Appendix 1 - Policy X A – Net Zero Operational Carbon in New Build Residential Development

1.1 Operational carbon is an area where policy can ensure the provision of buildings that are fit for the future, both in terms of reduced energy consumption and holistic integration of design decisions that address climate adaptation. It is essential that housing developers prioritise these metrics and subsequent total energy consumption to best ensure that any on-site renewable energy can feasibly match total regulated energy use. If the energy use of a residential building is not mitigated in the first instance, on site renewable energy generation will likely not be sufficient to deliver a net zero building.

Policy X A - Net Zero Operational Carbon in New Build Residential Development

All new build dwellings (use class C3 and C4) are required to meet the following requirements:

A1.1 - Part L% improvement

1) At least a 63% improvement (reduction) on Part L 2021 TER (Target Emissions Rate) from energy efficiency measures.

2) Heat pumps are to be calculated as an energy efficiency measure, rather than a renewable energy measure.

3) As a measure in aid of this TER target, achieve an improvement (reduction) on Part L 2021 TFEE (Target Fabric Energy Efficiency) as follows:

   End terrace: at least a 12% improvement
   Mid terrace: at least a 16% improvement
   Semi-detached: at least a 15% improvement
   Detached: at least a 17% improvement
   Bungalow: at least a 19% improvement
   Flats/ apartments: at least a 24% (weighted average, whole block) improvement

   All of the above should be calculated using SAP10.2 or later version, or the Home Energy Model (HEM, once it has been implemented)

   In the event national building regulations exceed the requirements of this policy, the national standards (i.e. the higher standards) would apply.

A1.2 - Energy metrics guidelines

Or –

4) Positive weight will be given to development proposals which can demonstrate the following absolute energy metrics are met:
   - Total energy use: 35 kWh/m^2/year
   - Space heating demand: 15 kWh/m^2/year

5) Performance in these targets must be evidenced using a methodology that accurately predicts buildings' operational energy use. Suitable methodologies include the Passive House Planning Package (PHPP). Where a building achieves Passivhaus certification, it will be deemed to have complied with these targets.

A2 - No Fossil Fuels

6) The use of fossil fuels and connection to the gas grid will not be considered acceptable.

A3 - On-site renewable energy

7) On-site annual renewable energy generation capacity (in kWh) at least equal to the predicted annual total regulated and unregulated energy use (residual energy use in kWh after A1.1 has been achieved, plus unregulated energy use).

8) Where an on-site net zero regulated and unregulated energy balance is not possible[1], it should be demonstrated that the amount of on-site renewable energy generation equates to at least 120kWh/m^2 projected building footprint/year.

9) Where a building in a multi-building development cannot individually achieve the requirements of A3 this shortfall is to be made up across other units on-site. Innovative solutions, for example utilising PV canopies on car parks or solar PV on communal buildings should be demonstrated before carbon offsetting A4 is considered.

10) Regulated and unregulated energy use can both be calculated with Part L SAP or BREDEM, but a more accurate method such as PHPP is advised. Any other proposed methods are subject to Council confirmation of acceptability.

11) The annual renewable energy generation and the annual energy use are whole-building figures, not per-m^2 figures.

12) Renewable energy output should be calculated in line with MCS guidance for the relevant technology (expected to be PV in most cases).

A4 - Energy Offsetting

13) Only in exceptional circumstances and as a last resort where it is demonstrably unfeasible to achieve an on-site net zero regulated and unregulated energy balance, should any shortfall in on-site renewable energy generation that does not match energy use be offset via a S106 financial contribution, reflecting the cost of the solar PV that will need to be delivered off-site.

14) The energy offset price is set as £2.31/kWh based on cost of solar PV data from the department for Energy Security and Net Zero, and includes inflation and a 10% margin to enable administration of the offset fund to deliver off-site solar PV by the Council or its appointed partners. The price should be revised annually. This is set as a one-off payment, where the annual shortfall in on-site renewable energy generation is multiplied by the energy offset price. This amount does not need to be multiplied by any number of years.

