

North West Bicester

Rebuttal Proof of Evidence of Mr Jonathan Riggall regarding to Carbon Emission Reduction Matters

Appeal Reference: APP/C3105/W/23/3315849

LPA Ref: 21/01630/OUT

Final

Document Reference: APP/2/D

22nd May 2023

Title	Proof of Evidence Carbon Emission Reduction
Customer	Firethorn Development Limited
Report Reference	3117
Report Status	Final
Revisions	V3
File	Y:\Projects\3117 - North West Bicester\Work\Proof\Final\3117 230505 Proof of Evidence carbon reduction final v3.docx

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1 Introduction

- 1.1.1 My name is Jonathan Riggall. The details of my qualifications and experience are included in my main proof of evidence (reference APP/2/A).
- 1.1.2 This rebuttal has been prepared in response to the evidence presented on behalf of Cherwell District Council (hereafter referred to as “the Council”) by Mr James Sheldon regarding putative reason for refusal one.
- 1.1.3 However, some of the comments I make are also of relevance to the evidence of Mr Tom Webster, who provided planning evidence on behalf of the Council, also relating to putative reason for refusal one. I clarify where this is the case.
- 1.1.4 My rebuttal is not intended to be an exhaustive response on all matters and deals only with certain points where it is considered appropriate or helpful to respond in writing at this stage. This does not mean that I am in agreement with any point by virtue of omission.
- 1.1.5 Where a specific point has not been dealt with, this does not mean that these points are accepted, and they may be addressed further at the Inquiry.
- 1.1.6 This rebuttal should also be read as an addendum to my proof of evidence.
- 1.1.7 I confirm that the opinions expressed are my true and professional opinions.

2 Evidence of Mr Sheldon

2.1 Introduction

2.1.1 Whilst many of the specific points outlined within Mr Sheldon's proof will no doubt be discussed at the Inquiry, there are some specific matters of detail where I consider that it would be most appropriate to respond to in writing at this stage. I set these responses out under headings which correspond with those in Mr Sheldon's evidence.

2.2 Key principles drawn from Policy Bicester 1

2.2.1 Mr Sheldon states in paragraph 12 of his proof that, in his opinion, the Outline Energy Statement submitted with the Application lacks the clarity and detail of how local policies will be achieved. This was also noted by Mr Webster in his paragraph 7.20.

2.2.2 The Outline Energy Statement (CD 1.18) follows the energy hierarchy set out in the Local Plan Policy ESD 2 through the use of sustainable design and construction measures; supplying energy efficiently; and making use of renewable energy. The use of allowable solutions to offset residual emission has been assessed within the viability appraisal to establish a baseline on how true zero carbon could be achieved. Paragraph B.186 of the Council's Local Plan (CD 4.1) states:

"B.186 Carbon emissions reductions can be achieved through a range of "allowable solutions"; measures which secure carbon savings off site. These have yet to be defined by the government but could potentially include investment in off site low and zero carbon technologies. The concept is relatively new and is seen as a way to enable developments to become carbon neutral where it is not possible to deal with all carbon emissions through on site measures. It will not always be cost effective or technically feasible to meet the zero carbon standard through on site measures and the government is therefore proposing that the zero carbon standard could be achieved by mitigating the remaining emissions off-site through the use of allowable solutions. The Council will support the implementation of the national approach to allowable solutions once defined and any additional implementation guidance required at a local level will be set out in the Local Plan Part 2 and the Sustainable Buildings in Cherwell SPD"

2.2.3 Section 3.5.1 of the Masterplan Energy Strategy (CD 8.3.1) notes allowable solutions can incorporate:

1. **On site solutions** such as smart appliances, energy storage and flexible demand systems.
2. **Near site solutions** such as retrofitting communal buildings or creation of local sustainable energy projects.
3. **Off site solution** such as investing in energy from waste, low carbon electricity generation and smart grids.

