Warwick District Council NZC DPD Examination Matter 2: Overarching strategy in achieving net zero carbon developments

Warwick District
February 2023

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Appendices

1 Question 2.1:

Are the aims and objectives of the DPD, as submitted, soundly based and do they form an appropriate response to the climate emergency declared in Warwick District?

1.1 The background and local context of the DPD is set out in Section 1 of the DPD [SUB1].

1.2 Warwick District Council (WDC) declared a climate emergency in June 2019 and committed to:

ii) Facilitating decarbonisation by local businesses, other organisations and residents so that total carbon emissions within Warwick District are as close to zero as possible by 2030. (DPD Para 1.11).

1.3 Following this, WDC adopted the Climate Emergency Action Programme in February 2020 recognising the important influence of planning in tackling climate change including possible actions:

- Ensure that the planning system, led by the Local Plan, sets developments and land use standards aimed at reducing carbon emissions and building sustainable communities
- Develop and implement policies that will deliver improved net zero carbon building standards - subject to national policy
- Ensure carbon reduction features and BREEAM standards are included in major development schemes. (DPD para 1.1.2).

1.4 The DPD further clarifies at para 1.1.5 that 'recognising that the Council had declared a climate emergency, the preparation of a Climate Change Development Plan ahead of a Local Plan review was identified as an early element enabling Warwick District to be as close as possible to net zero by 2030.'

1.5 Further justification for the DPD is provided in the Warwick DC Zero Carbon DPD Energy and Sustainability Policy review [SUB 5 Page 2]. This identifies that national building regulations will not deliver sufficient carbon reductions to achieve national carbon reduction targets (legislated carbon budgets under the Climate Change Act) nor local carbon and climate commitments (the Warwick Climate Change Action Plan).

1.6 Analysis of Warwick's carbon emissions [SUB5, page 2] identified a district-wide target of 57% carbon emissions reduction by 2030, as a step towards fulfilling the Paris Agreement and Warwick's own commitments. The analysis further identifies that national policy would

only deliver a 16% reduction in this time and that to achieve the 57% target, emissions from [all] domestic buildings must reduce by 58% and 55% for [all] non-domestic buildings, compared 2018 existing emissions. This demonstrates that significant carbon reductions are needed from new development to help meet local and national targets and commitments.

1.7 The DPD is an appropriate response to the declared climate emergency as it delivers improved low-carbon building standards and an offsetting mechanism, to ensure new development supports the target of getting the District as close to net zero as possible by 2030.

1.8 The Aims and Objectives as set out in Section 4.1 of DPD are soundly based in this regard and are an appropriate response to the Council's Climate Change Action Programme, and national carbon targets. DPD 4.1 states the aims are to minimise carbon emissions of new development and to ensure that all new developments should be net zero carbon in operation (clarified as relating to regulated energy).

> *4.1 This DPD aims to minimise carbon emissions from new buildings within the District to support the achievement of national and local carbon reduction targets set out in section 1.1 and paragraph 2.5 above. From adoption (and earlier where possible) the DPD will aim to ensure all new developments (as set out on para 5.11) should be net zero carbon in operation. For the purposes of this DPD net zero carbon relates to regulated operational energy, which results from fixed building services and fittings (space heating, cooling, hot water, ventilation and lighting).*

1.9 It is acknowledged that the policies of the DPD do not deliver true net zero carbon development, as for the purposes of the DPD 'net zero carbon in operation' relates to regulated energy and excludes un-regulated energy. WDC considers however that the aims and objectives of the DPD remain an appropriate response to the climate emergency in reducing carbon emissions and delivering improved net zero carbon building standards.

1.10 To provide additional clarity on the definition of net zero carbon for the purpose of the DPD, minor textual modifications are therefore suggested to para 4.1.2 and section 4.2 of the DPD – see Schedule of Minor Modifications references PMC1 and PMC5, PMC6, PMC8, PMC9 [SUB11].

1.11 In conclusion, the submitted DPD is an appropriate response and is soundly based on the identified climate emergency declared by Warwick District Council.

Proposed Minor Modifications

1.12 Textual clarifications are recommended, see Schedule of Minor Modifications PMC2, PMC3, PMC4, PMC7, PMC10, PMC11, PMC15, PMC16

2 Question 2.2:

Is the general approach of the DPD through *Policy NZC1 – Achieving Net Zero Carbon Development* a reasonable one?

