Response to the April 2022 DPD Consultation – prepared by George Martin

A: Foreword

With the current Climate Emergency added to which we now have an energy security issue and a cost of living crises resulting in what recent reports show that perhaps some 12 million people in the UK will potentially be in fuel poverty, now must be the time to work towards and deliver of ***truly net zero carbon buildings in use*** to include both regulated and unregulated energy.

The Warwick District Council Net Zero Carbon Development Plan Document Consultation Draft April 2022 does not deliver Net Zero Carbon

Next month it will be 3 years since WDC declared a Climate Emergency! It is disappointing in the extreme that it will have taken more than 3 years for the policies within this document to be implemented even if they are inadequate.

It is doubly disappointing that the document does not demonstrate the ambition of other authorities such as Greater Cambridge, Central Lincolnshire, Cornwall, Bath, North East Somerset and others to deliver truly net zero carbon in use. Warwick District Council will most certainly NOT be a leader in this field.

B: Introduction

I have been a resident of Kenilworth for 40 years and am currently Chair of the UK's Building Performance Network. My relevant working experience is as follows:

- Director of Environment – Tarmac Construction
- Director of Business Affairs at the UK's Leading Sustainable Development Charity, Forum for the Future.
- Director of Sustainability - Building Research Establishment
- Director of Sustainable Development - Willmott Dixon
- Professor of Low Impact and Sustainable Buildings – Coventry University
- Chair, Sustainable Development Foundation
- Chair – Building Performance Network.

I am a member of the Kenilworth All-together Greener Group (KATG) and helped develop the response that KATG made as part of the contribution to the Kenilworth Neighbourhood Plan (KNP)

I was also part of the Oversight Panel for The District of Warwick People's Inquiry on Climate Change 20/21

C: The District of Warwick People's Inquiry on Climate Change 20/21

The following two recommendations voted as 2nd equal and 5th equal, were made as part of this Inquiry:

HOUSING 2. Every new house must be carbon neutral both in construction and in their future use. There are quality standard tools that can be applied e.g. BREEAM, LEED, Passivhaus and these should be used. A resourced monitoring process needs to be in place to make sure this happens. Our council must investigate how it can accelerate in any way possible, as quickly as possible a drive to carbon neutral housing. This local action must be supported by similar national building and planning regulations. We recognise building regulations do not currently require homes to be carbon zero. We expect Warwick District Council to lobby for change to this at a national level.	=2nd	10	43

HOUSING 7. Warwick District Council should refuse all future planning applications for any new housing that is not carbon zero on the grounds of the Climate Emergency Action Plan and see how the developer responds. Radical action must be taken. We are concerned that such action should not penalise young people trying to access housing and we encourage Warwick District Council and others to investigate how this might be achievable.	=5th	7	36

This DPD does not deliver on either of these recommendations for action.

D: The Title of the Document

D1: Comments on the title of the document.

The document needs a fundamental re-think in terms of the wording around the use of the term 'net zero carbon' and the use of the words 'operational energy'

The title of the DPD document is not correct and also has the effect of misleading the public. This is NOT a **net zero carbon** initiative; it is not even "net zero ready" as this would mean first achieving energy use targets.

Can WDC please demonstrate to what definition of net zero carbon definition they refer? I would suggest that the authors of this document refer to recent CIBSE LETI document: ***Net Zero FAQs – what does net zero mean*** published in April 2022.

I would suggest the that the following title be used**:**

'Transition towards net zero regulated carbon.'

I would also suggest that the authors clarify the difference between regulated energy and unregulated energy……a term that does not feature in the document. In addition there is need to carefully define the term 'operational' as this has the potential to mislead.

The terminology and definitions surrounding the use of the words **net zero carbon; zero carbon and operational energy** in the document are confusing and indeed misleading. The words 'regulated energy' are dropped in but I would surmise that many if not most readers will not be aware of the difference between regulated energy, and unregulated energy.

Under the Section 4.1 Aim is the following statement:

1. 4.1.1 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).

What is clear here is that the use of the term **net zero carbon** relates to regulated energy only and therefore not unregulated energy. The use of the words 'operational energy' is confusing and misleading. It is therefore both incorrect and confusing to use statements such as regulated operational energy.

Now consider Section 4.2 Objectives.

1. 4.2.1 **Objective 1**: To provide a clear policy framework to enable developers to understand the requirements for planning proposals to ensure new buildings are planned and constructed to be net zero carbon in operation.

Here it states that new buildings are planned to be quote "*net zero carbon in operation "* This most certainly is both incorrect and misleading. The DPD will **not** deliver net zero carbon in operation…..it will not even deliver net zero carbon for regulated energy in operation as the methodology using SAP which does **not** take into account the performance gap a fact pointed out in supporting WDC documents – more later.

There are many examples of these incorrect and misleading statements throughout the document that should be amended in order that the document is consistent, transparent and accurate.

The terms that should be used are regulated and unregulated energy. I can find no reference in the document to unregulated energy.

