

Rother District Council

Energy Efficiency Standards Study

TER-Compatible Targets for new dwellings

Job number: 318714-00

October 2026 | Rev 3



This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Glossary

ASHP	Air Source Heat Pump	RdSAP	Reduced Data SAP
BER	Building Emissions Rate	SAP	Standard Assessment Procedure
BPER	Building Primary Energy Rate	TER	Target Emissions Rate
BR	Building Regulations	TFEE	Target Fabric Energy Efficiency
DER	Dwelling Emissions Rate	TPER	Target Primary Energy Rate
DFEE	Dwelling Fabric Energy Efficiency	WMS	Written Ministerial Statement
DHW	Domestic Hot Water		
DPER	Dwelling Primary Energy Rate (from SAP calculations)		
DSM	Dynamic Simulation Modelling		
EUI	Energy Use Intensity		
EPC	Energy Performance Certificate		
GIA	Gross Internal Area		
HVAC	Heating, Ventilation and Air Conditioning		
LETI	London Energy Transformation Initiative		
MVHR	Mechanical Ventilation with Heat Recovery		
NCM	National Calculation Methodology		
NZCBS	net-zero carbon Buildings Standard		
PHPP	Passive House Planning Package		
PV	Photovoltaic		
RDC	Rother District Council		

Executive Summary

Introduction

Arup's Rother Climate Change Study (2023) recommended to RDC that all new dwellings should be required to achieve the maximum Energy Use Intensity (EUI) targets outlined in LETI's Climate Emergency Design Guide (2020). This commission uses modelled data to provide further technical evidence to define what energy efficiency performance net-zero-carbon-aligned dwellings should achieve, in preparation for the updated Local Plan.

This study is intended to address the change in national policy requirements coming from the Written Ministerial Statement (WMS) on Local Energy Efficiency Standards published on 13 December 2023 and advise on appropriate energy efficiency targets based on Building Regulations Approved Document L's (BR Part L) metrics that correspond to the EUI limit in the 2023 study.

Approach

The project was split into five phases of development, as outlined below:

- Phase 1 – Project Inception, to define project objectives and plan of work;
- Phase 2 – Identifying archetypes and variable metrics to represent a wide range of case studies;
- Phase 3 – Energy modelling to assess the percentage improvement over TER and EUI results for all the tested design options;
- Phase 4 – Analysis of results to compare EUI and percentage improvements over BR Part L for tested archetypes and define correlations;
- Phase 5 – Policy target definition, to define net-zero-aligned targets.

Key results & observations

Modelled EUI and regulated emissions performance, expressed as the percentage improvement over Target Emissions Rate (TER), were estimated for typical new dwellings and analysis identified a correlation between the two metrics.

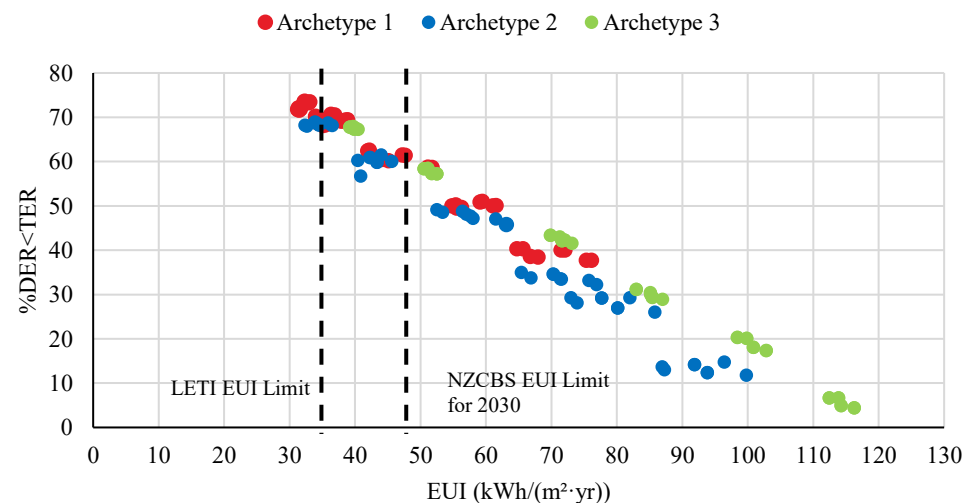
The graph on the right shows results from the assessment, in comparison with the

LETI EUI limit and the new dwellings limit from the recently published UK Net Zero Carbon Buildings Standard (UK NZCBS), which sets a commonly recognised definition of net-zero-carbon-aligned buildings for the UK.