- 2.2.4 The Outline Energy Statement follows the North West Bicester Masterplan Energy Strategy (referred to herein as the Masterplan Energy Strategy (CD 8.3.1)). The Masterplan Energy Strategy, adopted by the Council, notes that True Zero Carbon, will be met through a combination of energy hierarchy measures, including the use of allowable solutions to achieve true net zero.
- 2.2.5 At an outline planning application stage, where there are no plot layout or building designs that would allow detailed analysis, the Outline Energy Statement states that policy compliance will need to be achieved at each reserved matters application, and subject to detail cost and viability analysis.
- 2.2.6 It is my opinion that the level of detail provided within the Outline Energy Statement is commensurate with the outline nature of the planning application. It aligns with the staged approach set from the Masterplan Energy Strategy (CD 8.3.1) and policy requirements of Ecotown Principle ET 9.2 (Appendix 2 paragraph ET9.2 Page 64 of the SPD, CD 4.5) citing the need for flexibility through to detailed application to ensure resilience in technology selection.
- 2.2.7 In his paragraph 13 Mr Sheldon reiterates that there is a lack of specificity in detailing how true zero carbon would be practically implemented in practice. The Outline Energy Statement (CD 1.18) is clear that these will need to be implemented at detail design stage as part of the reserved matters applications, and subject to control through a planning condition. As with all development projects, implementation will be monitoring through the Development Control process.
- 2.2.8 In response to Mr Sheldon's paragraph 14, with regards to feasibility studies for renewable energy, the renewable energy appraisal (Section 7, and Appendix C of the Outline Energy Statement, CD 1.18) sets out the technology available to achieve further emissions reductions, at the time of writing.
- 2.2.9 The scale of renewable technology that can be incorporated on each plot will be dictated by building design (massing, plot layout, orientation, roof designs etc). The scale of renewable energy incorporated on each building will be defined in detail as part of each reserved matters application.
- 2.2.10 For the purposes of the viability assessment, selected fabric energy efficiency standards (which aim to exceed the standards set within the Masterplan Energy Strategy) and low carbon and smart technologies were appraised to understand the cost impact of true zero carbon. Table 5.1 of my Proof of Evidence (reference APP/2/A) presents how such combinations of measures aligned to Policy ESD 2 and therefore achieves true zero carbon.
- 2.2.11 The final approach to delivering true zero carbon will be defined with detail design of each building and presented at each reserved matters stage. The technology selection will be open to using the full suite of available technology. Over the coming years the parameters that define technology selection will change including:
1. Policy, regulation and guidance change
 2. Technology innovation

3. Cost and viability
 4. Supply chain risks
- 2.2.12 An example of this can be seen with the variables that surround district heat networks since the adoption of the Local Plan. It is therefore my opinion that technology selection should not be set in stone at the outline planning application stage.
- 2.2.13 As a development site may be built out over decades, this allows for flexibility at the detailed design stage to deliver the most appropriate low/ zero carbon solutions as building costs fluctuate, best practices evolve, or new technologies emerge.
- 2.2.14 This approach to specifying technology through the outline planning process is widely adopted across the UK. This approach has also been used on previous applications within North West Bicester.
- 2.2.15 Mr Sheldon discussed, within paragraphs 15 to 18 of his Proof of Evidence, the use of offsetting and suggests it sets a dangerous precedent for future development. This was also noted in Mr Websters Proof of Evidence paragraph 7.28.
- 2.2.16 It should be noted:
1. The use of allowable solutions, the term for offsetting used within the Council's policy and evidence base, is defined in Local Plan policy ESD 2.
 2. The Masterplan Energy Strategy (CD 8.3.1) Section 6.3 Summary of Options notes the need for the use of allowable solutions for all potential energy measure options in delivering true net zero, with the exception of a development that is connected to a biomass combined heat and power unit.
 3. The use of allowable solutions was also set as a precedent within the Planning Conditions of the Exemplar development (CD 8.1.4) (Condition 42).

"That full details of the measures to achieve zero carbon energy use as defined in PPS 1Eco Towns, through on site solutions, shall be submitted for approval at the same time as reserved matters referred to in condition 40 thereof. Should it be demonstrated to the satisfaction of the local planning authority that is not possible to achieve zero carbon on site, a scheme for offsite mitigation in Bicester shall be provided with the first reserved matters application for a building that does not achieve zero carbon, for that portion of the energy use that cannot be met on site."
- 2.2.17 The precedent for the use of allowable solutions has been set by the Council themselves.
- 2.2.18 Mr Sheldon discusses the price of carbon that would be levied for an allowable solutions payment between paragraphs 19 to 23.

