021; Reading Local Plan 2019; Milton Keynes Local Plan 2019; Oxford Local Plan 2020).

As previously stated, the scope of constraints the WMS inflicts is strictly focused on local energy efficiency standards. Therefore, the core requirement of Approach 1, requiring a 63% TER improvement through energy efficiency measures only, does not include renewable energy generation measures. The 63% reduction aligns with the Future Homes Standard (FHS) improvement on Part L 2021. The requirement is feasible in that the Government's previous indicative FHS specification indicates that this FHS performance can be achieved solely through fabric improvements and heat pump without any solar PV. Requiring this carbon reduction to be made solely through energy efficiency measures is positive for climate, occupant bills, electrical grid capacity and retrofit risks, in that it ensures developers cannot mask poor energy efficiency by adding more solar PV. Energy efficiency is essential within the UK's carbon budgets, reduces demands placed on the grid, and is also a more certain effective way of reducing energy bills and is much harder to retrofit later (compared to the relative ease of adding solar PV later). Improved energy efficiency also reduces the amount of PV needed to get to net zero.

Although still based on metrics within SAP, that are known to be inaccurate, this approach allows us to maximise improvements made solely through energy efficiency measures. By classifying heat pumps as an energy efficiency measure (whereas SAP typically classifies heat pumps as a renewable energy measure), the policy recognises the **efficiency gains of heat pumps (300% efficient compared to 100% maximum value of direct electric and gas boilers)**. Due to the efficiency gains provided by heat pumps, the **grid will be put under reduced stress** because fewer units of electricity will be required to produce the units of heat needed to sufficiently heat the building (and because less PV will be needed for the onsite net zero balance, resulting in a lower 'peak export' of PV energy to the grid at the times when PV is producing more electricity than the home can immediately use, such as midday in summer).

It is almost guaranteed that the Future Homes Standard will prohibit the use of gas boilers, as indicated by the 2019-20 FHS consultation and both options proposed in the 2023/24 FHS consultation. However, for the sake of clarity, fossil fuels are stated as unacceptable for all approaches proposed in this document in case this position of future national policy is delayed, weakened or withdrawn. This is compatible with the 63% TER reduction through energy efficiency measures.

Because absolute energy targets are not used, it is **not guaranteed that the building will completely avoid any retrofitting in the future**. This is because the standards vital[ix] to meet the UK's legally binding carbon targets of the Climate Change Act include a space heating demand value of 15-20kWh/m^2/year. Subsequently, for the building to operate at this level in the future, the retrofit required could be disruptive to the occupant, may damage the building (especially insulation[x,xi]), and could cost the future occupant three-to-five times the price it would have cost the developer to include in the first place[xii]. Future retrofit also comes with extra embodied carbon as outdated building elements are replaced.

As the **2023 WMS does not impact on-site renewable energy requirements**, we are able to set the policy requirement as high as possible within the framing of SAP and Building Regulations (i.e. provide solar PV to match 100% of residual regulated energy use after the initial 63% TER reduction from energy efficiency improvements). As the scope of the renewable energy requirement in Approach 1 is *regulated* energy only, it remains safely within the bounds of the WMS and national technical standards (see separate Approach 2 for how this scope could be expanded to include unregulated energy use too). Matching regulated energy use with solar PV output means that the building could be considered 'net zero energy' under a SAP/Building Regulations definition (although it may not achieve a 100% TER reduction because SAP gives less carbon 'credit' per kWh of PV energy exported than the carbon it associates per kWh of grid energy used). However, we cannot consider this to be true net zero because unregulated energy is not accounted for.

Also within Approach 1, it is **essential that a proven scheme to address the performance gap is implemented** alongside operational measures. This is particularly pertinent for this Approach as its requirements are based on metrics from Building Regulations SAP methodology, which is known to suffer from a performance gap due to modelling inaccuracies and insufficient quality verification during construction. Having a process in place to mitigate the performance gap can help compensate for that weakness. Suitable methods could include the NEF/GHA Assured Performance Process, the BSRIA Soft Landings Framework, or NABERS UK (offices only).

A **carbon offsetting approach is suggested for Approach 1**, which is supported by dozens of existing local plan precedents. The up-to-date national valuation of carbon 2024 price is set to low, medium and high values of £134, £269 or 403/tCO_2 respectively. The central value of £269 has been quoted in the policy. This is the same source from which Greater London sourced its original carbon prices of £60-90/tonne in 2015[xiii], but London has not kept this price up to date with the increases to that nationally recognised price. These increases from previous annual valuations flows partly from the cost of delivering the UK's increased carbon saving targets in the Climate Change Act update 2019, but also inflation and grid decarbonisation. Even the up-to-date price might not cover the actual cost of local projects that deliver the same amount of measurable and demonstrably additional carbon savings – for example a study in Bath & North East Somerset found that the local cost of such projects could be as high as £652/tCO_2[xiv]. However, selecting the up-to-date national valuation of carbon is a reliable approach at examination due to previous precedents and is demonstrably in line with the recognised national figure. Offsetting in Approach 1, as with both other Approaches next evaluated, is strictly seen as a last resort because benefits will always be maximised when on-site performance is prioritised and achieved as intended under policy requirements.

Any offsetting price should include not just the project itself, but also the administrative cost of devising projects with a measurable carbon benefit, identifying a pipeline of opportunities, project management, legal negotiation with third-party asset owners (such as buildings that are to receive energy retrofitting), fund administration, and potentially land acquisition (if the project involves tree

planting or standalone renewable energy generation). Sandwell BC may find it useful to compare the national carbon price against any recent experience it has of adding solar panels to its own estate.

Embodied carbon is increasingly important to consider as operational energy standards are ramped up. However, the national position on embodied carbon is not clear and only one local authority (Bath & North East Somerset Council) have had an embodied carbon emissions limit requirement tested at examination. Therefore, to ensure the overall approach remains fully WMS-compliant and does not significantly depart from national policy, Approach 1 only requires that embodied carbon is reported on for major development and does not set a limit.

To summarise, Approach 1 is considered to be fully WMS-compliant and aims to be as ambitious as possible within these perceived bounds. The **level of carbon reduction is high risk** because unregulated energy is not accounted for, whilst occupant bills are not at optimal levels as fabric and solar PV standards are not as high as Approach 2 and 3. Planning and build cost risks are relatively low in comparison to more ambitious approaches, whilst numerous existing local plans have similar policy requirements in place, meaning they have been tested and proven at examination before. Overall, pursuing Approach 1 would result in high risk for climate (albeit less than if no policy were applied at all) but low risk for planning.