Based on the results, dwellings that achieve a 70% improvement over TER are likely to achieve an EUI in line with or below the LETI limit (as set in the 2023 Climate Change Study), while a 60% improvement over TER would align with the UK NZCBS.

Key recommendations

- Update the limits for new dwellings to align with the recommendations in the newly published UK NZCBS, which represent a widely recognised definition for net-zero-carbon-aligned buildings in the UK;
- If a Dwelling Emission Rate (DER) energy efficiency standard is adopted, set the required DER improvement over TER to 60% for all new dwellings.



Graph 1: Regulated emissions rate performance mapped against EUI results and relevant EUI limits.

1. Introduction

1. Introduction

Project background

Arup was appointed by Rother District Council (RDC) to develop a piece of research on the correlation between Energy Use Intensity (EUI) limits and the Building Regulations Approved Document L (BR Part L) compliance methodology.

This commission follows the completion of Arup's Climate Change Study for RDC in 2023. In the study, as part of the 'Net zero building standards' policy recommendation, Arup recommended EUI standards for energy efficiency for residential archetypes aligned with LETI targets, which were considered the best-practice standard at the time of the study.

In December 2023, a Written Ministerial Statement (WMS) was published, stating:

“Any planning policies that propose local energy efficiency standards for buildings that go beyond current or planned buildings regulation should be rejected at examination if they do not have a well-reasoned and robustly costed rationale that ensures:

- *That development remains viable, and the impact on housing supply and affordability is considered in accordance with the National Planning Policy Framework;*
- *The additional requirement is expressed as a percentage uplift of a dwelling's Target Emissions Rate (TER) calculated using a specified version of the Standard Assessment Procedure (SAP).”*

In parallel, the UK Net Zero Carbon Buildings Standard (UK NZCBS or 'the Standard') was developed which, for the first time, provided clear definitions for the limits and targets that buildings need to achieve to be considered aligned with a UK "net-zero-carbon built environment" by 2050. The Standard was published in its pilot version in 2024 with the first official version available in April 2026. The

guidelines within have since superseded the LETI targets as a widely recognised definition of net-zero-carbon-aligned buildings in the UK.

This report presents research undertaken by Arup in the form of a modelling exercise to define, for different residential types, target improvements over TER that could be comparable to the EUI limits proposed in the 2023 Climate Change Study and the more recent UK NZCBS, based on defining a statistical correlation between the two metrics in a range of modelled options.

The current report covers the approach followed, the results from the study and the key recommendations for RDC's Local Plan policy on energy efficiency standards for new dwellings.

Project aims

This work aims to:

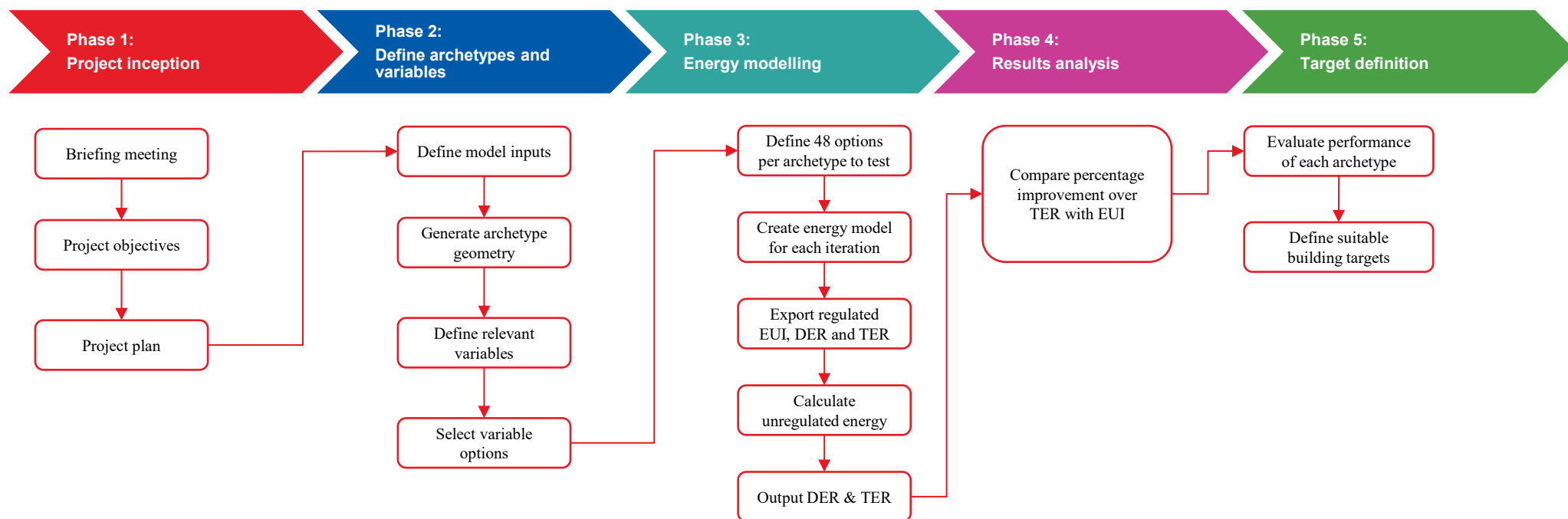
- Provide further technical evidence to define the energy efficiency performance that net-zero-carbon-aligned dwellings should achieve, in preparation for the updated Local Plan;
- Provide technical evidence for a fallback Dwelling Emission Rate (DER) energy efficiency standard, to be used in the event that an EUI standard is not accepted for the Local Plan;
- Ensure this fallback standard meets the requirements of the Written Ministerial Statement dated 13 December 2023.