- 2.2.19 The price of carbon was tested within the viability appraisal at £60 tonne over a 30 year period in lieu of Council not providing evidence of their requirements against their ESD 2 policy. Any adjustment to this figure would impact the agreed viability position.
- 2.2.20 Mr Sheldon also references the use of the current non-traded shadow price of carbon. He has not provided evidence within his proof of:
1. How the non-traded value of carbon is established;
 2. How the non-traded value of carbon has previously been used to assess the cost of offsetting in land development projects;
 3. How non-traded value of carbon should be used in policy by Government; and
 4. The relationship between non-traded price of carbon and cost of measures relating to abatement of carbon at a local level.
- 2.2.21 The current non-traded price of carbon is not relevant in setting allowable solution prices in the context of the Council's policy.
- 2.2.22 The Masterplan Energy Strategy (CD 8.3.1) notes (first paragraph, page 14) that the extent to which allowable solutions may be implemented within the development will be determined in the detail design stage.

2.3 Precedent policy examples showing achievability of Zero Carbon in other areas of the UK

- 2.3.1 Between paragraphs 24 to 35 of his Proof of Evidence Mr Sheldon sets out a range of information relating to documentation from three local authorities. These documents do not form any part of the Council's policy evidence base. These are also not listed within the approved documents list of the Appeal.
- 2.3.2 How this evidence supports viable development in each of these Councils will be specific to each planning authority. It has not been used by Cherwell District Council as evidence to inform policy or viability at North West Bicester.
- 2.3.3 This evidence is therefore not considered relevant.
- 2.3.4 Whilst the evidence presents a range of different costs for achieving variable fabric energy efficiency and technology standards, the Council has already signed off on the package of costs associated with the true zero carbon measures, including fabric energy efficiency measure, as being acceptable.
- 2.3.5 The costs summarised in Mr Sheldon's proof of evidence does not align with the costs presented within the more up to date (February 2023) Evidence to

Inform the Future Homes Standard by the Future Homes Hub Task Force (CD 8.3.10).

- 2.3.6 The gap between costings presented by these documents further illustrates the need to consider costing through understanding the detail design, rather than out of context third party references.
- 2.3.7 Mr Sheldon accepts, in paragraph 30, that the use of offsets should contribute to carbon reduction where onsite renewable energy cannot meet the residual emissions after energy efficiency measures. He notes that offsetting should not be used to reduce energy efficiency measures. As noted in Table 5.1 of my proof of evidence (APP/2/A), the energy efficiency measures considered within the viability assessment look to exceed those defined within the Masterplan Energy Strategy. Allowable solution measures would only be applied after meeting the fabric energy efficiency standards set in the Masterplan Energy Strategy and when the final quantum of roof mounted solar panels is known.
- 2.3.8 In his paragraph 31 Mr Sheldon states that the policies he refers to for Bath and North East Somerset have been complied with successfully since January 2023 and prove the requirements are “achievable in practice”. Mr Sheldon does not provide evidence of which applications these are, their specific viability considerations, or whether they have actually been built to the standards set in policy. “Achievable in practice” can only be defined by clear evidence post-construction delivery.
- 2.3.9 The Outline Energy Statement (CD 1.18) defines that what is achievable in practice should be established at the detail design stage, within each reserved matters application.

2.4 Implications and comments on current costings plan:

- 2.4.1 Mr Sheldon states in paragraph 37 that the combination of increased levels of fabric energy efficiency, including the use of low carbon and smart heating technology, solar panels and the use of allowable solutions (referred to in Mr Sheldon’s paragraph 36) does not meet the definition of true zero carbon (i.e. all energy related emissions are net zero over the course of a year).
- 2.4.2 Policy Bicester 1 does not provide a specification on how true zero carbon should be met. It is therefore not possible to state the combination of measures assessed in the viability appraisal does not meet Policy Bicester 1.
- 2.4.3 How zero carbon should be met is defined within the Local Plan Policy ESD 2. This defines the measures to include energy efficiency, low carbon technology, renewable energy supply and the use of allowable solutions. Please note the policy does not specify absolute targets for each measure.
- 2.4.4 In terms of measuring compliance against Bicester Policy 1 it is assumed that the Standard Assessment Procedure of the Building Regulations (CD 8.3.7) will be used, as per previous phases of North West Bicester. It should be noted that the Standard Assessment Procedure is a performance based methodology

and developers are free to use any technology, within the Building Regulations' Product Characteristic Database, to meet the performance specification.