Approach 2 – Testing WMS boundaries

Medium risk for climate, medium risk for planning

Scope	Policy requirements	Climate (2˚C carbon budgets)	Occupant energy bills	Future retrofit costs /disruption	Electrical grid readiness	Delivery/ sector readiness	LPA internal capability	Build cost	Planning powers/ precedents	Compatibility with national approach
Energy efficiency	63% improvement on Part L 2021 TER (residential)*/19% improvement on Part L 2013 (non-residential) TER from energy efficiency measures	3	3	3-4	2	1	3	2	2	1
	Space heat demand *guideline* limit 15-20kWh/m^2/year using SAP Dwelling Fabric Energy Efficiency (DFEE)	2	2	2	0	2-3	2	4 [due to lack of existing cost data]	3	1
	EUI *guideline* targets and mandatory reporting	No impact	No impact	No impact	No impact	3	2	No impact	No impact	4-5
	No fossil fuels (i.e. heat pump or similar required)	0	2	0	2	1	1	1	1	0
Performance gap	Apply any one of several named proven processes to remedy the performance gap	0	0	0	0	3	3	2	2	2
Renewable energy	On-site renewable energy to match regulated and unregulated energy use (i.e. on-site net zero energy); output at least 120 kWh/$m^2_{\text{building footprint}}$/yr	0	0	0	3	2	2	3	4	4
Offsetting	Offset any shortfall in on-site renewable energy generation to match total energy use (via S106 or direct investment); at cost of delivering that renewable energy (set as £/kWh)	1	1-3	1-3	1-3	1	2	2	3	3
Embodied carbon	Embodied carbon reporting for major development using RICS WLC methodology[xv]; target of 900 $kgCO_2e/m^2$ GIA for large-scale development	3	No impact	No impact	No impact	2	3	1	3	4

** Heat pump installation in residential would count as an energy efficiency measure not a renewable energy measure. For further commentary see equivalent note in Approach 1 table.*

Actively reduces risk	0
Low risk	1
High risk	5

Approach 2 looks to **utilise the ambiguities of the WMS** to assume the maximum possible freedom that the WMS could be interpreted to allow. The basic structure of Approach 2 is similar to the the fully-WMS compliant requirements of Approach 1, but builds upon this by maximising policy requirements on topics where the position of the WMS and national policy is not entirely clear. The requirements in Approach 2 **test the WMS boundaries whilst remaining robust and defensible** against the letter of the WMS' constraints and anticipated challenges throughout the examination process. There may be other ways that the WMS boundaries can be tested, but we feel this collection of requirements are most defensible and simultaneously ambitious in the context of the 2023 WMS and its perceived constraints.

The TER % improvement by energy efficiency measures is the same as in Approach 1, but is now supported by additional metrics to further ensure energy and fabric efficiency:

- The absolute space heat demand limit, set as the Dwelling Fabric Energy Efficiency (DFEE) in SAP, means the **building must have an inherently thermally efficient form**. SBEM (non-residential equivalent to SAP) does not have a FEE metric and this component therefore does not apply for non-residential development.
- The inclusion of this component makes the policy approach stronger than adopted precedents that just require a percentage improvement on the Part L baseline – because the Part L baseline is not absolute but relative: it is derived from a 'notional' building of the same size and shape. If the proposed building has a complex form with many joins and surface areas that leak heat, Part L would simply allow leeway to use more energy. Setting an absolute limit on this metric will remove this weakness of 'relative' improvement and move towards the level of performance vital to make new buildings compatible with the UK's carbon budgets (which are absolute, not relative).
- We do however **recognise that the building may not achieve this performance level in actual** operation, due to the aforementioned fact that Part L calculation methods dramatically underestimate space heat demand. 15-20kWh/m^2/year target is the space heat demand target recommended by the Committee on Climate Change. While space heat demand is not precisely the same as DFEE, Part L does not set a specific target for space heat demand and so DFEE is used as the closest proxy metric available within Part L. 15-20kWh would equate to a ~60-70% improvement on a typical home's DFEE[xvi] if it were built to Part L 2013, or an 39-54% reduction on the DFEE of a home built to Part L 2021 modelled using SAP[xvii]. (A more robust space heat demand metric is utilised later in the separate Approach 3, by the use of Passive House Planning Package PHPP, which can far more accurately predict space heating demand and more closely represents operational performance.)

As set out above, an absolute target in DFEE is an improvement for energy efficiency over Approach 1. However, this brings **additional risk in terms of compliance against the 2023 WMS** because the DFEE requirement is an improvement upon Building Regulations that isn't based on the TER. It is not yet clear how this individual requirement would be assessed against the WMS: On one hand it deviates from the TER, but on the other hand it does strongly remain within NPPF and Planning & Energy Act 2008 requirements stating that national technical standards must be used – and is effectively a first step towards (thus contributes towards) the % TER reduction target.

However, setting the DFEE target as low as 15-20kWh/m2/year brings additional risks in the topic of cost, because there is not any available cost data for homes built to a 15-20kWh DFEE. Evidence from the Future Homes Hub[xviii] indicates that even with the strongest fabric standard they had modelled, some home types would still exceed 20kWh DFEE. This is not to say that it is unachievable but that there is not existing cost evidence that can be drawn upon for viability testing. Therefore for soundness reasons, it might be necessary to vary this target to reflect a fabric standard for which there *is* cost data, such as for the 'Future Homes Standard Fabric Only' specification released by Government in 2021, which has been costed by Government[xix] and by third parties in other local plans' evidence bases[xx,xxi,xxii]. That specification would result in a DFEE of about 21-45kWh in most homes (but could be as low as 13.5kWh for mid-floor high rise flat or as high as to 51kWh for a bungalow), according to the Future Homes Hub modelling cited above. However, this would not have a direct link to the necessary energy efficiency for the UK's carbon budgets indicated by the Committee on Climate Change as previously cited. Therefore for the purposes of this comparison of approaches, we use a 15-20kWh DFEE target and assign a higher risk in the topics of 'cost' and 'industry readiness'. If the DFEE target were revised upwards (to 21-51kWh as cited above to match the available cost evidence), then the 'cost' and 'industry readiness' risk would be lower but the 'climate', 'energy bills', 'retrofit' and 'electrical grid readiness' risks would all be higher.

In addition to the TFEE limit, Approach 2 proposes that a guideline Energy Use Intensity (EUI) target is included in the policy suite (EUI represents the amount of *total* energy use per square metre of floor space). This is expressed as non-mandatory because a mandatory EUI metric would go against the 2023 WMS and is not a standard Building Regulations Part L metric. Instead, the proposed nonmandatory EUI target would provide a benchmark for applicants to work towards and understand how the building performs against best practice metrics and standards such as those set by LETI[xxiii] and RIBA[xxiv] which align with the energy efficiency needed in new builds to align with the sectoral changes necessary for the UK's carbon budgets. EUI can be crudely estimated with data produced by SAP, but it would be encouraged that the applicant uses PHPP (or CIBSE TM54 in non-residential) to estimate EUI. The requirement for TM54 calculations in non-residential is less divergent from national standards, in that TM54 is endorsed in Building Regulations Part L 2021 as a suitable method for the energy forecasting that Part L 2021 requires in new build non-residential over 1,000m^2.