2.1 The approach to NZC1 is justified in the Warwick DC Zero Carbon DPD Energy and Sustainability Policy Review [SUB5, Section 1].

2.2 The requirement under NZC1 sets a minimum % reduction of carbon emissions against a baseline of Building Regulations for residential and non-domestic buildings. WDC considers that policies requiring a % reduction in carbon emissions expressed against Building Regulations are consistent with national policy (NPPF paragraphs 152, 153 and 154b) and technical standards, are well-precedented, and conforms with the powers granted by the Planning and Energy Act 2008.

2.3 The principle of setting energy efficiency targets beyond Government standards has recently been re-confirmed through examination of several other local plans [EXAM6 and EXAM7].

2.4 The approach of Policy NZC1 to setting % carbon emission reductions against national technical standards (Building Regulations) is reasonable and sound, and would reduce carbon emissions from new development within the district. This responds to the Council's declared climate emergency and is consistent with national policy, particularly NPPF paragraph 154b.

2.5 The Warwick DC Zero Carbon DPD Energy and Sustainability Policy Review [SUB5] outlines the process involved in setting the minimum % reduction in on-site carbon emissions. For new dwellings, this aligns to the Future Homes Standard (FHS). It is also useful to note that the % requirement for homes is based against Building Regulations Part L 2021. The interim uplift in Building Regulations enacted by the Government already recognises that it is already universally feasible and viable to deliver more efficient buildings at a national scale. Beyond the 2021 standard, the FHS requires only a moderate fabric improvement and a heat pump; these measures are not unusual in the industry but must be accelerated to hit national and local carbon targets, as previously noted.

2.6 The structure of NZC1 follows the energy hierarchy. This recognises that improving energy efficiency and minimising our energy demand is the most cost-effective way to achieve a zero-carbon energy system and thus represents the starting point. The application of the energy hierarchy is a reasonable approach to reducing carbon emissions from new development through a staged approach.

2.7 The energy hierarchy is then translated into polices NZC2(A) fabric efficiency, NZC2(B) zero or low carbon energy sources and finally NZC2(C) offsetting residual emissions.

2.8 This approach is summarised by Figure 1 within Section 5 of the NZC DPD and, as the Warwick DC Zero Carbon DPD Energy and Sustainability Policy Review [SUB5] demonstrates, is an approach taken by a significant number of local authorities.

2.9 The overall approach of NZC1 (following the energy hierarchy and requiring a minimum % reduction of carbon emissions on site before offsetting to reach net zero regulated operational carbon) is reasonable.

3 Question 2.3:

Specifically, is the approach within the DPD to introduce local carbon reduction targets ahead of national Government-led targets (e.g. the Future Homes Standard in 2025) justified and set on a sound basis?

3.1 As is identified in WDC's response to Question 2.1, it is evident that neither local nor national carbon reduction targets will be achieved through the timescale of implementation of Government-led standards (Building Regulations and the Future Homes Standard).

3.2 To respond to the Climate Emergency declared in Warwick District, and to meet local and national carbon reduction targets, it is necessary therefore to introduce carbon reduction targets ahead of Government led targets. This is notwithstanding that the implementation timescale of Government-led the Future Homes Standard is yet to be definitely confirmed, albeit expected in 2025.

3.3 A % reduction in carbon emissions expressed against Building Regulations was considered most consistent with national policy. This aligns with similar policies adopted in other local authorities [SUB 5, page 6].

3.4 This approach also accords with the powers granted under the Planning and Energy Act 2008 and allows local authorities to set energy efficiency targets above national standards and a proportion of energy to be renewable. This approach has been considered justified and sound by Inspectors through recent examinations [EXAM6].

3.5 The justification of the % reductions in carbon emissions is provided in the Warwick DC Zero Carbon DPD Energy and Sustainability Policy Review [SUB 5, page 3].

New Dwellings

3.6 The requirement under NZC1 sets a minimum 63% reduction of carbon emissions based on Building Regulations Part L 2021. This % reduction aligns with the Government's Future Homes Standard set to come into force in 2025.

3.7 This policy option was selected having regard to the need to implement improved standards as quickly as possible, with the evidence already available with regard the costs and feasibility of the Future Homes Standard and that local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards (NPPF 154).

