

# Leading to Net Zero

Evidence review of  
communities pioneering  
low carbon standards



(c) Copyright Community Land Trust Network, November 2021

This research was produced by Nathan Kempson of HoyleDean, sustainability professionals.

<http://hoyledean.com>

It uses data from the Community Led Homes database, managed by the Community Land Trust Network on behalf of the Community Led Homes partnership.

We thank Power to Change for funding and supporting this research, and our corporate partner the Ecology Building Society for its ongoing support of the Community Land Trust Network.



## Glossary

- TER** Target Emission Rate - The target CO<sub>2</sub> emission rate sets a minimum allowable standard for the energy performance of a building and is defined by the annual CO<sub>2</sub> emissions of a notional building of same type, size and shape to the proposed building. TER is expressed in annual kgCO<sub>2</sub>/m<sup>2</sup>.
- TFEE** Target Fabric Energy Efficiency - is the minimum energy performance requirement for a new dwelling approved by the Secretary of State in accordance with regulation 25 of the building regulations. It is expressed as the amount of energy demand in units of kilowatt-hours per square meter of floor area per year (kWh/(m<sup>2</sup>/year)). The TFEE is derived from a notional dwelling of the same size and shape as the actual dwelling being constructed. A summary of the Part L 2013 notional dwelling is published in Table 4 of approved document L1A and the full detail is set out in the Standard Assessment Procedure (SAP 2012) Appendix R.
- DER** Dwelling Emission Rate - The Dwelling emission rate is the actual CO<sub>2</sub> emission rate of self-contained dwellings and individual flats (excluding common areas) based on their actual specification. The DER for the proposed building must NOT exceed the TER.
- DFEE** Dwelling Fabric Energy Efficiency - The Dwelling Fabric Energy Efficiency rate is the actual energy performance of the new dwelling.

# FOREWORD

Community led housing groups are nothing if not ambitious.

Starting new community businesses and trying to build homes can be an uphill task in a market hostile to new entrants.

Making affordable housing financially viable, often on tricky small sites, is a challenge for even well-established housing providers.

So, I am cheered when the majority of groups say they want to build to high environmental standards. To recognise that we are in a climate emergency, and to aim for high standards, is commendable. More than that, it shows that they put a wider vision of sustainable development at the heart of their vision for their community.

I am cheered, but also skeptical. How far can they achieve this?

We decided to put the sector to the test, to see how far it is achieving this aim. With a limited budget we've not been able to commission post-occupancy studies. But we've done the next best thing, employing an expert to examine the drawings signed off by planning departments. Hoyle and Dean has taken a random sample of projects with planning permission – some now completed – and assessed their planned energy performance.

It hasn't been easy getting the full technical details, and this is just a sample. But, from the sample reviewed, Hoyle and Dean's cautious conclusion is that community led housing is aiming to outperform both the national

minimum standards and higher local authority standards where they exist.

I believe communities can play a more significant part in raising standards, and accelerating the transition to Net Zero. We now have some evidence to back that up.

If we, the government and the industry can ensure the more than 12,000 homes in the pipeline are built, and the pipeline is grown, then community led housing can build up local supply chains and skills which benefit the whole industry.

And as is common with many Community Land Trusts, they can become vehicles for further climate action, from planting trees to taking a whole village off oil.

Community ownership and leadership can be central to communities thriving in a changing climate.

Tom Chance

**Chief Executive, Community Land Trust Network**



# INTRODUCTION

## Brief Outline of Scope

Hoyle and Dean were commissioned by the Community Land Trust Network (CLTN) to undertake a “soft touch” review of the approach various community led housing Development teams take towards sustainability and Carbon reduction for housing developments within their operating areas. The purpose of the review was to find the overall approach in terms of sustainability and to confirm the driving factor behind the potential sustainable approach towards community led housing developments as a whole.

In order to carry out this assessment it was agreed that a review of 100 prioritised dwellings across 11 sites was a reasonable sample size based on the funding available. A list of available sites from various regions was provided by CLTN which formed the basis of the selection process. Due to limited availability of information, the below sites were agreed to be used for review.

The 11 sites are listed as follows:

- 2 Belstone Walk, BS4 1QS
- 139 Novers Lane, BS4 1QP
- Bradworthy CLT, EX22 6BB
- Church Grove Ladywell, London, SE13 7UU
- Briar Close, Cornwall CLT, PL30 3FB
- Jubilee Close, Cornwall CLT, PL14 4PA
- Mistress Lane, Leeds Community Homes, LS12 2LJ
- Tolzey Hall, Marshfield CLT, SN14 8LR
- Rusty Lane, Seend CLT, SN12 6NA
- Hele Lane, South Petherton CLT, TA13 5DY
- Project 1, Witherslack CLT

Available information was gathered, collated and compared against the ‘then current’ Local Planning policies to ascertain if a baseline or improved approach towards sustainable design and carbon reduction had been considered.