- 2.4.5 The package of measures considered in the viability appraisal is aligned to the energy hierarchy defined by Policy ESD 2 and would deliver true zero carbon.
- 2.4.6 In paragraph 38 of his Proof of Evidence Mr Sheldon provides commentary on the measures selected to establishing costs for the viability appraisal.
- 2.4.7 It should be noted that:
 - 1. These are not the design standards set for the development.
 - 2. The measures established were developed to support testing cost impact of energy measures within the viability appraisal.
 - 3. Their consideration was based on meeting the energy hierarchy set out in Policy ESD 2, the requirements of 'smart technology as defined by Policy Bicester 1, and Section 6.2 of the Masterplan Energy Strategy (CD 8.3.1), last paragraph page 29.
- 2.4.8 This approach enabled potential allowable solutions costs to be considered with the Council.
- 2.4.9 The final designed energy efficiency measures and technologies will be agreed at each reserved matters stage. The measures will need to consider future changes to the Building Regulations, delivery of true zero carbon as defined in Bicester Policy 1 and meet the requirements of Local Plan Policies ESD 2 to 5, whilst maintaining viability of the development as a whole.
- 2.4.10 The costs of using higher fabric energy efficiency standards or use of technologies that decrease energy consumption can then be balanced against their potential to reduce the need for allowable solution payments. The mechanism to secure this approach is provided with the suggested planning condition for true zero carbon. Neither Mr Sheldon or Mr Webster have identified why such a condition would not be an acceptable approach.
- 2.4.11 In his paragraph 38 Mr Sheldon makes specific commentary on the measures included within the viability assessment which I have responded to in order.

Mr Sheldon Comment	My Response
<p>A. Use of night storage heaters in apartment blocks requires a significantly greater amount of energy and hence carbon emissions to deliver the space heating requirements compared to a heat-pump solution. See SAP 10.2 technical document for detailed energy factors used in heat-pump and night storage heater energy analysis.</p>	<p>Section 8.1 of the Outline Energy Statement identifies that OFGEM are requiring new development to think differently to close the disconnects between electrical heating demand and renewable generation. Whilst smart energy storage technologies are less efficient than heat pump technology, they have a far greater capability and capacity to utilise intermittent renewable energy. This is of importance as the UK increases the proportion of intermittent renewable energy on the grid over the next decade.</p>

Mr Sheldon Comment	My Response
	<p>Smart heat storage technology can store electricity when there is excess renewable supply on the grid. Heat pump technology cannot do this alone.</p> <p>The carbon benefits of heating technology solutions will be considered as part of the optioneering at detail design stage.</p> <p>At detailed design stage an understanding of the designed heat demand, space standards, power constraints and building form will allow a clear practical design outcome.</p>
<p>B. Immersion heaters for DHW provision significantly increases energy and carbon intensity of DHW provision compared to a heat-pump heated domestic hot water cylinder – again, please refer to SAP 10.2 technical documentation to see difference in factors between the two technologies.</p>	<p>As above, the potential for smart hot water storage to utilise a greater amount of renewable energy will need to be explored. The emergence of new technologies identified within the Outline Energy Statement (CD 1.18) that support active network management will also need to be considered, rather than dismissed at outline planning because they are not currently represented within the Standard Assessment Procedure, especially with the significant shift in technology innovation.</p> <p>The potential solutions identified within the Outline Energy Strategy includes air to water source heating, waste water heat recovery and smart energy technology such as storage. Again, the cost benefit of these solutions will be considered at detail design stage.</p>
<p>C. Heat pumps typically achieve annual operational coefficient of performance (SCoP) of greater than 300%. This means for one part of electricity used, three parts of heat are delivered to the space. Direct electrical solutions such as night storage heaters, immersion heaters etc will always have efficiencies of less than 100% (See: BRE : Domestic Annual Heat Pump System Efficiency (DAHPSSE) - Estimator - BETA (bregroup.com))</p>	<p>The specific operational performance of heat technology will be selected from the BRE’s product characteristics data base at detail design. This will ensure that the technology considered reflects the options available at the time of construction rather than planning.</p>
<p>D. The applicant refers to FHS specification as its core target. There is no formal specification for the FHS yet, and the current published notional specification is only indicative. However, that notional specification</p>	<p>The approach in the Outline Energy Statement is to ensure all potential variations of technology and performance compliance can be considered at detail design stage.</p>