3.8 It is also relevant that application of the Future Homes Standard will deliver 'zero-carbon-ready' homes with regard to regulated operational energy. This is consistent with the aims of the DPD to ensure the cost of retrofitting buildings does not increase.

Non-residential development

3.9 For non-residential development, NZC1 requires a minimum 35% reduction in carbon emissions compared to Building Regulations 2013. While the *residential* target was set to reflect the Future Homes Standard, this could not be replicated for non-residential target, because Government has not stated the % regulated carbon reduction that will be delivered by the Future Buildings Standard (by contrast, Government has stated the % for the Future Homes Standard).

3.10 Therefore, the non-residential 35% carbon reduction was selected to reflect a reasonably ambitious improvement that was well-precedented by existing local plans such as London (35%) and Milton Keynes (39%) [SUB5, Page 4]. Development in those locations has complied for several years, evidencing that the standard is technically feasible. Although Warwick's market is different, viability has been accounted for, and the actual physical interventions necessary in the buildings would be similar. In addition, please also cross reference to Matter 4, MIQ 4.1, paras 1.5-1.8.

3.11 The 35% carbon reduction (compared to Building Regulations 2013) remains an improvement on today's Building Regulations: Government states that the current non-residential standard represents a 27% reduction on that of 2013.

3.12 It is therefore considered that the requirements under NCZ1 for % carbon reductions compared to building regulations for residential, and non-residential buildings are justified and are sound.

4 Question 2.4

Does Policy NZC1, and the strategy set out within it, accord with national policy?

4.1 National planning policy is referenced in full in paragraphs 5.1 - 5.6 of the Council's response to Matter 1. Policy NZC1 accords with national policy as it supports the transition to a low carbon future and contribute to radical reductions in greenhouse gas emissions from new development.

4.2 The approach taken under NZC1 accords with national technical standards through the expression of carbon emission reductions against Building Regulations and sets efficiency targets beyond those standards under powers granted by the Planning and Energy Act 2008.

4.3 Further, it was recognised by the Inspector in B&NES [EXAM6] that: "*the NPPF is clear that mitigating and adapting to climate change, including moving to a low carbon economy, is one of the key elements of sustainable development, and that the planning system should support the transition to low carbon future in a changing climate".*

4.4 Having regard to the Council's declared climate emergency, Policy NZC1 is necessary to deliver the NPPF expectation of "*radical reductions in greenhouse gas emissions … in line with the objectives and provisions of the Climate Change Act 2008*" (NPPF paragraph 152 and footnote 53), and the plan's legal duty to mitigate climate change as per the Planning and Compulsory Purchase Act 2004 Section 19.

5 Question 2.5

How does Policy NZC1 sit comfortably with the adopted Warwick Local Plan and its relevant policies?

5.1 The Warwick District Local Plan 2011-2029, adopted in September 2017, includes as Objective B the following: *'Providing well-designed new developments that are in the right location and address climate change'.* This objective is further reiterated through Strategic Policy DS3.

5.2 The NZC DPD relates to criteria e) of Strategic Policy DS3 through targeting the delivery of a low carbon economy and lifestyles through the provision of net zero carbon development.

5.3 Policy NZC1 further supports and delivers the objectives of the Local Plan by expanding policies: SC0, BE1, HS1. CC1, CC2 and CC3, with new plan policy. Consequently, Policy NZC1 sits comfortably with the other relevant policies of the Local Plan.

5.4 Attention is drawn also to paragraph 3.34 of the DPD which explains that during the examination of the Warwick Local Plan a policy relating to sustainable homes was removed from the plan due to the Written Ministerial Statement (WMS) setting out the expectation that local planning authorities should not set energy efficiency standards higher than Level 4 of the Code for Sustainable Homes. This WMS has now been superseded and is out-of-date. Policy NZC1 complements and expands the Local Plan to address the declared climate emergency.

5.5 Section 12 of the DPD identifies policies of the Local Plan to be superseded or amended. It may be further clarified that no Local Plan policies are amended by the DPD - Local Plan policies are supported and expanded by new policies.

5.6 DPD paragraph 12.1 indicates Policy CC3 is to be superseded (or replaced) by Policy NZC1 and the DPD. However, it was recognised through the Regulation 22 Consultation Report that it is not required to replace Policy CC3 as the DPD and Policy NZC1 complement Policy CC3. An amendment is recommended to Paragraph 12.1 to remove Policy CC3 from the policies to be superseded (See Schedule of Minor Modifications, [SUB11, PMC14]). It may also add clarity if Section 12 were removed altogether.