2. Methodology

2. Methodology

Project workflow

The workflow below summarises the methodology applied to develop this work, which was undertaken in five phases.



2. Methodology

Overview

The workflow on the previous page summarises the methodology applied to develop this work, which was undertaken in five phases, as described below.

Phase 1: Project Inception

During the Project Inception phase, a kick-off meeting was held in which the project's key objectives and drivers were set, and the programme was finalised.

The decision was made with the client to model the building archetypes to represent the work completed in the 2023 Climate Change Study. The following archetypes formed the basis of the modelling work:

- Archetype 1 – 2-bed flat;
- Archetype 2 – 3-bed semi-detached house;
- Archetype 3 – 3-bed detached house.

More detail on these archetypes is presented in Section 3 of this report.

Phase 2: Define Variables

During the second phase, we analysed potential variables to test within the modelling that would represent a wider range of possible case studies. These variables were chosen as metrics that have a large impact on compliance and compliance results for domestic properties. The chosen variables are outlined in Section 4 of this report. Amongst the range of modelled options in this phase, 48 options per archetype were selected to undergo a Part L compliance model (using SAP).

Phase 3: SAP Modelling

In the third phase of the study, energy models were developed using the SAP 10.2 methodology. A typical building geometry was modelled for each archetype, based

on relevant previous Arup projects, and possible design parameters were assigned to define the range of modelled options to represent typical case studies, 48 in total for each archetype. The key result output from this phase was the percentage improvement over the notional dwelling (% DER < TER) for each modelled option.

Phase 4: Results Analysis

In this phase, the results from Phase 3 were analysed to understand the correlation between building EUI and percentage improvement over TER. The results were plotted graphically and evaluated for each archetype.

Phase 5: Target Definition

The final phase was to evaluate the results produced in Phase 4 and use these to draw suitable conclusions on sensible DER targets that would correspond to the original EUI limits. The key outputs from this were recommended performance targets for consideration for Rother District Council's proposed Local Plan.

The EUI limits recommended are as follows:

- LETI dwelling EUI of 35 kWh/(m²·yr) which was referenced as the target EUI in the Climate Change Study undertaken by Arup in 2023;
- UK NZCBS, Version 1, limits for new dwellings; the EUI limit ranges depending on the year the project commences on site and the archetype. For this report, the 2030 and 2040 limits were considered, respectively 48 and 44 kWh/(m²·yr) for flats and 47 and 40 kWh/(m²·yr) for houses. The full breakdown is shown at the end of this section.

2. Methodology

Limitations of the study

The results in this report are based on energy modelling rather than measured data from real buildings. Although reasonable skill and care has been taken to align modelling methodologies with those used in real-life scenarios (e.g. for compliance with BR Part L), the results from real building projects may vary from those included in this report.

Furthermore, the results from the study and recommendations in this report are based on the limited sample of simulations undertaken. Although we have covered a reasonable range of options within the scope of the commissioned study, the results may not cover all scenarios deemed possible. The limitations of this study were discussed with the client throughout the project and are outlined below.