The results of the review are concluded at the end of this document.

## Methodology and Approach

The method for energy analysis of new build residential dwellings is the Standard Assessment Procedure (SAP) this has to be completed at both Design Stage and Post Construction stage to ensure the design of the dwelling is in line with requirements to meet Building Regulations compliance as a minimum, and to meet any requirements for Carbon/Energy reduction or Low/Zero Carbon technology offsets in line with any Local Planning Policy requirements. The SAP has to be undertaken by a qualified and registered energy assessor.

In order to complete an accurate SAP assessment of a dwelling the assessor must have all relevant information including the buildings measurements (often planning drawings are used to ensure all

required measurement can be taken), an Air test result for the building\* and a full specification of the Heating, Cooling, Ventilation, Lighting and Hot Water systems being installed. Details of any LZC technologies should also be provided. If any of this information is not available, default values can be applied and assumptions can be made at Design Stage.

The review in this study refers to information available from each site from local planning authority's databases, online research and information obtained by CLTN. The information reviewed includes but is not limited to;

- SAP Assessment information available
- SAP Assessments completed with assumptions
- Energy Performance Certificates (As Designed Drafts)
- Energy Performance Certificates (As Lodged)
- Energy Statements completed for planning
- Sustainability Appraisals and Reporting completed for planning
- Planning drawings submitted and approved for planning and final development
- National Calculation Methodology guidelines
- Energy Accreditation membership discussions

A review of the Notional Dwellings Target Emission Rate (TER) and Target Fabric Energy Efficiency (TFEE) was completed where possible against the Actual Dwellings Dwelling Emission Rate (DER) and Dwelling Fabric Energy Efficiency (DFEE), along with reporting of the dwellings EPC Band Rating. Estimated reductions in the Dwelling Emission Rate (DER) and Dwelling Fabric Energy Efficiency (DFEE) were then provided to compare the Local Planning Policy requirements with the estimated reductions being realised.

The overall reduction in the tonnage of CO<sub>2</sub> and estimated running cost savings against an average household was also reported to provide a more pragmatic comparative metric for homeowners.

## Study and Approach Limitations

It was apparent from an initial review, that information would be limited. As the study was based on both historic and current/early on-site stages, we were reliant on Local authority planning department information contained on various planning portals. There was little consistency between local authority records, with some having copies of the information required, and some not. Where information was not available from planning stage, further research was carried out and as a minimum, any lodged Energy Performance Certificates were obtained.

Upon review, further information was retrieved by CLTN for the Jubilee Close and Bradworthy Schemes.

As the scope of work was limited to a desktop study, in the majority of cases, not all the required information was available to complete accurate SAP calculations and several assumptions have had to be made including that of construction fabric data, lighting, heating and ventilation. Due to these factors, the completion of SAP calculations has been minimal and the review relies on information gathered from secondary sources.

This should be considered when evaluating this review. Ideally a wider reaching and more detailed site-based study with survey information should be undertaken to provide more accurate and robust conclusions.

The limitations of the information available produces limitations in review. Estimations were made in places based on industry knowledge, experience and comparisons with similar development schemes not directly associated with the community led housing projects. The estimations are reasonable and serve to provide guidance as to the general performance of the buildings being reviewed.



*RUSS, one of the groups in the study, breaking ground this autumn.*

# CONCLUSIONS

Site	Local Authority CO <sub>2</sub> reduction Requirements	Est. Actual Average Reduction in CO <sub>2</sub> emissions	Est. average saving in CO <sub>2</sub> Emissions over Average Household	Est. running cost savings over "typical average household" <sup>1</sup>
Belstone Walk	None found – assume 20% reduction in line with NPPF	22.22%	2900kg	£389.00
Novers Lane	20% reduction from LZC	21.02%	2900kg	£0.00
Church Grove, Ladywell	Working towards 100% net zero carbon, acceptable is 35% currently	56.74%	4500kg	£698.00
Briar Close, Bodmin	None found – assume 20% reduction in line with NPPF	20% estimated	3364kg	£396.71
Jubilee Close, Duloe	None found – assume 20% reduction in line with NPPF	25-50% estimated	4827kg	£732.94
Mistress Lane, Leeds	20% reduction, with 10% from LZC	20% estimated	3800kg	£341.50
Tolzey Hall	20% reduction in line with NPPF	41%	3820kg	£698.00
Rusty Lane	None found – assume 20% reduction in line with NPPF	No information available	No information available	No information available
Hele Lane	None found – assume 20% reduction in line with NPPF	15-20% estimated	1720kg	£157.70
Bradworthy, Devon	None found – assume 20% reduction in line with NPPF	24%	4680kg	£695.00
Project 1, Witherslack	None found – assume 20% reduction in line with NPPF	No information available	No information available	No information available