A5 - Reduced Performance Gap

[1] Exceptional circumstances where an on-site net zero energy balance is not achieved may only be found acceptable in some cases, for example with taller flatted buildings (4 storeys or above) or where overshadowing significantly impacts solar PV output.

15) An assured performance method must be implemented throughout all phases of construction to ensure operational energy in practice performs to predicted levels at the design stage.

A6 – Smart Energy Systems

16) Proposals should demonstrate how they have considered the difference (in scale and time) of renewable energy generation and the on-site energy demand, with a view to maximising on-site consumption of energy generated on site and minimising the need for wider grid infrastructure reinforcement.

17) Where the on-site renewable energy generation peak is not expected to coincide with sufficient regulated energy demand, resulting in a need to export or waste significant amounts of energy, proposals should demonstrate how they have explored scope for energy storage and/or smart distribution systems. The purpose being to optimise on-site or local consumption of the renewable energy (or waste energy) that is generated by the site. Where appropriate, proposals should demonstrate that they have integrated these to optimise these carbon and energy saving benefits and minimise the need for grid reinforcements.

18) This may include smart local grids, energy sharing, energy storage and demand-side response, and/or solutions that combine elements of the above.

A7 – Post-Occupancy Evaluation

19) Large-scale development (100 units or more) is to monitor and report total energy use and renewable energy generation values on an annual basis. An outline plan for the implementation of this should be submitted with the planning application. The monitored in-use data is to be reported to the Local Planning Authority for 5 years upon occupation.

Reasoned Justification

1.2 As set out in the Climate Change Act 2008, national policy is working towards achieving the legally-binding UK target of net zero by 2050 and carbon budgets are subsequently legislated under the aegis of the act. These carbon budgets are linked to the Climate Change Committee's Balanced Pathway to Net Zero report, which is supported by analysis that sets out that all new buildings must be net zero by 2025. The 2050 net zero target is specifically referenced in the NPPF under paragraph 161.

1.3 The Planning and Energy Act 2008 sets out that local standards for energy efficiency in new homes are able to exceed those set in Building Regulations.

1.4 In the context of the 2023 Written Ministerial Statement, these policies are fully compliant with the perceived constraints it poses. The WMS only applies to energy efficiency standards where it states that any standards that exceed Building Regulations must be done so using the TER metric. Policy A1 remains within its bounds through the use of TER% reduction as the primary metric. The TFEE target is not additional to, but is a step towards, that TER target.

1.5 The 63% reduction target on Part L 2021 TER is set to align with national policy in that it is in line with the Future Homes Standard. Correspondingly, the TFEE target is set to align

with the performance of a home that achieves that TER target via the indicative FHS specification set out by the Government in the 2019-21 FHS consultation. This is necessary in order to reduce the space heat demand (which is necessary for the achievement of the UK's carbon budgets. It is also necessary in order to protect the resident from excessive energy bills and potential fuel poverty, as the latest FHS consultation indicated that the FHS carbon target could be achieved just with a heat pump and no fabric improvements, resulting in heating bills approximately double those of a current new build home.

1.6 A2 is aligned to the Government's direction of travel indicated by both the options proposed in the Future Home Standard 2023 consultation, in that no fossil fuel heating systems are proposed. A3 and A4 are not impacted because they address renewable energy, which is out of scope of the 2023 WMS.

1.7 Policy elements A1, A2 and A3 are to be addressed at the design and post-completion stages, to ensure that the development has been built to intended standards. Post-completion resubmission of the original energy statement including energy performance calculations, informed by the relevant tests to systems and fabric, should be required as a condition as part of the planning application process. A5 and A7 compliance should also be demonstrated post-completion through planning condition.

1.8 A1 – A7 are to be demonstrated at the planning application stage through submission of an energy statement, which should include associated output reports from energy modelling software (e.g. SAP, BREDEM, PHPP, or HEM when available for general use).

<u>The Non-Mandatory Energy Targets in Policy A 1.2</u>

1.9 The achievement of the energy efficiency performance levels set out in Policy A1.2 will reduce the amount of solar PV required under A3 for an on-site net zero balance. This can save the applicant costs in renewable energy provision and/or energy offsetting.