Limitations of this study include:

- The geometry remained fixed for each archetype. This is a parameter that has infinite potential iterations which, in turn, generate different results. Fixed geometry was chosen to represent a typical building archetype in order to yield useful results from the modelling exercise. If numerous different geometry options were assessed, the parametric results would be in the tens of thousands, which would not be feasible to assess under compliance.
- The same weather file was maintained throughout the simulations. With a changing climate, testing future weather files would be beneficial to identify the performance of buildings in the future. However, the SAP methodology uses a standardise weather year and does not allow the modeller to select a specific weather file.
- Fabric and system efficiency options modelled were limited for each archetype due to simulation and time constraints. A real building design can comprise numerous combinations of elements resulting in thousands of different

combinations of fabric and system efficiencies that can in turn generate thousands of EUI outputs.

- The SAP methodology is primarily designed to be used for new residential developments, so the results obtained would most likely apply to new buildings; for retrofit and refurbishment of existing buildings, RdSAP is typically used to assess energy efficiency performance, which is based on a simplified methodology based on a high number of assumptions compared to full SAP and can therefore present very different results for similar building fabric and systems.

2. Methodology

Implications of the new UK Net Zero Carbon Buildings Standard

In September 2024, the UK NZCBS was released in pilot version and then updated in April 2026 as the first official version. The Standard defines limits for the performance of buildings in the United Kingdom that aim to be aligned with a net-zero-carbon built environment for the UK. This includes embodied carbon and, more importantly for this study, operational energy use intensity (EUI) limits for new buildings constructed between 2025 and 2050 which were defined based on extensive modelling and engagement with the construction sector.

One of the aims of this study was to assess whether the EUI limits recommended in Arup’s previous work (the Climate Change Study developed in 2023) are still appropriate in the current industry context. Those targets were based on the LETI guidance, which provided the most widely recognised EUI limits for net-zero carbon buildings at the time of the study. With the publication of the new NZCBS (which drew upon the work from LETI and other organisations such as the UKGBC

and the Carbon Trust and is based on much more extensive modelling and a rigorous industry consultation process), the LETI targets can be considered superseded.

In line with RDC’s aspiration to plan for a net-zero-carbon built environment while setting targets that are ambitious but achievable, the new NZCBS requirements are considered in this report when looking to define TER improvement targets for new buildings in Rother.

A comparison between the targets from the Climate Change Study (LETI-aligned) and the NZCBS is shown in the table on this page. The NZCBS 2030 limits were considered to define the new building targets, but reference is made to the previous work in the Climate Change Study throughout this report for comparison and consistency.

Building Type	LETI EUI Limit kWh/(m ² .yr)	NZCBS EUI Limit 2025 kWh/(m ² GIA.yr)	NZCBS EUI Limit 2030 kWh/(m ² GIA.yr)	NZCBS EUI Limit 2040 kWh/(m ² GIA.yr)	NZCBS EUI Limit 2050 kWh/(m ² GIA.yr)
Flats	35	50	48	44	44
Homes	35	50	47	40	40

3. Building Archetypes

3. Building Archetypes

General approach

Overview

To conduct the analysis on the energy consumption of dwellings, a set of archetypes was defined. For each archetype, the building EUI and building compliance performance would be analysed over a range of different building variables.

The archetypes were selected to align with those used in the 2023 Carbon & Climate Study, namely:

- Archetype 1 – 2-bed flat;
- Archetype 2 – 3-bed semi-detached house;
- Archetype 3 – 3-bed detached house.