Mr Sheldon Comment	My Response
<p>contains heat pumps for heating and domestic hot water provision. The Future Homes Hub, a policy hub bringing together many developers, housebuilders and SME's, have proposed some alternative contender specifications for the Future Homes Hub. Within these specifications, heat pumps are used for DHW and if heating is provided, heating, in all contender specifications bar one. In this singular exception, a SMART technology solution using radiant heaters is suggested.</p>	
<p>E. There is no mention of night storage heaters in relation to any contender specification, or the governments notional specification in relation to the Future Homes Standard.</p>	<p>The Building Regulations is a performance based approach which allows developers to choose any technology including smart heat storage.</p>
<p>F. Due to the higher energy demands, night storage heaters significantly increase the energy demands per plot, thereby undermining the ability of the proposed development to meet the True Zero Carbon standard. Other design solutions are possible and should be explored to ensure this policy requirement is met.</p>	<p>As noted above, smart technology and heat storage has a capacity to capture a greater proportion of both local and national renewable energy generation, reducing the emissions of heating.</p> <p>In considering the wider viability assessment, at detail design the cost benefit of the various approaches to support grid decarbonisation in the future will be an important consideration.</p>
<p>G. CIBSE AM16 provides design guidance on heat pump installation in multi-residential buildings – very common solution in other parts of the country. (CIBSE are the Chartered Institution of Building Services Engineers (CIBSE), they are the professional body that exists to advance and promote the art, science and practice of building services engineering)</p>	<p>This will be considered in the detail design of buildings and its very common solution should not be considered exemplar in isolation.</p>
<p>H. For example, one common solution in multi-residential buildings is for the main ASHP heat generating units to be on the roof. Heat distribution pipework is then provided to the flats through risers and down corridors, with small</p>	<p>The design of the apartments will need to be considered at the relevant reserved matters application.</p> <p>It should be noted that the energy bill of the end user from a centralised system is dictated by the heating system management company. The retail of heat is</p>

Mr Sheldon Comment	My Response
<p>heat interface units, no larger than a traditional combi-boiler, within the flats. In this solution, the flat can be laid out as per a system boiler, with no low temperature radiators or thermal storage. Rooftop ASHP would reduce the area available for solar PV, but this may be balanced by the 60-70% reduction in electricity needed to run ASHP compared to direct electric. Additionally, the residents will always gain the energy bill savings benefit of ASHP because it reduces their actual electricity use.</p>	<p>currently unregulated and heat suppliers are open to define their own rates. It is therefore beholden on an independent unregulated private company to pass on any savings.</p> <p>As noted in the Outline Energy Statement, OFGEM are requiring distribution network operators to look at alternative mechanisms to manage the disconnect between renewable energy generation and demand.</p> <p>One mechanism, currently being trialled by regulated energy retailers, is for home owners to be paid not to use energy during peak demand times. In the future, home owners with energy storage may also benefit from lower tariffs for using energy during periods of excess renewable generation on the grid (similar to night time energy tariffs). These energy saving opportunities are less likely to be available to end occupants through a centralised heating system owned independently from the owners.</p> <p>Again, it is important to ensure these issues are considered at detail design stage when further market clarity is provided, rather than discarding them at outline planning.</p> <p>Whole system thinking end user cost benefit will be considered at detail design stage.</p>
<p>I. In addition, the life cycle impacts of a heat-pump are vastly less than any other technology, due to the high efficiency and significant reductions in life-time operational energy use.</p>	<p>Whole life cycle impact is an important consideration that needs to be evidence based, transparent, comparable and consistent between technologies and their integration into buildings, including all additional infrastructure required to support them both on and offsite.</p>
<p>J. Changing heating strategy would make it significantly easier for applicant to achieve on-site zero carbon balance.</p>	<p>The heating strategy is defined in the Outline Energy Statement, not in the viability appraisal. The heating strategy for the apartments (and wider site) will be determined through detail design and optioneering.</p>
<p>K. Further note that utilisation of ASHP/heat-pumps in all dwellings/flats would reduce peak electricity demand significantly, thereby potentially reducing the current connection costs quoted by SSE – current cost of £713,573.</p>	<p>Demand shifting and opportunities for reducing peak power demand will be considered during detail design which will allow a revision of the utility connection agreements.</p>