Alternatively, to address the problems of inaccurate DFEE metric and the lack of an EUI metric in SAP, Sandwell BC could explore using emerging tools such as the South West Net Zero Energy Hub SAP Energy Adjustment Tool[xxv], which is now being utilised in practice by Cornwall Council and Bath & North East Somerset Council (titled 'Energy Summary Tool'). This tool starts with SAP calculations for a home, then adjusts these to reflect the probable actual performance (in total energy use and space heating) by remedying SAP's underestimation of space heat demand and other regulated energy, and SAP's overestimation of unregulated energy.

Since the WMS does not affect the local plan's ability to require on-site renewable energy, **Approach 2 pushes the on-site renewable energy requirement to reaching net zero further** than Approach 1 by requiring that both regulated *and* unregulated energy use is matched by solar PV output, meaning the development is 'net zero' for *total* operational energy (whereas Approach 1 only required this for *regulated* energy, which can represent as little as 50% of the total). A supplementary target of 120

kWh/$m^2$$_{building\ footprint}$/yr is included under this policy requirement, which acts as a metric to ensure a building truly maximises solar PV on rooftops. That 120kWh/m2/year figure is reflects the feasible provision of PV demonstrated in other local plans' evidence bases; however, it may need to be adjusted to reflect the amount of sunlight that Sandwell gets compared to those other local plan areas (such as Cornwall, Bath/Somerset, Essex and Oxfordshire).

It is important to note that because a fixed EUI limit is not required in Approach 2, a **large amount of solar PV may be required to match total energy use**, which in some cases may not be feasible on-site. By contrast, if there were an EUI limit in place (as in Approach 3 later), this would limit the amount of solar PV needed (and indeed the exact specific amount of necessary solar PV to reach net zero can be modelled). Without an EUI limit in place, the amount of solar PV needed for net zero can significantly vary from house to house depending on the degree of energy and fabric efficiency.

In Approach 2, assuming a building has reduced energy demand sufficiently that the resulting energy demand can be met using solar PV that can fit on the building's own rooftop, true net zero will have *technically* been achieved. However, the building would still most likely not fulfil the industry best practice frameworks for compatibility with the UK's carbon goals (as per LETI and RIBA previously cited), which are instead defined by EUI and space heating demand limits in addition to the solar provision. Essentially, as previously mentioned, **true net zero in Approach 2 may require more solar PV than in Approach 3**. This additional solar PV comes with associated embodied carbon, cost and grid infrastructure burdens.

Another key improvement from Approach 1 is the offsetting approach. Where Approach 1 involves *carbon* offsetting (i.e. any residual *carbon* to a 100% TER reduction, with a payment per tonne of *carbon* emissions), **Approach 2 approaches offsetting under an energy framing (a payment per kWh of energy use not matched by onsite renewable energy generation)**. Only the shortfall in renewable energy can be offset; this means that the 63% TER reduction through energy efficiency must be achieved on site, as it cannot be offset. Additionally, the offset price per kWh of missing renewable energy generation can specifically be set a value that directly represents the cost of installing renewable energy, to raise funds that will be sufficient to install the residual renewable energy elsewhere in Sandwell.

Additionally, offsetting through renewable energy projects ensures that this policy **avoids forcing other sectors (land use or existing buildings) to pick up avoidable excess carbon of new buildings**. As discussed in the previous report, the UK's carbon budgets will need steep drops in carbon emissions from all sectors, meaning every sector faces a large challenge and is unlikely to have ability to pick up slack from other underperforming sectors. This aspect of the 'energy offsetting' approach helps with overall climate outcomes, given that the offset fund will directly deliver what was missing on site (i.e. renewable energy generation, not tree planting or other uncertain interventions whose carbon saving cannot be reliably measured). Offsets may be made via Section 106 payments to follow precedents, or the developer could contribute directly to the expansion of renewable energy schemes in the area.

Embodied carbon standards in Approach 2 are improved. The WMS does not impose any constraints on embodied carbon standards. Reporting for major schemes is required (same as in Approach 1), but also a backstop target is set for large scale schemes to prevent excessive embodied carbon emissions. This backstop target is here set to reflect a business-as-usual embodied carbon figure which is therefore cost neutral[xxvi] and thus does not impact viability. As it does not improve on business-as-usual, it also does not represent best practice design; however, it does however ensure that applicants do not perform worse than average. This limit has been used in at least on adopted precedent (Bath & North East Somerset 2023[xxvii])

There may be scope to tighten this embodied carbon target, as other more recent studies have estimated that current standard practice could be as low as **600 kgCO_2e/m^2 GIA** (see 2023 evidence[xxviii] from South Oxfordshire and Vale of White Horse emerging local plan). That study found that this was the maximum embodied carbon value across residential and non-residential typologies with current building regulations (Part L 2021). Therefore, this target can also be considered cost neutral, as the materials and specification assumed under this scenario of current Building Regulations are already applied. However, there is no adopted precedent for embodied carbon policy at this value, meaning additional planning risk would be associated with this lower emissions limit compared to the limit of 900 kgCO_2e/m^2 shown in the Approach 2 risk matrix. The mandatory embodied carbon reporting will generate data that could be used to set a custom benchmark from which to base future targets in future iterations of the Sandwell plan policy.

In summary, the required standards in this Approach test the boundaries of the 2023 WMS, yet all of the mandatory energy standards are based on the national calculation models SAP and SBEM (as used in Part L of Building Regulations). Therefore, **they all are safely within the Planning and Energy Act 2008 powers to set "reasonable requirements"** for energy efficiency and a proportion of energy to be met with local renewable supply, which is primary statute and cannot be overruled by non-legislated policy such as the 2023 WMS. Given the climate crisis and the UK's carbon budgets, it is 'reasonable' to require 100% renewable energy so long as this can be demonstrated viable using appropriate cost estimates.

There is still 'medium' climate risk because of the shortcomings of SAP in terms of accurate prediction of energy use, but this weakness is somewhat reduced in the following ways:

- Requiring use of a methodology proven to reduce or eliminate the energy performance gap.
- Encouraging use of a guideline EUI target.
- Requiring that on-site renewable energy generation matches not only regulated, but also unregulated energy use (as opposed to Approach 1 which only covered regulated).