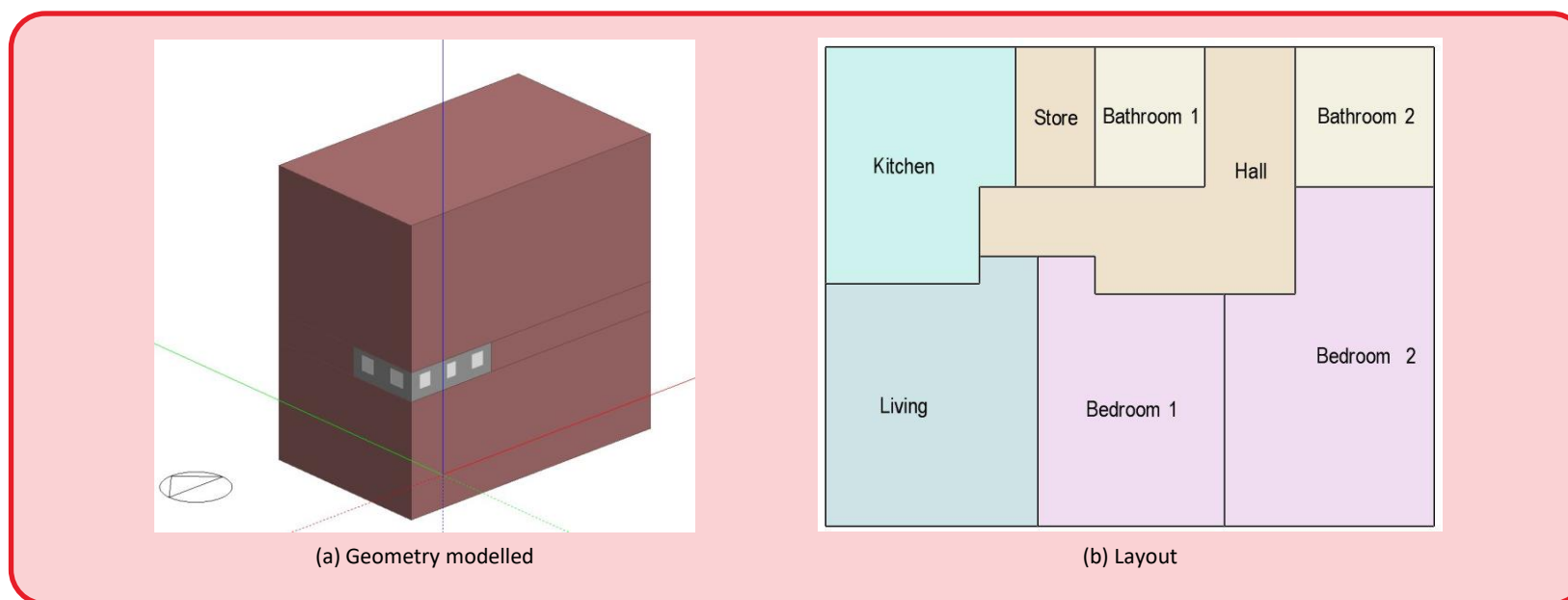
A representative geometry was selected for each archetype. The geometry remained fixed for each archetype while additional parameters, as explained in Section 4, were varied to create 48 modelled options for each archetype, representing a range of possible dwelling designs.

The HVAC systems used within each archetype were determined based on typical characteristics of residential projects and BR Part L-compliant designs.

Further details of each archetype are outlined in the following pages of this section.