D2: Comments on Building Regulations

WDC Officers and Councillors need to understand that SAP and SBEM as included in the 2013, 2021 and currently within the 2025 Future Homes Standard will **not** deliver truly net

zero carbon buildings in use. They will not even deliver net zero carbon regulated energy in use. The technical reasons and evidence for this are contained within existing WDC documents highlighted as follows:

The evidence for this is contained within the following Warwick DC Zero Carbon DPD Energy and Sustainability policy review document Rev:04 updated 21st January 2022.

> Quote from the WDC document:
>
> Unfortunately, the calculation methods used in Building Regulations Part L (SAP and SBEM) are very poor predictors of the actual energy use of a building. SAP and SBEM are compliance tools, not really tools to predict energy and carbon performance (even though they purport to be). This is not only due to out-of-date carbon factors used for different energy sources, but the entire methodology. This is a key reason for point (1).
>
> **For this reason, recalculating SAP on completion[17] will not confirm that the building *performs* to the same metrics as in the SAP output** (kWh/m^2 and CO_2/m^2), only that it is *built* as designed in terms of installed specification of insulation, heating system and renewable energy generation. The nation-wide lack of post-occupation energy monitoring means that both developers and planning/building control enforcers are often unaware of the scale of difference between SAP outputs and actual performance.
>
> Point (2) above relates to how imperfections in the construction process can lead to worse energy performance than predicted, even if an accurate energy prediction methodology were used. For example, a building may leak a lot of heat if insulation is incorrectly installed, or if a hatch to a cold loft is put in the wrong place and has to be moved, resulting in unexpected holes in the air tightness membrane. Another risk is that lower-spec products may be used or poor substitutions made in the building – whether for cost-cutting reasons, supply difficulties, or simply because the right person was not available on site at the right time to make the decision within a set deadline.

Greater Cambridge and the other authorities that I have already listed understand this and have taken steps to resolve this very important issue. I will highlight only the Greater Cambridge documents:

D3: Greater Cambridge Local Plan Policy Recommendations:

The various documents that make up the development of the Greater Cambridge Local Plan are considered by myself and my colleagues to be the model to aspire to in terms of the journey to true net zero carbon in use. Other LAs as described above are also aspiring to these standards.

The consultants that were involved with the development of the Greater Cambridge documents were Bioregional, Etude and Currie & Brown. WDC employed Bioregional to assist in the development of the DPD. It is therefore disappointing that the Warwick DC DPD lacks the ambition and delivery of these other organisations. Certain WDC Councillors have spoken publicly that this DPD document demonstrates WDC leadership in the field! In its current form it most certainly not do that.

Take for example the Policy Recommendations from Greater Cambridge:

Table of policies

Recommended Policies

Proposed policies: Buildings – Net zero carbon new buildings

Recommended net zero carbon buildings policies.

*indicates policies we think are essential in achieving net zero carbon aims.

		Relevant NPPF paragraphs
A.1.0*	**Net zero carbon new buildings** All buildings should be net zero carbon and comply with policies A.1.1, A.1.2, A.1.3 or, where A.1.3 cannot be achieved, with A.1.4.	
A.1.1*	**Net zero carbon new buildings: Space heating**	
A.1.1.a*	- All dwellings should achieve a space heating demand of 15-20 kWh/m²/yr.	
A.1.1b*	- All non-domestic buildings should achieved a space heating demand of 15-20 kWh/m²/yr.	
A.1.1c*	- All heating shall be provided through low carbon fuels (not fossil fuels).	
A1.1.d*	- No new developments shall be connected to the gas grid.	
A.1.2*	**Net zero carbon new buildings: Energy Use Intensity (EUI) targets** All dwellings should achieve an Energy Use Intensity (EUI) of no more than 35 kWh/m²/yr (as calculated by TBC) Non-domestic buildings should achieve an Energy Use Intensity (EUI) of no more than the following, by building type: • Offices – 55 kWh/m²/yr • Schools – 65 kWh/m²/yr • Multi-residential (e.g. student accommodation) – 35 kWh/m²/yr. • Retail – 55 kWh/m²/yr • Leisure – 100 kWh/m²/yr • Research facility – 150 kWh/m²/yr • HE Teaching facilities – 55 kWh/m²/yr • Light industrial units – 110 kWh/m²/yr • GP surgery – 55 kWh/m²/yr • Hotel – 55 kWh/m²/yr • Student accommodation – 35 kWh/m²/yr	149, 150, 151, 152, 153
A.1.3*	**Net zero carbon new buildings: Renewable energy** Renewable energy should be generated on-site for all new developments. The amount of energy generated in a year should match the predicted annual energy demand of the building. I.e. Renewable energy generation (kWh/m²/yr) = EUI (kWh/m²/yr).	
A.1.4*	**Net zero carbon new buildings: Offsetting** In the first instance, Requirement A.1.3 should be met. Where this is not possible, the development can be made compliant through payment into an offset fund to balance the shortfall in renewable energy provision.	
A.1.5	**Net zero carbon new buildings: Assured Performance** All developments (domestic and non-domestic) must demonstrate use of an assured performance method in order to ensure that the buildings' operational energy performance reflects design intentions.	

Bioregional Etude Currie & Brown

Greater Cambridge Local Plan Net Zero Carbon Evidence Base | Apr 21 | Rev B 8

Here you will see that there are specific recommendations for space heating for different building types in kWh/m2/yr and in addition energy use intensity where there are specific targets specified again using kWh/m2/yr and **not** in percentages as included in this DPD.