<sup>1</sup> the estimated running cost savings metric does not provide a direct comparison with like for like properties. The average running cost comparative figures include for "typical" usage of regulated energy for a "typical average sized" property. The figures quoted only give an approximate cost saving based on the information available, in real world terms the reductions are dependent on dwelling type, size and many use factors which should be properly reviewed on a case-by-case basis to give actual predicted cost savings. In this regard a significant portion of the savings shown will come from the sizing and type of dwellings for these projects compared against the "typical average sized" property metric.

## Overview of findings

It is apparent that on all schemes where a specific Local Authority requirement for a reduction in CO<sub>2</sub> exists, generally the results show that the community led housing Development teams have met, and in some cases exceeded these requirements across the sites reviewed.

The schemes that do not have a Local Authority requirement for a reduction in CO<sub>2</sub> emissions, but do encourage sustainable design and contain guidance on energy efficiency, seem to have taken a more pragmatic approach and produce dwellings that are very efficient, with reductions in emissions estimated between 15 - 50%, it is assumed the NPPF requirements have been utilised in these cases.

From a review of the information available to this study, it is clear that a sustainable approach is taken by the community led housing Development teams to produce energy efficient homes, with a focus on the reduction of CO<sub>2</sub> emissions and good EPC Band Ratings. This is a key factor in driving the housing sector towards the net zero carbon target whilst contributing to the reduction to running costs for prospective homeowners.

It is unclear as to whether the Local authority requirements are the driving factor, or whether a reduction in running costs, carbon emissions and a more sustainable approach to building as a whole has been adopted regardless of requirements. This brief study however does suggest the latter.

In addition to the reduction in CO<sub>2</sub> emissions and Carbon savings, a review of the potential running cost savings was undertaken. Although accurate predicted cost savings cannot be provided within this report, a general overview of the savings realised in terms of a comparison between the predicted regulated energy use according to the EPC Band rating and a "typical average house" has been included as a guide (see Appendix A);

An article published by Everest 2020 Limited (measured from 2005-2016) shows the comparative estimated energy costs and number of properties by Energy Performance Rating.

Energy Performance Rating	Estimated energy costs for an average sized property per year (regulated energy only)	Number of EPC's lodged within England and Wales for each Rating
G	£2203	239,142
F	£1626	802,933
E	£1171	2,874,064
D	£1076	6,136,001
C	£681	4,154,915
B	£372	1,393,610
A	£364	19,832

From this data the average running cost for an average sized property across England and Wales is estimated to be £1070, which falls into the category of a D Rating.

A more realistic prediction of actual energy usage and cost includes for unregulated energy usage and according to data published by Ofgem in May of 2021 the average running costs for three general dwelling types are as follows;



#### Small house/flat – 1 -2 bedrooms

A small to medium sized house or flat, with 1 or 2 bedrooms and 3 to 4 people, would use around 8000kWh of gas per year, and 2000kWh of electricity.

This would mean an average monthly energy bill of £66, or £795 a year.



#### Medium house - 3-bedroom house

If your house is a little bigger, say 3 bedrooms and 3 – 4 people, your usage might be more like 12,500kWh of gas per year, and 3100kWh of electricity.

This would mean an average monthly energy bill of £97 per month, or £1,163 a year.



#### Large house – 4 or more bedrooms

For a bigger house with 4 or more bedrooms and 5 people, the average would be around 18,000kWh of gas per year, and 4,600kWh of electricity

This would mean an average monthly energy bill of £137 per month, or £1,639 a year.

These costs include **for both regulated and unregulated** energy usage within the dwellings. Regulated energy relating to the Heating, hot water, lighting and fans, with unregulated energy relating to the running of household appliances, TV, computers etc.

Further advice would be to secure funding to allow a broader set of analysis to be undertaken, to include as many regions/areas across the UK as possible, to expand the dataset and be able to provide a better overview of the approach to sustainable developments. A more detailed approach to the data gathering would be required to ensure all information is provided for review. Where information is not available, property surveys should be conducted to ascertain accurate performance data and where possible energy monitoring and recording of data should be undertaken to more accurately predict and confirm the cost savings realised.

To aid in any further reviews it is recommended that for all future developments, the local planning authority requirements, full final specifications, full drawing sets and air test results are acquired and retained for each development. These can then be used to re-assess the approach taken for future comparisons.



**COMMUNITY  
LAND TRUST**  
NETWORK