- 2.4.12 In Mr Sheldon’s final paragraph he notes that reshaping the agreed position on viability will enable consideration of various different energy efficiency solutions to consider four aspects. In this Mr Sheldon identifies that increasing the fabric energy efficiency standards will increase the costs of the development over the agreed viability position.
- 2.4.13 As per the Outline Energy Statement, the approach to final technology selection will be determined at detail design. This will include the four aspects referred to by Mr Sheldon, and not limited to:
- A. The need for quality mechanical ventilation and heat recovery in all dwellings considered through appropriate overheating analysis and a detailed ventilation strategy.
 - B. The consideration of heating flattened units to deliver low operating cost and low carbon solutions in the context of viable development as a whole.
 - C. The final fabric energy efficiency performance, that goes beyond the minimum standard set by the Masterplan Energy Strategy adopted by Council.
 - D. The expansion of the use of roof mounted PV when detail roof design has been established.

3 Evidence of Mr Webster

- 3.1.1 Mr Webster's statement predominantly reflects the Proof of Evidence of Mr Sheldon. In addition to points already address in Section 2 of this rebuttal the following comments have been considered.
- 3.1.2 Mr Webster states in his paragraph 7.24 that the Appellant did not make the commitment as to what would be delivered if national changes to Building Regulations are not brought forward. The commitment was made within the Outline Energy Statement that Policy ESD 2 will be delivered. The Masterplan Energy Strategy (CD 8.3.1), which provides the evidence base for Local Plan policy, states the minimum fabric energy efficiency standards as that of Code for Sustainable Homes Level 5.
- 3.1.3 In his paragraph 7.29 Mr Webster questions the 30 year spend gap on establishing the price of carbon. Typically, 30 years is used because by 2050 (i.e. within 30 years) electricity grid emissions are expected to be near zero (approximately 0.003kgCO₂/kwh).
- 3.1.4 Mr Webster states in his paragraph 7.40 that if the scheme were to be approved, the development would serve as a significant blow to the Council's flagship development site (and the wider masterplan's ability to achieve a zero carbon footprint), at a time when climate change is of critical importance.
- 3.1.5 In developing the potential approaches to decarbonisation, the Outline Energy Statement (CD 1.18) follows the approaches set out in the Masterplan Energy Strategy (CD 8.3.1). It aims to advance the current development to new ground through smart infrastructure.
- 3.1.6 Section 8.3 and 8.4 of the Outline Energy Statement sets out the opportunities to deliver ground breaking approaches to energy supply and use. As an exemplar site North West Bicester offers the opportunity to innovate and lead on dealing with national issues. This includes the disconnect between how energy is generated and use, which has not been considered to date at North West Bicester.
- 3.1.7 As identified in the Section 8.1 of the Outline Energy Statement (CD 1.18), Scottish and Southern Energy Networks (SSEN) are mandated by OFGEM to think beyond just installing electrical heating technology such as heat pumps and renewables to manage the disconnect between demand and renewable generation. This project, especially for the higher density development, will allow North West Bicester to lead on resolving the issues of the existing disconnects of uncontrolled demand and intermittent renewable generation.
- 3.1.8 It is my opinion that this approach and the use of innovation in smart energy storage and technology goes beyond current thinking and convention of just enhancing fabric measures and single technology applications such as heat pumps to tackle the national issues set by OFGEM.
- 3.1.9 The project has the opportunity to define new ways of meeting zero carbon development affordably through the use of a range of innovation from thermal batteries to shifting power demand (as reference in the Outline Energy

Strategy) for housing typologies such as flats. The lessons learnt can then contribute to the national understanding of alternative approaches to net zero. This requires thinking of the whole system of renewable generation, distribution and use rather than just building heating demand alone. It is my opinion that this would enable North West Bicester to continue challenging normal thinking on net zero.



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