You will also see that fossil fuels (i.e. natural gas) will not be used for heating.

A question should be asked of the Executive as to why WDC not undertake sufficient work to follow the policy recommendations that have been used by Greater Cambridge….and others!

E: Specific Comments on Sections of the DPD Document

Note that the numbers and certain sections of the document have been snipped and included in this response to aid the reader.

1.1 WDC's Climate change commitments.

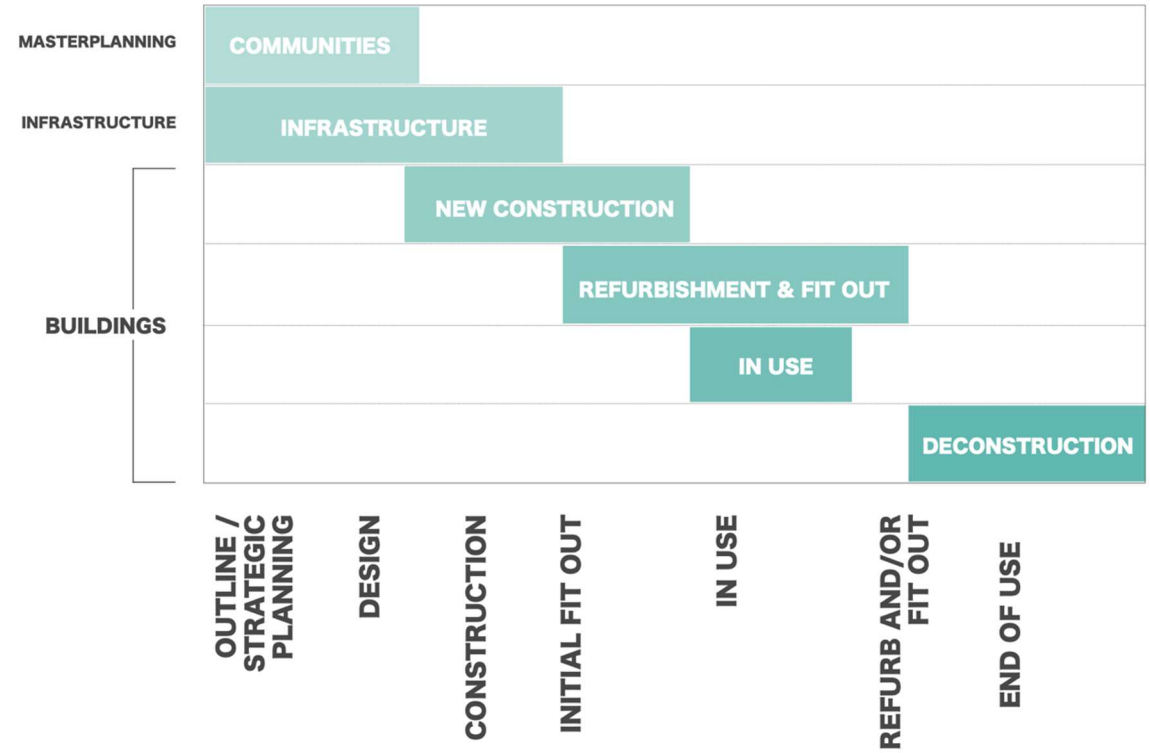
1.1.2 Ensure carbon reduction features and BREEAM standards are included in major development schemes.

Under section 12.1 WDC have superseded the requirement for Policy CC3 as a result BREEAM is **not** now required at all for non-domestic buildings. In addition, there is no reference to BREEAM in any of the published policies.

1. 12.1 The following Local Plan policies will be superseded or amended by this DPD:
   • Policy CC3: Building Standards and other Sustainability Requirements is superseded

Action is therefore required to reinstate BREEAM in the document but not merely as BREEEAM very good for the following reasons:

There are a number of BREEAM standards (see below) and within each standard there are categories from 'pass' (P) to 'outstanding' (O) When recommending BREEAM, it is vital to state which BREEAM standard and date is being specified. The following are the current BREEAM standards:



After a specific BREEAM standard has been specified it is then vitally important to ensure that the **maximum** energy credits are obtained.

If we take ***BREEAM New Construction 2018*** as an example (see below) you will see that the ***Credit ENE 01 Reduction of energy use and carbon emissions*** is **not** a mandated requirement for Pass (P), good (G) or even very good (VG)! Consequently, a developer could obtain the credits elsewhere – for example in cycle racks or bird boxes, both (and others) are good to have but not at the expense of energy efficiency and carbon reduction. This document should make it clear that the maximum credits i.e. 6, MUST be obtained.

	CATEGORY	P	G	VG	E	O
MAN 03	Construction practices	-	-	-	ONE CREDIT MAN3.3	TWO CREDITS MAN3.3
MAN 04	Commissioning and handover	-	-	MAN4.1 & BUILDING USER GUIDE	MAN4.1 & BUILDING USER GUIDE	MAN4.1 & BUILDING USER GUIDE
MAN 05	Aftercare	-	-	-	ONE CREDIT MAN5.2	ONE CREDIT MAN5.2
ENE 01	Reduction of energy use and carbon emissions	-	-	-	4 CREDITS (PERFORMANCE)	6 CREDITS (PERFORMANCE)

1.3 Objective of DPD

1.3.1 This DPD aims to focus on minimising carbon emissions from new buildings within the District to support the achievement of national and local carbon reduction targets. In achieving this aim, the DPD will ensure that new development does not add to the District's carbon deficit and will therefore ensure that the significant cost of retrofitting buildings to achieve net zero carbon does not increase.