3. Building Archetypes

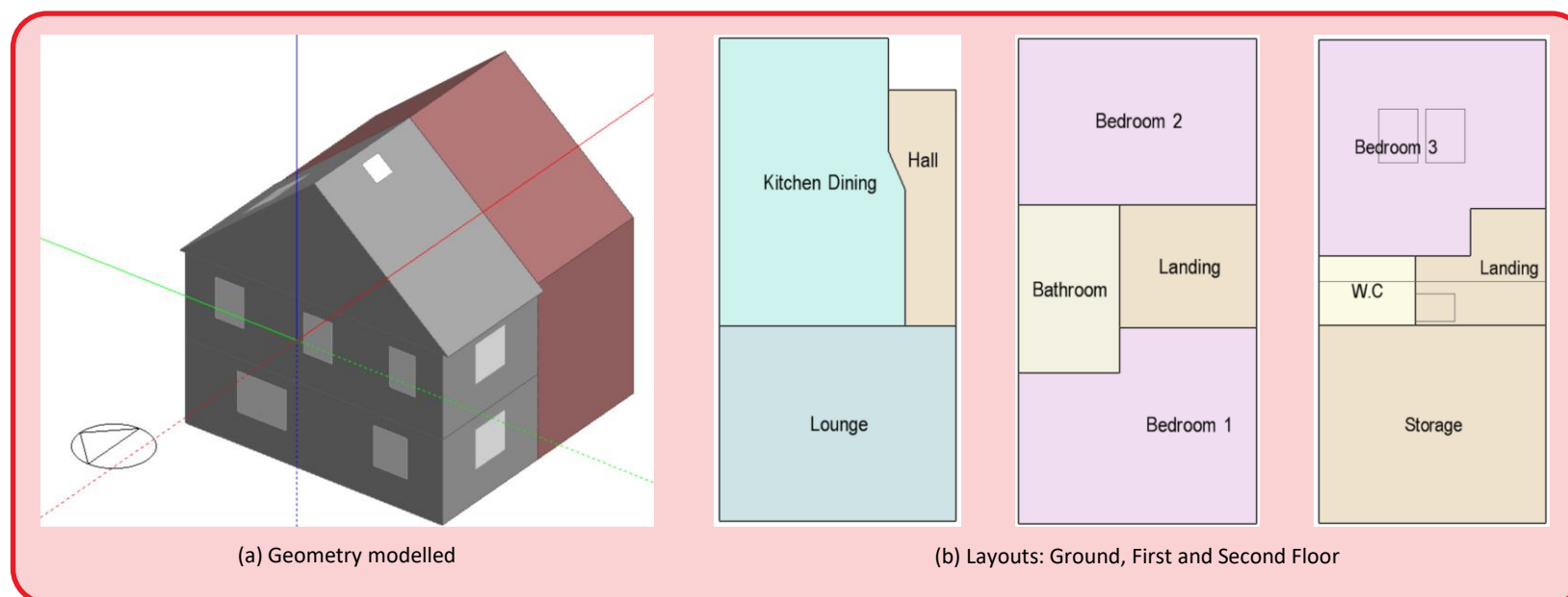
Archetype 1 – 2-Bed Flat



Metric	Limit	Features	Inputs	HVAC System	Inputs
LETI EUI (as per the Climate Change Study recommendation)	35 kWh/(m ² .yr)	GIA	79 m ²	Heating System	Radiators (Direct Electric, ASHP)
NZCBS 2030 EUI	48 kWh/(m ² .yr)	No. Bedrooms	2	Domestic Hot Water System	ASHP, Direct Electric
Space Heating Demand	15 kWh/(m ² .yr)	No. Bathrooms	2	Cooling System	None
Hot Water Demand	10 kWh/(m ² .yr)	Floor Level	5	Ventilation	MVHR
		Flats per Floor	6		