5.7 NZC1 and the requirement to deliver a % reduction of carbon emissions in new residential and non-residential developments complements the requirements of policies DS3 (e), SC0 (g), BE1 (p), CC1 and CC3 to ensure that new development meets a specific reduction in carbon emissions.

5.8 Overall, it is considered that NZC1 creates a measurable requirement for carbon emission reductions in developments that complements policies within the Warwick Local Plan and further delivers the Local Plan objectives.

6 Question 2.6

Is everything covered within Policy NZC1 that needs to be?

6.1 The Council consider that NZC1 is clear in setting the threshold and type of developments to which this policy relates, and the appropriate measures to reduce carbon emissions in new development.

6.2 The format and wording of policy NZC1 clearly sets out its requirements in a structured and logical fashion which accords with the energy hierarchy. This is achieved in the following way:

- Firstly, NCZ1 sets out clearly the threshold of developments to which it applies, and the overall carbon reduction requirement for residential dwellings and other development (NCZ1 (i) and (ii)).
- Secondly, NCZ1 (iii) signposts compliance with the first and second step of the energy hierarchy through NZC2(A) and (B).
- And lastly, NZC1 (iv) signposts compliance to the last step in the energy hierarchy through NZC2(C).

6.3 The policy also outlines performance monitoring requirements through planning conditions. This is to ensure that the quality of development does not diminish between the grant of planning permission and construction.

6.4 Lastly, the policy includes flexibility to where it is either not feasible or viable to deliver carbon reductions in the first two steps of the energy hierarchy (to be demonstrated through the energy statement) before offsetting is considered acceptable.

6.5 In conclusion, the Council does not feel that there are any modifications required to NZC1 to ensure it is found sound.

6.6 Regulation 22 Consultation representations raised whether a higher BREEAM standard should be referenced within the policy. The policies of the DPD propose specific targets and standards regarding regulated operational energy and embodied carbon, whilst BREEAM standards are more wide ranging. BREEAM offers some credits for operational energy improvements (some of which are required for ratings of Excellent and above), but these are calculated by a combination of several factors including primary energy, carbon emissions and other metrics, via “translator curves” unique to BREEAM. As such referencing BREEAM within NZC1 may not reliably and transparently deliver the specific carbon emissions reductions sought by the DPD.

6.7 As noted in previous sections, NZC1 supports and expands on the Warwick Local Plan policies, which includes CC3 which requires BREEAM 'very good' for major non-residential development.

6.8 Comments in consultation also questioned the omission of an energy target expressed as kWhr/m2/yr– the Council position to this is outlined in response to Question 2.7 below.

7 Question 2.7:

Is there a justification to include a target FEE (space heat demand) of 15-20 kWh/m²/yr within Policy NZC1, or similar, and would the inclusion or omission of such a target go to the soundness of the DPD?

7.1 The Council recognises and agrees with the principle that absolute targets in kWh/m^2/yr have some advantages for delivering carbon and energy use reductions. However, due to the urgency for adoption in light of the climate emergency, the Council has used nationally described technical standards for the calculation of energy and carbon.

7.2 At the time of drafting the DPD, all adopted local plan precedents readily available sought relative improvements on Part L metrics, not fixed targets nor calculations other than Part L. This caused uncertainty whether a fixed target FEE (or alternative calculation) would be interpreted as 'reasonable' and 'in line with national policy'.

7.3 The DPD as-written approximately aligns with the Future Homes Standard, and at the time of drafting the DPD the Council did not have evidence to confirm whether a home built to that Standard would or would not have a Fabric Energy Efficiency (Building Regulations approximation of space heat demand) in line with the 15-20kWh/m^2/year recommended by the Committee on Climate Change.

7.4 It was considered that the added cost and time to assemble feasibility/viability evidence for a fixed 15-20kWh/m^2/year FEE in Warwick was unlikely to provide a sufficient carbon benefit (compared to the policy as-written) to justify the delay to adoption which would prolong the period in which proposals gain planning permission without any energy/carbon improvements.

7.5 Data has now come to light from Cornwall [EXAM7] showing that the SAP FEE with Part L 2021 is typically 19–25kWh/m^2/year. Therefore, the Warwick DPD requirement of a 10% improvement on the 2021 FEE would deliver a FEE close to the 15-20kWh range.