The DPD does **not** meet this objective.

- New developments will **add** to the District's carbon deficit due to the fact that there will be thousands of new homes that will not be truly net zero carbon in use or even near to this!
- There will also be significant costs for occupants for retrofitting buildings to achieve true net zero carbon. More on this in the response that follows:

Section 2.0 National Context.

2.7 There is need to define the word 'current' when describing energy standards. The 2021 standards will be operational in June 2022. Also need to better define 'zero carbon ready' with the inclusion of a local energy use target in kWhr/m2/yr.

2.11 In declaring a climate emergency, WDC has committed to "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." The Council is therefore committed to introducing standards which enable net-zero carbon buildings as soon as possible. Recognising the Government's position that "local planning authorities will retain powers to set local energy efficiency standards for new homes", Warwick District Council is committed to bringing forward policies ahead of the Government's stated timetable for the Future Homes Standard, whilst ensuring the approach we take broadly aligns with the approach set out in the Government's outline proposals. This DPD provides the building standards policies to achieve this and

(except where policies within the existing Local Plan are replaced by the DPD), these policies supplement those within the adopted Warwick District Local Plan, 2011 – 2029 (See Section 11). The policies will be incorporated and built on in the preparation of the emerging South Warwickshire Local Plan.

Whilst I support the ambition of this paragraph – this DPD document does not go far enough. Why is WDC not following the examples set by Greater Cambridge, Central Lincolnshire, Cornwall, Bath, North East Sommerset and others…….

Section 3: The Planning Policy Context.

Aims and Objectives.

4.1 Aim

1. 4.1.1 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).
2. 4.1.2 In achieving this aim, the DPD will ensure that new development does not add to the District's carbon deficit and will therefore ensure that the significant cost of retrofitting buildings to achieve net zero carbon does not increase.

These two aims will not be met.

- The DPD will **not** ensure that all new developments should be net zero carbon in operation.
- The DPD will **not** ensure that there will be no addition to the District's carbon emissions
- There will be a significant cost to retrofitting buildings

The following should be clearly stated in the document:

- No gas – the DPD implies this subtly but does not explicitly state '**no gas'**.

Note that the current ambition for the Future Homes Standard 2025 is that natural gas will be excluded from heating.

If gas is to be allowed, the following should be clearly stated in order to avoid significant additional costs for future owners when fitting air source heat pumps.

- No combi boilers
- No microbore pipes
- Need to allow internal space for a hot water cylinder and preferably a heat store.
- The cylinder should be equipped with an immerser linked to the PV panels.

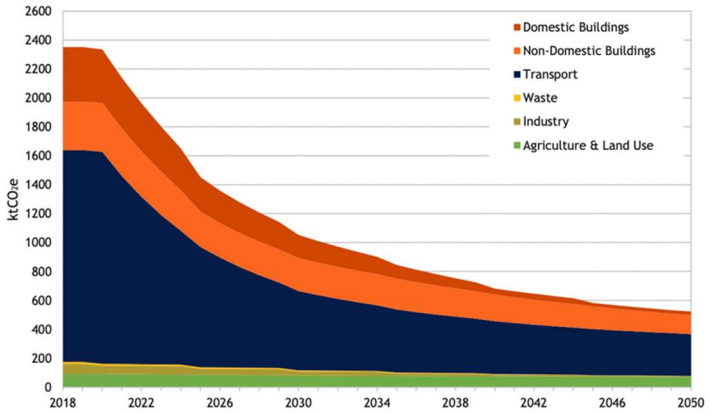
If these are not clearly stated, developers will seek ways to manipulate the compliance assessment to make it comply and/or create a diversion with a viability assessment to allow them to install lower cost solutions that will result in significant additional costs to the occupiers at a later date.

In terms of the statement in 4.1.2 carbon emissions will still increase in the district.

The reason that emissions will increase can be found in the Anthesis report. The report shows that 42% of carbon emissions in Warwick District come from buildings. In the following diagram from the report the high ambition strategy (which still does **not** achieve the WDC 2030 target) requires significant reduction in both domestic and non-domestic buildings. As a result of the thousands of new homes, significant reduction will NOT be achieved with this DPD.

5. EMISSIONS REDUCTION PATHWAYS
SOUTH WARWICKSHIRE HIGH AMBITION PATHWAY

Despite applying the most ambitious interventions in the SCATTER tool for South Warwickshire, emissions remain in the energy system. Along South Warwickshire's High Ambition Pathway, **1052.8 ktCO$_2$e** remain in the energy system in 2030 and **524 ktCO$_2$e** remain in the energy system in 2050.