1.10 Performance against these non-mandatory targets would need to be calculated using a method that accurately predicts energy use. SAP is not suitable for this due to its poor predictive accuracy in the context of high-performance buildings. PHPP (Passivhaus Planning Package) is a suitable methodology, as it is widely recognised for its precision in predicting energy performance, particularly for low-energy buildings. Unlike SAP, PHPP has a proven track record of providing accurate energy use and heating demand predictions, ensuring that the development can meet its energy efficiency targets and reduce operational energy consumption effectively.

1.11 The Council may subsequently take a view on whether the incoming Home Energy Model (HEM) may be suitable, when HEM's final form is known.

<u>A2 – No Fossil Fuels</u>

1.12 The A2 No fossil fuels policy prohibits the use of fossil fuels within the operational phase of the development, specifically for energy purposes within the buildings, including heating, hot water, and electricity. The intent is to ensure that the development aligns with sustainability goals and supporting the transition to low-carbon energy sources. The restriction on fossil fuels does not apply to their use in construction activities or transport.

<u>Steps to Calculating and Narrating Amount of Renewable Energy Provisions</u>

1.13 Policy A3 should contain the following steps, to be expressed in an energy statement:

- First calculate the total predicted annual energy use in kWh for all proposed new buildings

- This can be modelled using SAP, BREDEM or PHPP. PHPP is the preferred model due to its accuracy, to avoid SAP's inaccuracies at predicting actual energy use in operation. The Council may later take a view on whether the incoming Home Energy Model (HEM) is a suitable method for energy use prediction when the final form of HEM is available.
- Then calculate the annual renewable energy generation for whole site in accordance with the MCS guidance for the relevant renewable energy technology. This does not have to be exclusively on the buildings themselves and can include provision of new standalone renewable energy installations within the site. The figure does not include renewable heat delivered by heat pumps, as that would count instead towards Policy A1.
- Deduct the annual renewable generation from the annual energy use. The result should be zero or less.
- If the result is not zero or less, explore how to provide more on-site renewable energy.
- If it proves unfeasible to increase renewable energy generation on-site to result in an annual balance of energy generation with energy use, then divide the total annual renewable energy generation by the building footprint. If this is impossible, provide evidence as to why this is not possible even with a PV area equivalent to 70% of projected building footprint and reasonably efficient panels available on the market.
- Calculate the residual energy demand (whole building, not per m^2) for all proposed new buildings are all measures proposed towards policies A1 and A3, then proceed to use this figure to calculate the required amount of offsetting provision in policy A4.

1.14 If a development cannot generate enough renewable energy on-site to balance the total regulated and unregulated energy use (as calculated after fabric efficiency improvements in Policy A1.1), the policy requires the renewable energy generation to meet a minimum of 120 kWh per square metre of projected building footprint per year.

1.15 Applicants should demonstrate compliance with this fallback target by providing a clear calculation of the renewable energy generated per square metre of the projected building footprint. This can be demonstrated in the Energy Statement by:

- Renewable energy system design, such as PV layouts, system capacities, and expected energy outputs
- Calculation of the renewable energy generated based on these designs, ensuring it meets or exceeds the 120 kWh/m^2 threshold for the total projected building footprint

1.16 If the 120 kWh/m^2 target cannot be met, the applicant must provide evidence explaining why, even with renewable energy provision up to the equivalent of 70% of the projected building footprint (including roof overhangs), it is unfeasible to meet this threshold. This should include details on the constraints (e.g., site limitations, technical or financial barriers).

<u>If Applicants Cannot Meet Policies A1.1 and A3</u>

1.17 If the requirements of Policy A1.1 (fabric efficiency) and Policy A3 (on-site renewable energy) cannot be met, applicants must demonstrate compliance through the energy hierarchy:

- Fabric efficiency: The first step is reducing energy demand through fabric efficiency measures (e.g., insulation, airtightness, efficient windows). If these measures can't

be met due to technical or site-specific constraints, applicants should provide clear evidence (e.g., feasibility studies or cost analyses) to justify why.