Approach 3 – Overcome the WMS

Low risk for climate, high risk for planning

Scope	Policy requirements	Climate (2˚C carbon budgets)	Occupant energy bills	Future retrofit costs/ disruption	Electrical grid readiness	Delivery/ sector readiness	LPA internal capability	Build cost	Planning powers/ precedents	Compatibility with national approach
Energy efficiency	EUI limits using PHPP/TM54 (Homes: 35kWh/m^2/year; Non-residential: varies by typology)	0	0	0	0	3	2	3	5	5
	Space heat demand limit of 15kWh/m^2/year (predicted with PHPP/TM54)	0	0	0	0	3	2	3	5	4-5
	No fossil fuels (i.e. heat pump or similar required)	0	2	0	2	1	1	1	1	0
Performance gap	Process to remedy performance gap	0	0	0	0	3	3	2	2	2
Renewable energy	Onsite PV to match total energy use, including unregulated (estimated with PHPP/TM54); output must demonstrate at least 120 kWh/$m^2_{\text{building footprint}}$/yr	0	0	0	3	2	2	3	4	4
Offsetting	Offset any shortfall in on-site renewable energy generation to match total energy use (via S106 or direct investment); at cost of delivering that renewable energy (set as £/kWh)	1	1-2	1-2	3	1	2	1	3	3
Embodied carbon	Embodied carbon reporting for major development using RICS WLC[xxix] methodology; LETI-aligned targets set for large-scale development	2	No impact	No impact	No impact	3	4	3	4	4

Actively reduces risk	0
Low risk	1
High risk	5

The final policy option proposed, Approach 3, supports a position that **diverges from the 2023 WMS,** specifically the WMS' stipulation to express any energy efficiency requirements as % TER reduction. This would involve justifying this divergence from the WMS, making the argument at examination on the grounds that the WMS' purported constraints are unjustified in that to follow the WMS would inhibit or even prevent the fulfilment of the local plan's legal duty to mitigate climate change. Clearly this policy approach comes with additional planning risk, but should still be considered due to the climate mandate.

Although this Approach will come under greater scrutiny at examination and greater opposition from objectors due to the WMS2023, a WMS is not a fixed and final rule that must always be followed. The Courts have placed emphasis on the point that planning guidance from the Secretary of State "does not amount to a legal rule, and that **local decision-makers are free to rely on local or exceptional circumstances** as to why a departure from that national guidance is considered to be justified" (Keep Bourne End Green v Buckinghamshire CC & SSHCLG [2020] EWHC 1984 (Admin) at §105).

If local circumstances are demonstrated to show that there is a need for alternative metrics and standards such as those proposed in Approach 3 and that these are viable in the local area, then it can be defensible to diverge from the WMS. This will **still need to be backed by robust evidence of viability based on costings[2] of the proposed policy**. This could draw on the itemised costs in evidence bases of existing and emerging plans that have similar requirements, such as Cornwall, Bath & North-East Somerset, Central Lincolnshire, Essex, and South Oxfordshire and Vale of White Horse.

Demonstration of such local circumstances would require a substantial evidence base to support departure from Building Regulations. An evidence base of local feasibility and cost assessments testing energy-based metrics against Building Regulations would constitute strong evidence. This could be further strengthened by evidence that the specified energy metrics are necessary to hit the national and local carbon reduction commitments (this argument relating to national carbon budgets, and insufficient national action towards them, was outlined in the previous report, and the ways in which policy Approach 3 remedies this are discussed on this page). Engagement with local residents might further strengthen this approach if it demonstrates that residents are unsupportive of Building Regulations metrics and prefer industry-proven metrics that will deliver energy efficient homes with low running costs and help directly deliver the committed carbon goals. Additionally, **emphasising the local plan's duty to meet local carbon budgets that align with the UK's legally-binding 2050 net zero target** is an essential piece of evidence to support the need for stronger policy that departs form Building Regulations.

As previously discussed, it is the view of Bioregional that the 2023 WMS places only minimal additional planning risk on Approach 3 for non-residential development. The general position of the WMS places constraints on the energy efficiency metrics that can be sought in *residential* development, but its preferred metric is not applicable to non-residential development. Therefore, the **elevated planning risk levels in the matrix above primarily apply to residential development** and would be reduced if this EUI-based approach were only applied to non-residential development.

Approach 3 essentially reflects the operational net zero carbon definition proposed by the range of industry experts that form LETI, which was promoted in Task 1 of the original appointment. Central Lincolnshire successfully adopted this policy approach in April 2023, whilst Cornwall Council and B&NES had slightly less stringent versions of this approach adopted in January 2023. Various other councils are in the process towards bringing identical or similar approaches to be tested at examination (e.g. Greater Cambridge, South Oxfordshire & Vale of White Horse, and Uttlesford supported by evidence at Essex level). Where these policies have successfully been adopted, the success at examination is largely down to robust evidence bases that include feasibility[xxx] and cost[xxxi] assessments on policy delivery, in addition to demonstrating the necessity for these policies in order to deliver on their duty to mitigate climate change. **However, please note that all of the successfully adopted plans to date that use policies like Approach 3 were examined and adopted before the WMS2023.**

The use of PHPP or TM54 energy modelling methods (to evaluate performance against the targets) reduces risk to climate, occupants, and future retrofit needs, by providing a far more accurate prediction of energy use compared to the industry's usual Part L SAP.

The space heat demand limit reduces risk of in-use carbon emissions, energy costs, and future retrofit needs. It also supports health and comfort as the home will be less subject to temperature fluctuations or condensation. Note that this metric has the same numeric target sought in Approach 2, but is calculated with the more robust and accurate PHPP modelling tool, instead of using the proxy metric of SAP DFEE.

The **EUI limit effectively mandates the use of a heat pump** as these are ~300% efficient (allowing them to fulfil a 15kWh heat demand using only 5kWh of electricity, thus reducing the overall energy use). This ensures the use of low carbon heat which is a crucial element required for the achievement of the UK's carbon budgets as noted in the previous report. This implicitly **rules out fossil gas systems and direct electric heating**, thus saving energy bills, minimising the additional demand on the electricity grid, and sparing the occupant from the disruption and cost of future retrofit. Because of the superior efficiency of heat pumps, their running costs are typically similar to gas, but here the occupant may benefit from even lower bills because onsite solar PV is also required.

[2] Estimated build cost uplifts for Approaches 1, 2 and 3 as outlined here can be assembled for the subsequent evidence base to be produced for Sandwell (Output iii within our appointment, as described in the current report's introductory overview. However, some of Sandwell's existing draft policy requirements cannot currently be costed within the current appointment, because they will vary so much depending on the individual site context (e.g. 'connection to decentralised energy networks') and there is almost certainly a lack of existing evidence in the public domain to derive a reliable, universal cost uplift that could be reasonably applied all across Sandwell plan area within the viability assessment. Therefore if Sandwell retains policy requirements like that, they will need to be carefully worded to allow the policy to respond to feasibility and viability for each site that is affected by those policies.