7.6 In conclusion, NCZ1's requirements as written would deliver a similar SAP FEE to 15-20kWh/m^2/yr and as such its omission does not affect the soundness of the DPD.

8 Question 2.8:

Is sufficient clarity provided within the DPD in relation to the content and scope of energy statements and when they are required?

8.1 As was outlined in the Consultation Report at Regulation 18 and 22 stage, the Council will be preparing Supplementary Planning Guidance (likely to be in the form of a Supplementary Planning Document (SPD)) to support developers in demonstrating the requirements of the NZC DPD, including the content and scope of energy statements. The guidance will also assist planners assessing applications as to what should be included in documentation submitted to demonstrate adherence to the requirements of the DPD.

8.2 To assist the examiner and provide some clarity, The Council has produced an initial scope of the guidance, provided in Appendix 1 to this statement.

9 Question 2.9:

Are there any requirements that should not be in Policy NZC1 with regard to soundness?

9.1 As outlined in preceding questions, the Council consider that the content and format of policy NCZ1 does not require any further modification to be found sound.

9.2 Minor modifications are suggested to the introductory information, and supporting text as detailed in Schedule of Modifications [SUB11], however no modifications are required to Policy NCZ1 itself.

10 Question 2.10:

Will there be any unacceptable impact on housing delivery and development generally as a result of the overarching strategy and Policy NZC1 of the DPD, as submitted?

10.1 As discussed in response to earlier questions, NZC1 aligns with Future Homes Standard (FHS). Based on the evidence surrounding FHS, one way to achieve the % carbon reduction target is to moderately upgrade insulation values compared with existing standards, use more thermally efficient glazing and a heat pump (as per the notional specification of the FHS). The on-site requirements relating to non-residential development could be delivered through less extensive measures, the combination of which will vary by use type, but for example in offices are likely to include modest fabric/glazing upgrades and efficient lighting/services. All of these technologies exist in the industry today and are widely used.

10.2 However, NZC1 could be met with an alternate mix of measures. There is no evidence that would robustly show an inadequate supply of these technologies to meet the needs of the very small portion of the UK's development that will take place within Warwick District (even in combination with the share of development in the handful of other local planning areas that are considering similar requirements).

10.3 It is considered that grid electricity capacity would not be a significant constraint on the delivery of housing. Upgrades may be required for specific sites, but this must happen anyway when the FHS is introduced (only 2-3 years after this DPD) and for the UK's wider net zero carbon transition. Through policy NZC2(A), energy efficiencies are targeted first and so will minimise the overall demand that new homes put on the electricity grid. It must also be noted that any electricity grid upgrade cost must be set against the avoided cost of gas grid connection, which can be significant especially at greenfield sites.

10.4 Furthermore, the DPD requires that carbon reductions to the greatest extent feasible are demonstrated through the energy statement and such allows for exceptional circumstances where full compliance with the policy is not feasible or viable due to site constraints.

10.5 Accordingly, it is considered that Policy NZC1 will not have an unacceptable impact on housing delivery.

Appendix 1- Warwick District Council NZC DPD Supplementary Document Scoping

Warwick District Council
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1 Scope of Supplementary Document

1.1 It is envisaged that to assist the implementation of the DPD the Council will prepare supplementary guidance addressing the following matters:

- Requirements of an energy statement including information required to demonstrate compliance with the policies of the DPD (Section 2 below)
- Appropriate renewable, zero and low carbon energy technologies and design considerations to help guide applicants and advise planners on whether an optimal system selection has been made (Section 3 below)
- Guidance on retrofitting existing building (Section 4 below).

1.2 The following sections present an indicative scope of this guidance to assist the Inspector and participants in the Examination of the Net Zero Carbon DPD. The detailed scope will be confirmed following the examination of the DPD.

2 Scope of the Energy Statement

2.1 Policy NZC1 states that: "*New developments of one or more dwellings (C3 or C4 use class) and/or 1,000sqm or more of new non-residential floorspace, hotels (C1) or residential institutions (C2 use class) should achieve net zero operational carbon emissions by implementing the energy hierarchy*". The policy goes on to say that "*Proposals should demonstrate application of the energy hierarchy through submission of an energy statement*" and sets out what the energy statement should identify.