- Renewable energy: After addressing fabric efficiency, applicants must meet energy needs through on-site renewable energy generation. If fabric efficiency measures cannot be fully met, applicants can look to increase renewable energy provision, but they must still comply with overarching policy objectives.
- Submission requirements: Applicants should submit an energy statement that includes:
    - Predicted energy demand (kWh/year).
    - Proposed renewable energy contributions (e.g., PV output in kWh/year).
    - The percentage of energy demand met by on-site renewables.
    - Evidence of site-specific constraints preventing full compliance.

The Offsetting Calculation

1.18 The offset is a one-off payment, calculated by multiplying the annual shortfall in on-site renewable energy generation (in kWh) by the energy offset price (£/kWh). This represents the upfront cost of installing the equivalent renewable energy capacity that the developer has not provided on-site. Since it's a one-time contribution to cover this capital cost, it only reflects one year's shortfall – there's no need to factor in the building's lifetime or ongoing energy use.

1.19 The offset price (£2.31/kWh) is based on the national cost of solar PV deployment as published by the Department for Energy Security and Net Zero (DESNZ). This price reflects the average cost of delivering solar PV (including installation), adjusted to include inflation and a 10% uplift to support fund administration and delivery of offset projects. The Council may revise the offset price annually to reflect updated DESNZ cost data.

1.20 Flexibility in applying the offsetting requirement may be considered where it is robustly demonstrated that full offsetting would make social or affordable housing unviable due to site-specific costs that exceed assumptions in the Whole Plan Viability Assessment. In these cases, the Council may consider:

- Reducing the scope of energy to be offset, or
- Applying a discounted offset price where the Council is confident it can still deliver the equivalent renewable generation on a case-by-case basis.

Assured Performance Methods

1.21 These are processes to follow throughout design, construction, commissioning and building handover that reduce the energy performance gap (the gap between predicted energy use and actual energy use). These not only help keep the building's actual carbon emissions to a minimum (as opposed to their predicted emissions using inaccurate methods like SAP), but they also help to ensure occupant satisfaction. Suitable methods include (BSRIA Soft Landings, NEF/GHA Assured Performance Process, and Passivhaus certification. Alternative processes proposed by the applicant will be subject to consideration by the Council about their evidence-based merits.

Applicability to Outline Applications

1.22 Compliance with the policies will be conditioned at outline stage and must be confirmed in detailed reserved matters. However, the Council accepts that the degree of detail provided in the outline energy strategy will be less than for full and reserved matters applications. It is also recognised that this means the outline energy calculations may be largely based on

assumptions. The aim should be to demonstrate that options have been identified by which the development could comply with the policy targets, taking into account the broad mix of anticipated floorspace, typologies and site conditions. Statements made about estimated carbon and energy performance based on a high degree of assumptions at outline stage should be reassessed at detailed reserved matters, albeit the reserved matters may diverge in how the required compliant performance will be achieved.

1.23 Where more detail is known, it should be reflected in the outline application; for example if expecting to connect to a site-specific low-carbon energy source. For a further example, if expecting a limited number of repeated home types, then the energy modelling would ideally reflect similar archetypes and identify a specification by which they could meet the policy targets for energy efficiency and renewable energy (taking into account site conditions). The modelled homes could reflect, for example, a sample of a relevant housebuilder's 'products' most likely to be bult on site. This exercise benefits the developer in that it gives an early understanding of the degree of amendment needed to their existing regular specifications, allowing them to set up supply chains and economies of scale well in advance of commencing on site, as outline proposals typically are large-scale and take several years from outline application, to detailed design, to commencement.

1.24 Outline applications' estimated offsetting contribution should be stated in the outline Energy Assessment. These will be subject to a Section 106 agreement, but not paid at the time of the outline application. In that case the offset contribution must be recalculated within the subsequent reserved matters application, and paid on or prior to commencement of works on site for the reserved matters scheme. The reason for payment into the offset fund prior to commencement of works is so that the offset fund administrators are able to deliver the offset projects on a timescale not too dissimilar from the timescale for completion and occupation of the development. The aim is to enable, wherever possible, the offsetting project to be producing renewable energy no later than the development's occupants begin to place their demands on the grid.