The limits on space heat demand and EUI both reduce the demand placed by the development on electrical grid capacity (however, see also commentary further down regarding the potential additional grid capacity demand that may be exerted by on-site PV).

It important to note that overheating risk becomes a greater concern as buildings become more energy efficient and thermally insulated. Overheating risk can decrease comfort or even safety of residents. Integrating overheating risk mitigation assessment requirements into policy alongside operational energy/carbon requirements works towards a well-rounded policy approach, that can address climate change mitigation and adaptation holistically.

Overheating and operational energy/carbon should be treated together, for example to ensure that the development does not increase overheating risk by excessively pursuing solar gain to reduce heating demand, and that the design does not require energy use for active cooling now or in future predicted climate conditions within the building's lifespan. Therefore, it is important that passive cooling measures are prioritised and active cooling measures are only used as a last resort, because active cooling would increase energy consumption and subsequent associated carbon emissions. Design elements such as building form, orientation, shading and passive ventilation should be decided at the earliest possible stage to ensure passive measures are maximised and overheating is sufficiently addressed.

The renewable energy targets will mean that the building's roof must be oriented to maximise solar PV generation. This may require adjustment to volume builders' standard designs on some sites, but the **target has proven achievable without changing the design or orientation of existing ordinary new builds** in Central Lincolnshire[xxxii]. Please note that as with Approach 2, the 120kWh/m2footprint/year target for PV is taken from the feasible target evidenced in other local plans' evidence bases, and may need adjustment to what is feasible in the Sandwell context considering regional differences in annual solar irradiation.

Aside from non-compliance with the 2023 WMS, another high-risk policy element to planning acceptability is the setting of targets using PHPP, which is not a method used to fulfil national Building Regulations (SAP / SBEM), thus could be argued to diverge from the definition of an 'energy efficiency standard' that the Energy and Planning Act empowers local plans to require. Acceptability will become better understood in the next year as some local authorities continue to push ahead with EUI-based policies, even in light of the 2023 WMS.

Some adopted plans with this policy approach have set requirements for major development's energy target compliance to be shown using PHPP or TM54, in supplementary guidance documents at Bath & North East Somerset Council[xxxiii] and Cornwall Council[xxxiv]; albeit these documents were not tested at examination. This risk primarily applies to PHPP, given that TM54 is now acknowledged in Part L 2021 (non-residential) as a suitable method for energy forecasting, thus should now be considered to have been 'endorsed … by the Secretary of State' as per the definition of an 'energy efficiency standard' laid out in the Planning & Energy Act 2008.

This approach is also subject to risks relating to the industry's readiness to deliver all of the measures at scale – such as availability of construction materials and systems that perform well enough, and also potential constraints in the number of professionals familiar with the required skillset to design, deliver and verify such high-performing buildings. That is not to say that these skills and materials do not exist, but that further studies may help to bolster the evidence on whether this could constrain the speed of housing delivery to a point that would affect Sandwell's achievement of housing targets beyond the existing construction skills shortage that already constrains housing delivery even without the policy.

This approach has **some level of risk relating to infrastructure readiness**. The extensive on-site PV will export energy to the grid at times of peak generation and low onsite energy demand. This is part of the necessary solution to net zero carbon: the export of clean energy reduces the need for fossil fuel use at power stations, balancing out the times when the building must draw power from the grid. However, in some locations, the grid may not be ready for these exports without capacity upgrades. This **risk could be reduced by energy storage** (batteries; hot water tanks) or other smart 'demand side response' system. It should also be noted that extensive upgrades to grid capacity and 'smart grids' will be essential as part of Sandwell's (and the UK's) net zero carbon transition of the *existing* buildings and transport sectors anyway even in the absence of this local plan policy; these capacity upgrades should not be assumed to have been triggered solely by a local plan policy for new development rooftop PV.

The renewables and offsetting approach would mean that the building must have enough renewable energy capacity to generate an equal amount of energy to what the building uses per year. The policy would expect this to be delivered on-site, but if necessary it can be delivered on other buildings' roofs or separate land in Sandwell. This is the **most reliable and climate-safe offsetting option we have identified**, as it is easily measurable, and clearly additional to what would happen without the funding. This offsetting approach aligns with best practice but still has a minor level of risk to the climate as some offsetting projects may not achieve entire equivalency or pure additionality.

Like Approach 2, this policy Approach 3 uses '**energy offsetting'** instead of 'carbon offsetting'. This requires a £/kWh cost metric, which is agnostic to the carbon factor of the grid and allows more specific allocation of funds on projects based on what specifically has been offset (either residual total energy use or deficit in on-site renewable energy generation).

Nevertheless, this offsetting approach has 'low' rather than 'zero' risk for climate. This is because the carbon budgets require such drastic cuts that all buildings and most sectors will need to become net zero carbon on their own terms, meaning that as we near the net zero carbon end-goal there will be very little room for trading carbon savings between sectors. The **built environment is one sector that is expected to be able to become net zero without offsetting**; the UK's capacity to generate 'carbon credits' should therefore primarily be reserved for hard-to-abate sectors, such as aviation and agriculture. This would mean that existing buildings will probably eventually need their own roof space to deliver their own renewable energy to eliminate their own carbon, rather than being able to lend that roof space to eliminate the carbon of new buildings. Alternatively, delivering the renewable

energy generation equipment on open land would compete with other land uses vital to the UK's carbon reduction trajectory such as woodland creation to capture carbon, or local food production. Any impact on Green Belt or other landscape protection designations could also potentially constrain the ability of Sandwell to bring forward off-site large scale renewable energy as scheme to offset new builds' carbon.

In this Approach 3, embodied carbon policy is maximised to industry best practice (LETI embodied carbon targets). The policy requirement for an embodied carbon limit is only applicable to large-scale development (i.e. more than 50 dwellings or more than 5000 m^2 non-residential floorspace) so that minor development, and even major development under that limit, would not be hit by the increased build costs of this. This higher threshold was set in recognition that the cost of assessment itself can be more of an impact on smaller developments, compared to larger developments that can spread the cost of assessment across their larger sale value. The cost of assessment does not scale up in direct proportion to the development size, because large-scale developments typically consist of a small number of repeated home types (or similar floor space) that can be assessed together for their embodied carbon, creating an economy of scale.

The **2023 WMS poses no additional risk regarding embodied carbon,** as the WMS2023 only relates to energy efficiency policies.