2.2 The purpose of requiring an Energy Statement to be submitted is to ensure that detailed technical information forms part of the application to demonstrate compliance with the energy efficiency and carbon emission reduction requirements of the suite of policies within the DPD.

2.3 An Energy Statement should include an Executive Summary outlining the following information:

Table 1: Energy Statement Summary		
Target Emission Rate $kgCO_2/m^2/yr.$	Building Emission Rate $kgCO_2/m^2/yr.$	% Reduction in CO_2 Emissions

2.4 An Energy Statement should demonstrate compliance with Net Zero Carbon DPD policies and include presentation of data against the policies. See Table 2 for details.

2.5 Alternatively, applications may demonstrate the requirements of NCZ1 through Passivhaus standards and accompanying PHPP[1] calculations.

2.6 In the event that full compliance with NZC DPD policies is not feasible or viable, the Energy Statement must demonstrate that carbon reductions have been considered and incorporated to the greatest extent possible through the application of the energy hierarchy.

[1] *Passivhaus Planning Package, a modelling method used to accurately predict and improve energy performance.*

Table 2: Scope of detailed information within the Energy Statement	
Details of the proposed development	Details of the proposed development must include: • Location of the development • Description of the development • Number of buildings • Proposed Use of Building (Use Class/classes) • GEA and GIA (square metres) • Primary (and secondary) means of heating) • Heating split. This is the percentage split (in energy use — kWh/annum) between the two heating fuels. (Only required where more than one heating fuel is to be used).
NZC1 The overall % carbon emissions reduction against Building Regulations reported in Target Emission Rate (TER) and Dwelling Emission Rate (DER) / Building Emission Rate (BER)	
Predicted regulated carbon reduction measures (over and above the Building Regulations)	Expressed as: • Target Emission Rate (TER)* • Dwelling Emission Rate (DER) / Building Emission Rate (BER) • Overall % Reduction in CO_2 emissions *Based on the relevant version of Building Regulations Part L as outlined in policy NZC1. These figures should be obtained from calculations using either SAP (the Standard Assessment Procedure for domestic buildings) or SBEM (the Simplified Building Energy Model for non-domestic buildings)
ENERGY HIERARCHY STAGE 1 **NZC2(A): % improvement of energy efficiency against Building Regulations**	
Energy Efficiency Measures (over and above the building regulations requirements)	Details about each measure shall be included, (including the resulting predicted energy savings in kWh/m^2/annum - Fabric Energy Efficiency in the case of residential). Energy Efficiency measures / materials to consider (all should be presented in terms of the proposed building value compared to the notional building value in Part L): • External wall insulation (U-value) • Floor insulation (U-value)

	• Roof insulation (U-value) • Doors (U-value) • Glazing (U-value and glazing ratio) • Air permeability ($m^3/(h \cdot m^2)$ at 50 Pa) • Fixed appliances; heating, hot water, cooling and lighting And consideration of: • Optimising solar gain (while avoiding overheating risk and thus the need for active cooling) • Building form and layout • Natural ventilation • Thermal bridging
	Expressed as: Residential: • Dwelling Fabric Energy Efficiency (DFEE) after the proposed improvements have been applied • DFEE as a % improvement on TFEE (Target Fabric Energy Efficiency) Non-residential: • BER after all energy efficiency improvements (including fabric) have been applied in pursuit of NZC2(A), excluding any renewable/low carbon energy measures • BER % improvement on TER as a result of energy efficiency improvements, excluding any renewable energy measures • Optional: Building Primary Energy Rate as a % improvement on Part L Target Primary Energy Rate.
ENERGY HIERARCHY STAGE 2 **NZC2(B): kWh of energy generated onsite through zero or low carbon energy sources, and regulated carbon emissions reduction as a result of this**	
Choosing/Discounting a renewable/low carbon energy technology	An assessment of the suitability of renewable and low carbon technologies Information on each technology and why one is chosen above the other should be provided. Where it is considered that renewable or low energy technology cannot be provided in the development a clear explanation should be provided along with a viability and feasibility assessment.