3. Building Archetypes

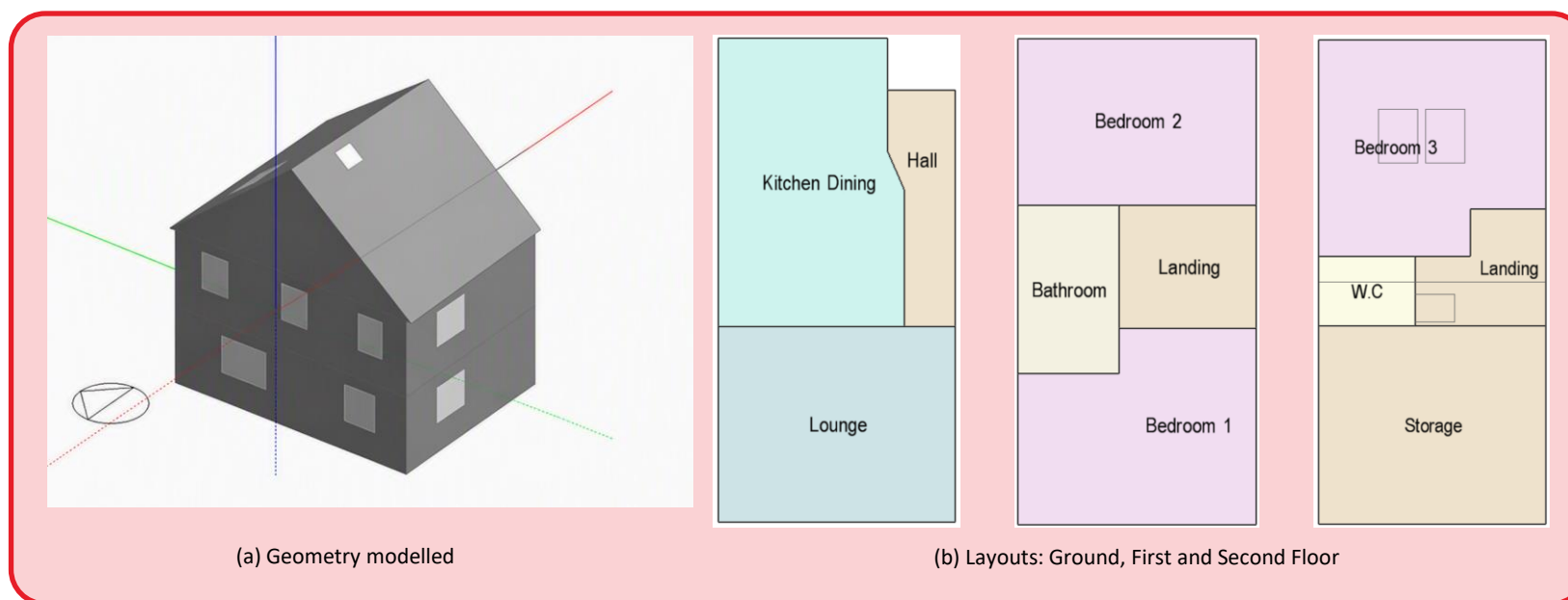
Archetype 2 – 3-bed Semi-Detached House



Metric	Limit	Features	Inputs	HVAC System	Inputs
LETI EUI (as per the Climate Change Study recommendation)	35 kWh/(m ² .yr)	GIA	107 m ²	Heating System	Radiators (Direct Electric, ASHP)
NZCBS 2030 EUI	47 kWh/(m ² .yr)	No. Bedrooms	3	Domestic Hot Water System	ASHP, Direct Electric
Space Heating Demand	15 kWh/(m ² .yr)	No. Bathrooms	2	Cooling System	None
Hot Water Demand	10 kWh/(m ² .yr)	No. Floors	3	Ventilation	MVHR

3. Building Archetypes

Archetype 3 – 3-bed Detached House



Metric	Limit	Features	Inputs	HVAC System	Inputs
LETI EUI (as per the Climate Change Study recommendation)	35 kWh/(m ² .yr)	GIA	107 m ²	Heating System	Radiators (Direct Electric, ASHP)
NZCBS 2030 EUI	47 kWh/(m ² .yr)	No. Bedrooms	3	Domestic Hot Water System	ASHP, Direct Electric
Space Heating Demand	15 kWh/(m ² .yr)	No. Bathrooms	2	Cooling System	None
Hot Water Demand	10 kWh/(m ² .yr)	No. Floors	3	Ventilation	MVHR

4. Modelling Variables

4. Modelling Variables

Fixed and Variable Parameters

To develop the analysis for each building archetype, key modelling parameters were identified. These were divided into fixed parameters, which remained consistent across all simulations, and variable parameters, which were adjusted to represent different case studies.

This allowed a manageable modelling scope to be defined which focused on key parameters that are within the scope of a designer to change.

Fixed parameters

The following parameters were considered constant for each archetype:

- Building Airtightness
- Window g value
- Thermal Bridging Y value
- Lighting Power, Efficacy and Capacity
- Mechanical Ventilation System (including flow rate and efficiencies)

Variable parameters

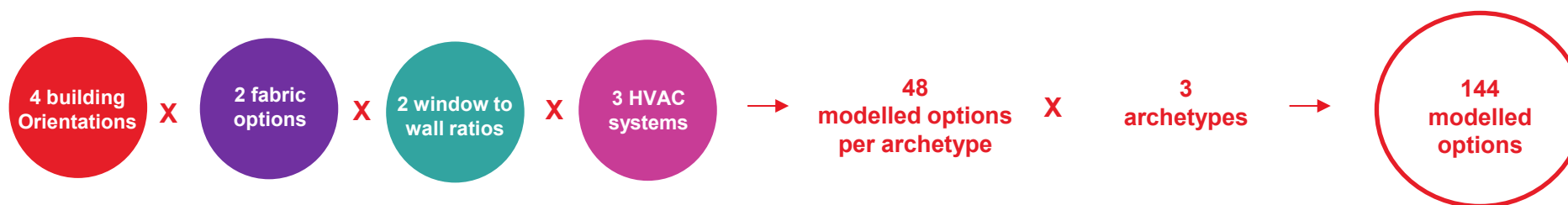
The following parameters were varied across various iterations:

- Fabric (e.g. window, wall and roof U values)
- Space and Water Heating Systems
- Window-to-Wall Ratio
- Building Orientation

4. Modelling Variables

Archetype Iterations

For each archetype, all possible combinations of the variable parameters described in the previous page were tested, which provided 48 modelled options for each archetype, giving a total of 144 modelled options.



4. Modelling Variables

Fabric Performance Options

Two fabric performance options were tested:

Level 1 – BR Part L aligned

- Walls $U = 0.26 \text{ W/(m}^2\cdot\text{K)}$
 - Windows $U = 1.6 \text{ W/(m}^2\cdot\text{K)}$
 - Roof $U = 0.16 \text{ W/(m}^2\cdot\text{K)}$
 - Floor $U = 0.18 \text{ W/(m}^2\cdot\text{K)}$
-

Level 2 – Net zero aligned

- Walls $U = 0.14 \text{ W/(m}^2\cdot\text{K)}$
 - Windows $U = 1 \text{ W/(m}^2\cdot\text{K)}$
 - Roof $U = 0.11 \text{ W/(m}^2\cdot\text{K)}$
 - Floor $U = 0.09 \text{ W/(m}^2\cdot\text{K)}$
-

The Level 1 fabric represents a scenario where each fabric element is in line with the related maximum U value as per BR Part L; the Level 2 fabric represents fabric performances typical of PassivHaus projects; the latter was selected to represent a net-zero-aligned design, based on the consideration that demonstrating compliance with the PassivHaus Standard is one of the possible routes to demonstrating compliance with the UK NZCBS operational energy limits.