Please note: This higher level of embodied carbon targets shown in Approach 3 would also be equally compatible with Approaches 1 or 2, provided the overall policy suite remains viable as a whole. These enhanced embodied carbon standards have here been shown only for Approach 3 so as to fully differentiate the three Approaches so that they represent three distinct levels of ambition in each of the different policy themes; from lowest ambition (Approach 1), to medium (Approach 2) or high ambition (Approach 3). As Approach 3 represents the highest level of energy-related ambition, it is here shown with the highest level of embodied carbon ambition too.

A note on cost uplift, and making policies responsive to viability in Sandwell

To be found sound at the local plan's examination, it will be necessary to show that the policies' mandatory requirements do not negatively affect viability to the point where it would inhibit delivery on the necessary housing targets.

As previously noted, the "build cost" risk scores we have presented are not exact costings but an expression of the relative difference that it is anticipated each policy component might make (comparative between the three different Approaches) from the baseline of building regulations Part L compliance. Our understanding of the likely build cost uplift is based on recent prior experience of the % cost uplift that these different combinations of measures tend to add to a typical base build cost, based on studies from central government and other local plans' evidence bases.

The actual impact on of these policies on *viability of development in Sandwell* will depend on the land values, sales values, and regional build costs and labour.

In many other local plan evidence bases it has been shown that similar policies' build cost uplift could be absorbed within the available profit headroom and thus development would stay viable in enough of the respective value areas to still enable the housing delivery targets.

However, it has been raised by Sandwell BC liaison that Sandwell's recent viability work indicates value constraints across the Borough, which might make development unviable in many cases even in the absence of policy. That viability assessment also modelled an allowance for net zero carbon policies of approximately £6,000-£6,500 uplift on the regional baseline build cost. With that uplift, viability was further impacted. It has been verbally expressed by Sandwell BC liaisons that the anticipated way to unlock this problem (even in the absence of net zero carbon policies) is to improve sale values of completed buildings through long-term regeneration projects, which would be grant-funded.

However, it is understood that Sandwell's preference is to identify policy options that would fit within that £6,500 allowance, so that the local plan will contain policies that can be more widely and strongly implemented as sale values are improved over time (and as low carbon techniques and technologies become the norm through market and regulatory mechanisms, which would have the effect of both reducing the cost uplift from the baseline).

In light of these viability challenges and the Council's desire to have some solid policies to use in future if not today, it has been suggested that policy options should be identified that might be configured so that they could be applied to the extent viable at the time and site.

The policy Approaches 1, 2 and 3 presented within this report each consist of a set of different policy components, which could be modularly applied if full compliance is not viable.

This modular approach, and several other suggested ways that the policy could be made flexible to viability, are summarised as follows:

- **Modular application of each component following the energy hierarchy** – i.e. where if it is not viable to meet all of the policy components, then the proposed development should meet as many of the steps as possible, in the following order:
    - 1. Energy efficiency (e.g. space heat demand target, energy use intensity target, or TER % reduction from energy efficiency)
    - 2. If step (1) is met and there is further viability headroom, then also meet the renewable energy and/or offsetting requirement.
    - 3. If steps (1) and (2) are met and there is further viability headroom, then also meet the embodied carbon requirements in the following order:
        - a. embodied carbon reporting only
        - b. meet embodied carbon target of 900kg/m^2 floorspace
        - c. meet enhanced embodied carbon LETI-aligned targets
- **Word the policy to step up the targets over time with specific dates**
- **Word the policy to be waived in specific contexts**, e.g. low-value areas and/or social housing (but consider not waiving energy efficiency targets, to mitigate fuel poverty)
- **Include in the policy a general exemption clause** where the applicant can robustly demonstrate that viability constraints prohibit policy compliance for a specific application.

Meanwhile, we would like to flag that there is some evidence that home sale value rises in more energy-efficient buildings. This may be further explored in the subsequent evidence base assembly that forms Output iii within Bioregional/Edgars' current appointment for Sandwell. If that exploration can identify sufficiently robust evidence that there is a sale value uplift for improved energy efficiency, it would be reasonable to reflect this in the viability assessment (depending on the viability consultant's expert judgement).

Justification evidence requirements for policy approaches

The higher the level of ambition in the policy (and the more it diverges from national metrics and national building regulations standards), the more robust evidence required. Therefore, before a decision is made, it is important to consider the scale of evidence that would be required to appropriately defend the preferred policy position.

As outlined in the introduction to this report, one of the next stages in this appointment is to produce evidence to justify whichever carbon policy approach Sandwell selects for its next stages of plan development, where necessary beyond the evidence already identified in the previous Literature Review (Output i in this report suite).

The table overleaf sets out general evidence that should ideally accompany each of the three assessed policy Approaches, in order to be able to robustly defend them. It is important to highlight that not everything we have identified as desirable evidence may be readily available, which we have recognised in the table overleaf with the red and orange boxes based on our other recent experience of assembling local plan evidence bases. Some cells have been merged across the policy options for one evidence requirement, which means that the evidence content will not differ significantly between approaches. Cells that have not been merged, even though the status of the evidence requirement is the same across the three approaches, means that the content of the evidence should be specifically tailored to the differing policy standards under the respective policy approach.

Where two colours have been given for an evidence requirement of a particular policy approach, this means that we have identified two different desirable evidence points that both contribute to the same evidence requirement, but these two evidence points differ in their availability. To use requirement 11 as an example, application acceptance rates – to demonstrate that housing supply is not impacted higher policy standards – should be readily available but supply chain data on materials and presence of a skilled workforce may not be available in the public domain.

The majority of evidence topics are relevant to all three Approaches, primarily because they are needed to satisfy the four NPPF tests of soundness. For example, no matter what standard is set, feasibility and viability are core issues that Sandwell must be ready to demonstrate at examination. Additionally, since all three Approaches exceed standards proposed under the Future Homes Standard, all three should be supported by evidence that the FHS is insufficient to deliver on local and/or national carbon budgets (requirement 6) and that it will have an excessive impact on grid infrastructure upgrades and capacity (requirement 8) due to a lack of energy demand mitigation through poor fabric measures in the FHS. (Regarding the evidence of 'need to exceed Building Regulations in order to satisfy the climate mitigation duty', much of this evidence is already provided in the separate Literature Review report).

The three instances where evidence is not required are all because the evidence requirement is not relevant to any policy component in that Approach. There are a number of evidence points that are not entirely vital for a particular Approach's policy component, yet would be desirable to further strengthen the justification. One example is demonstrating the effectiveness of absolute energy metrics over Building Regulations, for Approach 2. Approach 2 requires absolute energy metrics to be reported, but no target limit is set using these metrics as a policy requirement. Therefore, no cost uplift is associated with this policy component, but it is still important to address why this policy requirement is necessary or desirable, to fully justify its inclusion (i.e. that this policy requirement educates and compels developers to understand the building's actual probable energy use rather than relying on inaccurate Building Regulations metrics, and that data gathered through this requirement can form the basis of benchmarks that would be invaluable to inform future policy targets in later iterations of the local plan).