Aggressive and urgent emissions reduction interventions are demanded by the High Ambition Pathway. The scale of the actions necessary to reduce emissions by 55% in 2030 requires radical step changes across almost every area of activity across South Warwickshire. Chapter 6 of this report defines these interventions. They can be thought of as falling into two groups; interventions focused on reducing energy *demand*, and interventions focused on decarbonising energy *supply*. However, with increased electrification of cars, and building systems etc., future electricity demand is likely to rise. This modelling follows electrification assumptions from the UK's Future Energy Scenarios.

Adoption of the High Ambition Pathway still does not achieve South Warwickshire's target of carbon neutrality by 2030. Despite applying the most ambitious interventions in the SCATTER tool, 524 ktCO2e emissions still remain in the energy system in 2050. Discussions around closing this "gap to target" can be found on page 39.

Figure 16: SCATTER High Ambition Pathway for South Warwickshire, broken down by sector. Shaded areas correspond to residual emissions.

Warwick & Stratford-on-Avon District Councils | Emission Reduction Pathways

Anthesis 36

The next diagram in the Anthesis report demonstrates that WDC need 3,500 new homes to Passivhaus standard and there are not even 10 in existence now? Also, the report shows the need for 18,000 deep retrofit and I doubt there are even 100 retrofitted to the EnerPHIT, Energiesprong, PAS 2035 or PAS 2038 standards!

6. EMISSIONS REDUCTION INTERVENTIONS
SUMMARY OF INTERVENTIONS

The following tables describe the scale of each interventions required to realise the emissions reductions shown in the High Ambition Pathway (green line, figure 14) for Warwick and Stratford-on-Avon. The purpose of this analysis is to understand the scale and speed of change needed to meet the High Ambition Pathway.

Sector	Measure	By 2025	By 2030	By 2050
Domestic Buildings	More energy efficient homes & new builds	Warwick: • 1,400 households "medium" retrofit • 11,500 households "deep" retrofit • 2,000 new houses built to Passivhaus standards Stratford-on-Avon: • 1,300 households "medium" retrofit • 2,100 households "deep" retrofit • 2,500 new houses built to Passivhaus standards	Warwick: • 2,300 households "medium" retrofit • 18,000 households "deep" retrofit • 3,500 new houses built to Passivhaus standards Stratford-on-Avon: • 2,100 households "medium" retrofit • 17,000 households "deep" retrofit • 3,900 new houses built to Passivhaus standards	Warwick: • 6,000 households "medium" retrofit • 47,600 households "deep" retrofit • 6,800 new houses built to Passivhaus standards Stratford-on-Avon: • 5,400 households "medium" retrofit • 43,200 households "deep" retrofit • 6,500 new houses built to Passivhaus standards
Domestic & Non-Domestic Buildings	Improved energy efficiency	• 15% domestic reduction • 12% non-domestic reduction	• 21% domestic reduction • 17% non-domestic reduction	• 43% domestic reduction • 40% non-domestic reduction
Domestic & Non-Domestic Buildings	Shifting from high carbon gas heating systems	• 34% of domestic heating systems are low-carbon or electric • 28% of non-domestic heating systems are low-carbon or electric	• 47% of domestic heating systems are low-carbon or electric • 39% of non-domestic heating systems are low-carbon or electric	• 100% of domestic heating systems are low-carbon or electric • 80% of non-domestic heating systems are low-carbon or electric

Warwick & Stratford-on-Avon District Councils | Emission Reduction Interventions Anthesis 42

The authors of this document need to address this misleading information within the DPD

A comment on the Passivhaus standard. For some reason WDC have completely failed to trial the Passivhaus standard for new buildings under their control. They should be demonstrating to developers the many advantages of this standard in delivering truly net zero carbon in use buildings with a minimal performance gap. In this way WDC would be showing leadership.

The DPD document also states:

1. 5.4 As a District that can demonstrate levels of development viability that can accommodate energy efficiency measures that go beyond the 2021 Part L building regulations, Policy NZC1 requires developments to achieve building performance that is broadly consistent with national ambitions as set out in the proposed Future Homes Standard to be introduced in 2025.

The currently proposed Future Homes Standard will **not** deliver true net zero carbon in use and at this point in time it is not certain if 'performance in use' is going to be included.

4.2 Objectives

1. 4.2.1 **Objective 1**: To provide a clear policy framework to enable developers to understand the requirements for planning proposals to ensure new buildings are planned and constructed to be net zero carbon in operation.
2. 4.2.2 **Objective 2**: To ensure practical and viable low carbon building standards that can be applied to new buildings.
3. 4.2.3 **Objective 3**: To support the consideration of low carbon energy sources as part of development proposals.
4. 4.2.4 **Objective 4**: As a last resort, to provide the policy framework for addressing residual carbon from new buildings through a robust carbon offsetting policy.

The objectives need to be overhauled. Within **objective 1** as I have already pointed out this DPD will NOT ensure that new buildings are planned and constructed to be net zero carbon in operation and not even net zero regulated carbon in operation.

If the overall title is changed to ***'transition towards net zero regulated carbon'*** it is important to point out that this is for regulated energy only. Talking about net zero carbon in operation is both incorrect and misleading.

Objective 2: is OK and states low carbon building which is a more truthful way to describe what WDC in this DPD are seeking to achieve.