Renewable and Low Carbon Energy Technologies	Details on renewable and low carbon technologies employed. This should include specification for each technology and carbon mitigated by each approach • System design; size, orientation • Energy generation (approx) kWh/annum • Carbon factor of alternate energy source
	Expressed as: • BER or DER after energy efficiency measures (NZC2(A) have been applied. • BER or DER after renewable and low carbon energy measures towards NZC2(B) have been applied, *subsequent to the improvement made by measures under NZC2(A).* • Actual % improvement on TER as a result of renewable and low carbon energy measures
ENERGY HIERARCHY STAGE 3 **NZC2(C): residual carbon emissions are offset**	
	Offsetting calculated in accordance with NZC2(C) and paragraphs 8.2 & 8.3.

	Expressed as:
	
	• Actual BER or DER after all on-site measures have been applied;
	• Actual % improvement on TER after all on-site measures have been applied;
	• Residual regulated CO_2 emissions per annum multiplied over 30 years (with option to take into account BEIS projected grid carbon reductions if the development is all-electric, with calculations transparently shown):
	  • Per m^2 of development; and
	  • Total across the whole development.
	• CO_2 emissions x BEIS carbon value;
	• If the option is taken for all-electric developments to take into account future grid carbon reductions, then the increased BEIS carbon £value should also be used for each respective year; and
	• Final Offset Figure - £
	
	Please note that all emission figures should express CO_2 in tonnes, and not kg.

NZC3: embodied carbon assessment; consideration and reduction of embodied carbon	
	All major development proposals should, as applicable by use type, include reference to: • RICS Whole-Life Carbon Assessment for the Built Environment. Modules: A1 – A5 (material production through to completion) (applicable to any use type); or • BREEAM assessment (Mat 01 LCA, and narrative on any other targeted Mat credits that could affect embodied carbon); or • HQM pre-assessment with reference to BRE Green Guide Super major schemes: • RICS Whole-Life Carbon Assessment for the Built Environment. Modules: A1 – A5 (material production through to completion), B1 – B7 (in use – e.g. refurbishment and maintenance), and C1 – C4 (end of life). Any similar whole life carbon assessment – to be agreed with the local planning authority.
NZC4: applications relating to existing buildings are required to consider low/zero carbon assessment; alternatives to conventional fossil fuel boilers.	
	In addition to information provided against CC1, consideration of the alternatives to conventional fossil fuel boilers must be provided. Furthermore, additional information on proposed interventions to the existing building that would relate to operational energy and carbon performance, and the results achieved by these (quantified as far as possible) would be supported in line with other Local Plan policies. Information on low or zero carbon technologies is set out in Table 3

3 Low Carbon or Zero Carbon Technologies to be considered

3.1 Low-carbon and zero carbon technologies require a sensitivity to site conditions and whole-system design considerations which are not as critical to traditional fossil fuel based heating systems.

3.2 Guidance will review a range of current technologies as identified within Table 3 and identify some critical considerations to help guide applicants and advise planners on whether an optimal system selection has been made.

3.3 The guidance will acknowledge that there may be additional suitable technologies that may emerge and where this is the case, the Local Planning Authority would consider updating its guidance to incorporate consideration of such technologies.

Table 3: Low/Zero Carbon technologies	
Efficient energy supply and low carbon heating *(reduction of reliance on fossil fuel technologies and move away from gas boilers, for both space heat and hot water)* This list is not exhaustive	• Air source heat pumps • Ground/ water source heat pumps • Domestic hot water thermal storage • Heat recovery (MVHR, WWHR) • Direct electric/panel heating • Energy storage – electrical batteries, heat batteries • District heat powered by recycled heat, heat pumps, or CHP (not fossil gas powered) • Biomass heat (less preferred; only in specific limited circumstances)
Renewable electricity generation types This list is not exhaustive	• Photovoltaic (PV) panels • Solar thermal • CHP (not fossil gas powered) • Biomass • Wind power • Hydro power

4 Retrofitting guidance to be considered

4.1 To assist applicants in exploring and incorporating energy efficiencies, materials and low or zero carbon technologies in existing buildings, the Council will look to develop and, or signpost guidance on appropriate retrofitting measures.

4.2 Examples of retrofitting guidance which the Council could feasibly adapt, or reference include:

- LETI Climate Emergency Retrofit Guide (LETI, 2021)
- Net Zero Carbon Toolkit (Etude, Elementa, Passivhaus, Levitt Bernstein, 2021); or
- Retrofit and Energy Efficiency in Historic Buildings (Historic England, 2020)
- Energy Efficiency Guidance for Historic Buildings - guidance that Warwick District Council is producing specifically relating to historic buildings and retrofitting energy efficient measures.