Blue boxes in the table overleaf denote where there would be an element of input needed from Sandwell to maximise robustness for certain evidence requirements. For evidence requirement 2 (feasibility of offsetting), this entails an understanding of the willingness and capacity of Sandwell BC to deliver offsetting projects and spend the resulting offset fund. This could follow a council-led or partnership-led approach, with the latter being driven by project delivery through external organisation mechanisms such as a local community energy group or housing provider. Requirement 8 (impact on grid capacity) may also need input from Sandwell through provision of any local studies or data on grid connectivity issues in particular areas, depending on the capabilities of whoever carries out the study to produce this evidence.

Please note that some elements of desirable evidence may not be available to the consultants or Sandwell BC, hence why the high risk of availability has been marked. For example, a detailed assessment of grid connectivity across Sandwell would be helpful but would need highly specialist input, and instead Sandwell may choose to revert to a high-level overview on grid connection trends in Sandwell. Similarly, a detailed Sandwell-specific assessment of supply chain readiness to deliver on these standards (and its impact on housing supply) could be challenging as there is no standard assessment approach for this.

Overall, the evidence requirements are similar throughout all options, but Approach 1 is the least intensive because evidence points 4, 9 and 11 are not necessary.

- The only difference between the necessary requirements for Approaches 2 and 3 relates to requirement 1, where standards and associated cost/feasibility data for Approach 2 is more bespoke and therefore may be more difficult to robustly amalgamate.
- Contrarily, there are multiple proven existing evidence bases that directly align with the standards proposed under Option 3, thereby providing a highly reliable collection of cost and feasibility data.

✓	Evidence required – input from Sandwell BC	**Approach 1 – Fully WMS compliant**		**Approach 2 – Testing WMS boundaries**		**Approach 3 – Overcome the WMS**	
✓	Evidence required – readily available						
✓	Evidence required – high risk of availability						
✓	Evidence required – low risk of availability						
✕	Evidence not required						
1. Feasibility and viability of operational carbon/energy build standards		✓	✓	✓	✓	✓	
2. Offsetting is viable and feasible		✓		✓		✓	
3. Embodied carbon requirements are viable and feasible		✓		✓		✓	
4. Arguments why the 2023 WMS should not be applied		✕		✓		✓	
5. Demonstration of local circumstances to justify departure from Building Regs		✓	✓	✓	✓	✓	✓
6. Future Homes Standard insufficient to deliver on local carbon budgets		✓					
7. Feasibility of grid connection for on-site PV generation		✓	✓	✓	✓	✓	✓
8. Impact of building to FHS on grid capacity/infrastructure		✓					
9. Demonstrate effectiveness of PHPP over SAP/SBEM		✕		✓		✓	
10. Demonstrate effectiveness of absolute energy metrics over Part L metrics		✕		✓		✓	
11. Supply chain readiness/housing supply		✓	✓	✓	✓	✓	✓
12. Arguments why the policy option aligns with the 2023 WMS							

Next steps

Sandwell now has the opportunity to select a policy approach that represents the desired level of ambition and risk, depending on the Council's appetite for risk and any prior commitments it may have made to specific carbon reduction or other climate targets. Any of the options assessed throughout the risk matrix exercise could be selected, or used as a basis to develop a more tailored policy suite to suit needs and ambition of Sandwell.

Approach 1 represents a safe route to compliance with the WMS, whilst exceeding Building Regulations standards to an extent, yet does not go far enough to create true net zero buildings that are needed to align with the UK's legally-binding carbon budgets. This option therefore represents the safest option in terms of planning risk but poses significant risk to the climate and could cause future disruption to occupants and the electricity grid.

Approach 2 represents a strong middle ground between compliance with the WMS and showing additional ambition to create robust net zero policy. The standards suggested, if achieved on-site, could create true net zero buildings due to the requirement that on-site renewable energy matches both regulated and unregulated energy use. However, the energy used within the building will be higher than recommended and result in additional strain on local grid infrastructure. Additionally, a performance gap (gap between energy prediction and actual energy use) is likely the use of SAP to calculate the energy use and carbon reductions.

Approach 3 is the ambitious best practice approach that aligns with the scale of action needed in the new build sector for the UK's carbon budgets, and importantly has the lowest risk for occupant bills and future retrofit disruption/costs. However, to reiterate, this option will undoubtably require extensive evidence to support such an ambitious approach at examination, which must importantly demonstrate local circumstances to justify departure from Building Regulations metrics. Importantly, Approach 3 utilises a sophisticated modelling tool, PHPP (or TM54), to predict energy use and space heating demand that will better align with in practice energy performance.

As mentioned previously, the three Approaches represent three selections of individual policy components that could be adjusted upwards or downwards or combined differently. Bioregional views each option as the best representation of the sliding scale of ambition.

Optimism remains throughout industry that the 2023 WMS will not act in practice as intended – to confuse and slow progress of local authorities developing ambitious net zero policies. With the WMS facing a High Court challenge in June 2023, its weight granted in planning decision making may deteriorate, as was the fate of the preceding 2015 WMS in the recent legal case decision on the Salt Cross Area Action Plan that deemed the 2015 WMS was incorrectly applied (this plan proposed EUI-based policies). Additionally, pre-action legal correspondence[3] between a coalition of local authorities and the Secretary of State shows that the Secretary of State concedes that the WMS2023 does not constrain or inhibit the exercise of local planning powers granted by legislation, and that the WMS2023 is only a material consideration alongside the various other material considerations. Therefore, although the WMS2023 is bluntly worded, the degree to which it constrains the formulation of net zero local planning policy should not be over exaggerated.

The immediate next steps will be:

- Sandwell BC to consider the findings of this report and the separate Literature Review
- Sandwell BC to select a policy approach (or combination of approaches) based on the insight from these and their interpretation of Sandwell's priorities, and feed this decision back to the consultant team
- Consultant team to draft policy wording according to Sandwell's selected policy approach
- Consultant team to assemble any further evidence needed to justify Sandwell's selected policy approach, beyond what was already covered in the Literature Review report. This may include cost and value evidence, such as:
    - Exploring existing published evidence of the build cost uplifts associated with the selected policy approach (to ascertain whether these could be accommodated within the £6,500 allowance already made in Sandwell's previous viability assessment)
    - Exploring existing published evidence of the potential sale value uplift that might be achieved through improved energy efficiency policy compliance which could also support viability.
- Consultant team to produce a separate report on the potential mechanisms and governance for a carbon/energy offsetting fund, assuming Sandwell's selected policy approach will include an element of offsetting (whether immediately, or as a future requirement).