Objective 3: is OK. I will comment on the policy later in the document

Objective 4: WDC need to be prepared for some clever viability assessments where the developer makes the case for substantial offsetting.

Section 5: Overarching Strategy: Achieving Net Zero Carbon Development.

Policy NZC1 Achieving Net Zero Carbon Development.

The title needs to change. The policy will not deliver a net Zero Carbon Development.
I make the following suggestions:
Change the Policy references NZC etc…….

- Policy CC1 – i.e. CC being Climate Change?
- Policy CE1 – i.e. CE being Climate Emergency?

Change to a new title:

- Title: ***Transition Towards Net Zero Regulated Carbon*** Development?

Comments on the actual policy:

> The following words need to change quote "……should achieve net zero regulated carbon emissions……"
>
> I am pleased that the word 'regulated' is included here – but you cannot use 'should achieve' as you have not taken into account the performance gap. As detailed in your own documents, SAP cannot take into account the performance gap and that is a fact.
>
> I suggest the following:
> Should demonstrate a transition towards net zero regulated carbon emissions……..
>
> Good to see that there is need to demonstrate that the finished building meets the standard set in this policy. The question is how:

I suggest that included within this policy is a requirement to implement the British Standard **BS 40101** ***Building performance evaluation of occupied and operational buildings*****. This was published in January 2022.**

> Alternatively, applications may demonstrate the requirements of Policy NZC1 are met through the Passivhaus standard with accompanying PHPP calculations submitted within the energy statement (without the use of fossil fuels on site including gas). A condition will be applied requiring Passivhaus certification prior to occupation.

Whilst I all in favour of recommending the use of the Passivhaus Standard it is possible to recommend the use of PHPP as a preferred modelling tool without going as far as the Passivhaus standard.

Words to include could be:

The use of the PHPP modelling tool developed by the Passivhaus Institute to accurately model the energy performance of very low energy buildings is recommended.

Quote from the Greater Cambridge *Zero Carbon Evidence Base – Technical Feasibility* document:

Post occupancy studies in the UK[07] and Europe [08] have shown that PHPP is generally accurate. Until SAP, SBEM and EPCs are improved it is not recommended to use them as key performance indicators.

We believe the most robust energy modelling tool to evidence net zero carbon is PHPP. For this reason, our technical feasibility analysis uses PHPP to determine the compliance with "net zero carbon".

BREEAM

BREEAM is missing from the Policy and must be included. It is not just a matter of saying BREEAM 'very good' as I have itemised earlier in this response.

The words contained in section 5.9 should be included in this policy. Using an appropriate QA process must be mandated otherwise there will be a performance gap and this could be 100% or more!

1. 5.9 Furthermore, to ensure the energy performance gap is minimised we recommend the use of a recognised quality assurance process that ensures the 'as built' performance (energy use, carbon emissions, indoor air quality, and overheating risk) matches the calculated design performance of buildings. Examples of these include BEPIT (Building Energy Performance Improvement Toolkit), the Passivhaus accreditation process and the Assured Performance Process (NEF/GHA).

Energy Targets.

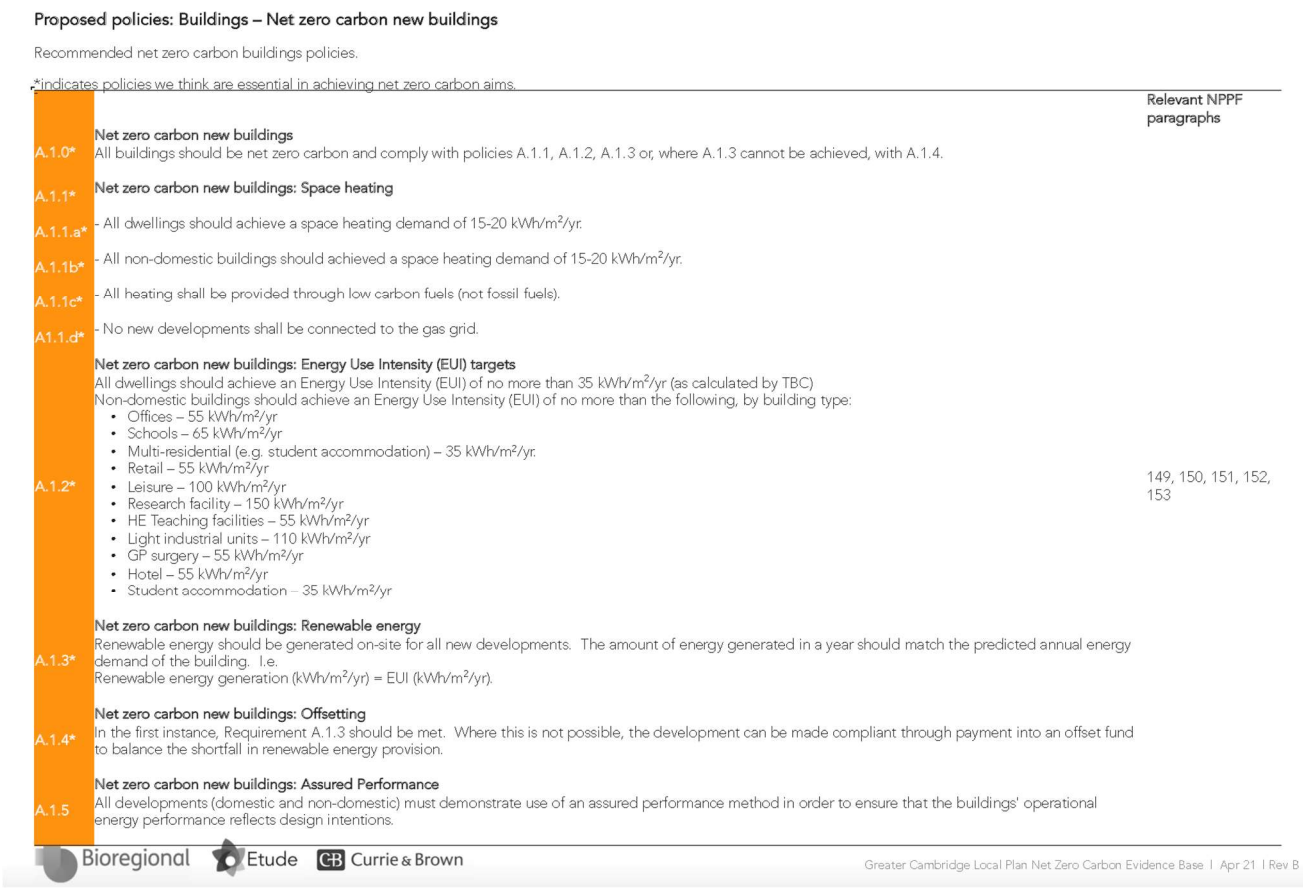
It is remiss not to include energy targets in terms of kWhr/m2/yr.