[3] This correspondence is not yet published at the time of writing this report, but copies were shared with the authors of this report by the legal representative of that coalition of local authorities. It is expected that copies will soon be published by a planning body along with interpretive commentary very soon.

Appendix: How does Sandwell's existing draft policy suite fare in the risk matrix assessment?

The 'risk matrix' evaluation approach in this report was designed to comparatively assess potential policy approaches to carbon and energy performance improvement that follow a similar structure and themes (based around the energy hierarchy – energy efficiency, renewable energy, offsetting – and embodied carbon). The insights provided by the risk matrix evaluation are useful in that those policy approaches are directly comparable to each other in their relative merits. Additionally, the three policy Approaches 1, 2, and 3 devised in this report are designed to be specific enough to be have a relatively predicable impact on the risk topics (climate, energy bills, build cost, etc).

Any separate policy approach that does not have a similar structure or themes would not be directly comparable to the three policy Approaches 1, 2 and 3 that we have outlined until now. Therefore any risk matrix assessment of alternative policies that are not structured in the same way, or are not as specific, should not be read in direct comparison to the risk matrices for Approaches 1, 2 and 3 provided previously in this report.

However, we now nevertheless attempt to apply the risk matrix format to the existing draft Sandwell climate policies in order to give Sandwell BC a general indication of the likely effectiveness of the policies. These draft policies are those from the regulation 19 plan.

The approximated risk matrix table for Sandwell's existing draft carbon and energy policies is given overleaf. The main insights are that:

- **The lack of any requirements for improved energy efficiency or performance gap** leaves the policy open to high risks in climate, occupant energy bills, retrofit and potential grid capacity strain
- **Many of the requirements are not specific enough to be able to assess:**
    - feasibility (whether the industry is able to deliver them)
    - cost of compliance
    - impacts on electrical grid infrastructure.

  This will make it harder or impossible to assemble evidence to defend their feasibility and viability to pass the tests of soundness at examination.

- **Some of the requirements are not specific enough to be able to clearly identify whether a particular application has in fact earnestly implemented the policy** expectation (therefore bringing unidentified or higher risks in the topic of 'local planning authority internal capability' – although please note this is only our estimation and we recognise that Sandwell itself may have a very different level of confidence about its officers' ability to assess the kind of qualitative information that such policies would induce in planning applications).

Finally: A general insight here is simply that the risk matrix assessment is designed to evaluate very specific policy requirements that are quantified or yes/no; not qualitative ones. However, as above, quantified and yes/no requirements are more defensible with evidence.

Approximate risk matrix assessment of Sandwell existing draft climate policies (NOT COMPARABLE TO APPROACHES 1, 2 OR 3 GIVEN PREVIOUSLY)

Scope	Policy requirements	Climate (2˚C carbon budgets)	Occupant energy bills	Future retrofit costs/ disruption	Electrical grid readiness	Delivery/sector readiness	LPA internal capability	Build cost	Planning powers/ precedents	Compatibility with national approach
Energy efficiency	[No on-site energy efficiency standard proposed in Sandwell existing draft policies]	5	5	5	5	[no impact]	[no impact]	[no impact]	[no impact]	0 / no impact (because WMS2023)
	Overheating: "Minimise internal heat gain"	5 [because internal heat gains are a key step to low space heat demand, albeit should not be excessive]			cannot assess [will increase heat demand but may also reduce cooling demand]	3	4	cannot assess	[no impact]	[no impact]
	Overheating: Implement cooling hierarchy [but no verification/demonstration required]	3-4	3-4	3	3	3	4	cannot assess	1	1
Performance gap	[No performance gap requirement proposed in Sandwell existing draft policies]	5	5	5	5	[no impact]	[no impact]	[no impact]	[no impact]	[no impact]
Renewable energy & decentralised energy [assume district heating]	Renewable provision to match the following % of "residual energy demand": 10% in minor 20% in major [unspecified whether % of total energy, or % of regulated energy only]	3 [unknown how much difference this policy target would represent compared to PV provision in the Building Regs or the FHS 2025 – which are expressed in kWp per footprint area, which vary by building shape/size, therefore the % of energy use met will also vary. However, it may be better than no requirement, as the FHS may not include any renewable energy at all]		4	2	2	2	cannot assess [because unknown / variable how much difference to Building Regs PV provision]	1	1
	"Demonstrate opportunities" to use decentralised energy [presume district heat]	[cannot assess]	[cannot assess]	[cannot assess]	[cannot assess]	3	4	1	1	1
	Connect to decentralised energy if present (or be ready to connect if imminent) [presume district heat]	1 [if gas-free. 5 if gas CHP.]	3-4	1	1	3	[cannot assess]	cannot assess [varies by site; may be significant]	1	1

Scope	Policy requirements	Climate (2˚C carbon budgets)	Occupant energy bills	Future retrofit costs/ disruption	Electrical grid readiness	Delivery/sector readiness	LPA internal capability	Build cost	Planning powers/ precedents	Compatibility with national approach
BREEAM	"Very Good" in minor until 2029 [note: there are no minimum energy credits for BREEAM Very Good]	5 [because there are no minimum energy credits for BREEAM Very Good]			[cannot assess]	1	1	1	1	1
	"Excellent" in major (and in minor from 2029)	3-4 [Because BREEAM Excellent does include some mandatory energy credits, but these don't necessarily have to be earned through actual improvement to energy or carbon performance, as they can also be earned through accurate prediction of energy use. Therefore there is no guarantee that a BREAM Excellent building will necessarily have improved energy use or carbon emissions compared to in absence of this policy.]			[cannot assess] [as BREEAM mandatory energy targets for 'Excellent' can be achieved through any energy measure]	1	1	2	1	1
Offsetting	[No offsetting requirement proposed in Sandwell existing policies, as also no carbon reduction target to be complied with]	4-5	[no impact]	[no impact]	[no impact]	[no impact]	[no impact]	[no impact]	[no impact]	[no impact]
Embodied carbon	No requirement for embodied carbon reporting or targets currently in Sandwell policies	5	[no impact]	[no impact]	[no impact]	[no impact]	[no impact]	[no impact]	[no impact]	[no impact]

RISK SCORING KEY	
Actively reduces risk	0
Low risk	1
High risk	5

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[xviii] Based on the TFEE figures given in the Future Homes Hub (2023) "Ready for Zero" report appendix F, averaged across all home types modelled. That appendix used SAP10.2 modelling therefore its energy predictions will be subject to the energy performance gap (underestimation of actual energy use in operation) as outlined in our previous report. This means that in reality, the homes would have a much higher space heat demand and total energy use intensity than modelled in the Future Homes Hub report appendix. https://irp.cdn-website.com/bdbb2d99/files/uploaded/Appedix%20F%20-%20final.pdf

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