The Committee on Climate Change Recommend such targets in their report UK Housing Fit for the Future in February 2019 – 3 years ago. Here is an extract from page 63 of that report.

> **New homes should deliver ultra-high levels of energy efficiency as soon as possible, and by 2025 at the latest.**
>
> Ultra-high energy efficiency standards have potential to represent a more cost-effective option than some more moderate levels of tightening, due to the cost savings associated with the reduced need for radiators and associated heating distribution pipes (Box 2.6). Implementing ultra-high levels of energy efficiency (consistent with space heating standards of 15-20 kWh/m^2/yr) can save consumers money on bills, provide comfort and health benefits, deliver some reduction in annual and peak electricity demand, and provide an industrial opportunity for the UK to export innovation and expertise. It could also support the delivery of European requirements around nearly-zero energy buildings:
>
> - Ultra-high energy efficiency standards, installed alongside an air source heat pump, represent a 1.1-4.3% uplift on **build costs** relative to current standards, depending on the type of building.[128] This cost would affect housebuilder profits, be reflected in land values and/or be passed through to the house buyer (see section 4.3). A significant (up to c.£3,300) saving in the capital cost of the heating distribution system helps to offset the additional costs associated with the most energy efficient fabric specifications.[129]
> - For a semi-detached home built with a gas boiler in 2020, the modelling indicates that ultra-high energy efficiency standards can deliver annual average bill savings of around £55 over the lifetime of the build.[130] When installed alongside heat pumps, ultra-high energy efficiency standards are expected to deliver average annual bill savings of around £85

The **Government Social Housing Decarbonisation** now gives guidance in kWhr/m2/year

The **Greater Cambridge** zero carbon policy recommendations gives specific targets and ranges of targets as shown previously and repeated below for convenience.



Proposed policies: Buildings – Net zero carbon new buildings

Recommended net zero carbon buildings policies.

*indicates policies we think are essential in achieving net zero carbon aims.

		Relevant NPPF paragraphs
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A.1.1c*	- All heating shall be provided through low carbon fuels (not fossil fuels).	
A1.1.d*	- No new developments shall be connected to the gas grid.	
A.1.2*	**Net zero carbon new buildings: Energy Use Intensity (EUI) targets** All dwellings should achieve an Energy Use Intensity (EUI) of no more than 35 kWh/m²/yr (as calculated by TBC) Non-domestic buildings should achieve an Energy Use Intensity (EUI) of no more than the following, by building type: • Offices – 55 kWh/m²/yr • Schools – 65 kWh/m²/yr • Multi-residential (e.g. student accommodation) – 35 kWh/m²/yr. • Retail – 55 kWh/m²/yr • Leisure – 100 kWh/m²/yr • Research facility – 150 kWh/m²/yr • HE Teaching facilities – 55 kWh/m²/yr • Light industrial units – 110 kWh/m²/yr • GP surgery – 55 kWh/m²/yr • Hotel – 55 kWh/m²/yr • Student accommodation – 35 kWh/m²/yr	149, 150, 151, 152, 153
A.1.3*	**Net zero carbon new buildings: Renewable energy** Renewable energy should be generated on-site for all new developments. The amount of energy generated in a year should match the predicted annual energy demand of the building. I.e. Renewable energy generation (kWh/m²/yr) = EUI (kWh/m²/yr).	
A.1.4*	**Net zero carbon new buildings: Offsetting** In the first instance, Requirement A.1.3 should be met. Where this is not possible, the development can be made compliant through payment into an offset fund to balance the shortfall in renewable energy provision.	
A.1.5	**Net zero carbon new buildings: Assured Performance** All developments (domestic and non-domestic) must demonstrate use of an assured performance method in order to ensure that the buildings' operational energy performance reflects design intentions.	

Bioregional Etude Currie & Brown

Greater Cambridge Local Plan Net Zero Carbon Evidence Base I Apr 21 I Rev B

So why does this DPD keep providing only % improvements and reductions?

Figure 1. Energy Hierarchy.

Change 'Operational Net Zero' on the diagram to **transition towards net zero regulated energy**.

Policy NZC2: Making Buildings Energy Efficient.

The NZC nomenclature needs to change.

> New developments of 1,000sqm or more of new non-residential floorspace, hotels (C1 use class), or residential institutions (C2 use class) are expected to demonstrate that they achieve a 19% reduction in carbon emissions compared to Part L 2013 through energy efficiency measures (fabric efficiency, efficient services and efficient energy supply; steps 1 and 2 of the energy hierarchy).

Surely the reference should be to Part L 2021?

Policy NZC2 (B) Zero or Low carbon Energy Sources and Zero Carbon Ready Technology.

The NZC nomenclature needs to change.

The following statement is good……

1. 7.3 The Government has set out its intention to ensure that new homes and buildings will not be built with fossil fuel heating, such as natural gas boilers. Given the Council's commitment to reducing carbon emissions across the District, we are seeking to accelerate the delivery of this national ambition within Warwick District. As a result, the Council is expecting that energy sources avoid fossil fuels in their entirety.

However it would be better to include the following within the actual policy so that the WDC expectation is delivered.

All heating shall be provided through low carbon fuels (not fossil fuels)

8. Carbon offsetting

Looking now at section 5.6 3: Carbon Offsetting - quote:

1. **3: Carbon Offsetting.** Developments that result in residual operational carbon emissions having incorporated stage 1 and stage 2, will be subject to carbon offsetting requirements to bring the total operational carbon emissions to net zero.

Where it says quote "…….subject to carbon offsetting requirements to bring the total operational carbon emissions to net zero" Does this now mean that total includes both regulated and unregulated energy to net zero?

9. Embodied carbon

No comments to make except to say that although significant in terms of the Climate Emergency and carbon reduction it should be a secondary requirement to energy efficiency and carbon reduction in buildings. Reducing embodied carbon whilst a good thing to do does not help the occupant in terms of cost of living and fuel poverty.

Policy NZC4: Existing Buildings.

The NZC nomenclature needs to change.

There are standards for retrofitting existing buildings. These should be included in the policy or in the statements to support the policy.

- Energiesprong
- EnerPHIT
- PAS 2035 – for domestic buildings
- PAS 2038 – for non domestic buildings
- LETI Retrofit Guide.

Eureka……..the following document does include an energy demand in section 10.2. Just one comment on this it should be 40kWhr/m2/year! You need to add 'year'

> 10.2 For existing buildings an average heating energy demand of 40kWh/m^2 should be used as a target for proposals involving alterations, extensions and changes of use. Detailed guidance for existing buildings is provided by LETI's Climate Emergency Retrofit Guide[8]

Why then are there not more references to energy demand and energy use intensity.(kWhr/m2/yr) If it is good enough for existing buildings it is good enough for new buildings!

11. Viability.

Surely all the viability work had been undertaken previously as part of the following April 2022 report

BNP PARIBAS REAL ESTATE

Real Estate for a changing world

Net-Zero Carbon Development Plan Document: Revised Viability Study

The report included the following statement:

- In this Study, we tested the potential impact of the climate change policies in the NZC DPD. The costs are 3% of build costs for residential developments and 6% of build costs for non-residential developments.

In light of the dramatic increase in energy and cost of living a 3% or 6% increase is essentially nothing and could easily be taken out of the cost of the land or the developers profits.

Appendix: Glossary

All of the definitions associated with energy and carbon should be reviewed and where appropriate revised in light of those contained with the recent CIBSE LETI report reference:

Net zero FAQs What does Net Zero mean? Published in April 2022

I would draw your attention to one specific LETI definition:

> A '**Net Zero Carbon – Operational Energy**' asset is one where **no fossil fuels** are used, all energy use (Module B6) has been minimized, meets the local **energy use target** (e.g. kWh/m^2/yr) and **all energy use is generated on- or off- site using renewables** that demonstrate additionality. Direct emissions from renewables and any upstream emissions are 'offset'.

Please note the requirement for a local energy use target in kWhr/m2/yr

Those definitions specifically to be reviewed are?

- Carbon neutral
- Net Zero Carbon
- Zero Carbon building
- Zero Carbon Ready

I suggest add the following to the Glossary

- A definition forCO2e
- Unregulated energy
- Heat Store
- Air Source heating
- Ground source heating
- Decentralised energy
- Neighbourhood energy scheme
- Energiesprong
- EnerPHIT
- PAS 2035 – for domestic buildings
- PAS 2038 – for non domestic buildings
- LETI Retrofit Guide.

Appendix 1 Policy Context

Add the following document:

- BS 40101 Building performance evaluation of occupied and operational buildings

END

George Martin

5th June 2022