It should be noted that the SAP fabric efficiency metric, the Dwelling Fabric Energy Efficiency (DFEE), must also be met for all new domestic buildings to comply with BR Part L. Depending on other factors such as form factor or orientation, buildings presenting Level 1 performance for each element do not necessarily meet the minimum DFEE. DFEE was not assessed as part of this study and the Level 1 set is used to represent a theoretical lowest performance modelled option.

4. Modelling Variables

Heating System Options

Three options for heat generation were tested:

Level 1 – Direct Electric

- Direct Electric (Efficiency = 1) for both space heating and domestic hot water
-

Level 2 – Heat Pump + Direct Electric

- ASHP (COP = 3) for space heating
 - Immersion heater (Efficiency = 1) for domestic hot water
-

Level 3 – Heat Pump

- ASHP (COP = 3) for both space heating and domestic hot water
-

Servicing strategies for the domestic archetypes were adopted from typical new-build residential projects and emerging recommendations. The coefficient of performance was selected to reflect typical ASHP systems.

These options represent a selection of potential servicing strategies for the purposes of this study, although it is recognised that actual system selection will vary depending on the constraints of each development.

For this exercise, it was assumed that all dwellings presented a mechanical ventilation heat recovery (MVHR) system with consistent performance characteristics.

5. Modelling Approach

5. Modelling Approach

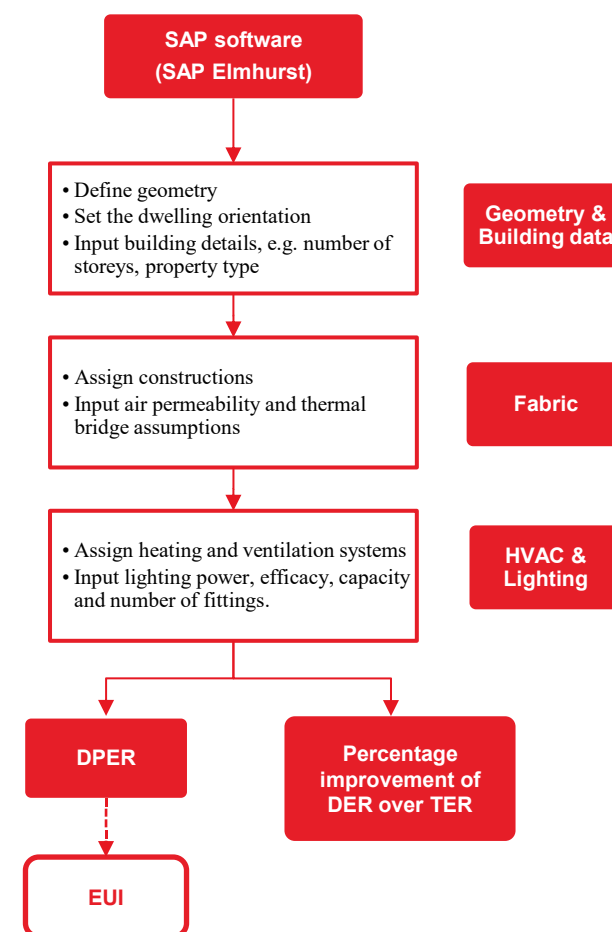
The 48 modelled options per archetype defined in the previous section were assessed using SAP 10.2, the software used for BR Part L compliance for dwellings.

The SAP methodology calculates a dwelling's energy use based on standard assumptions from the National Calculation Methodology (NCM). While the DER figures only cover regulated energy (heating, cooling, ventilation and lighting), the Dwelling Primary Energy Rate (DPER) figures also account for small power loads, i.e. energy use for appliances, based on a standardised allowance calculated as per the NCM methodology.

By contrast, the EUI definition used by LETI and the UK NZCBS includes all non-regulated energy, namely energy for lifts, communal lighting and small power loads. Therefore, a full EUI calculation to align with these standards would require a much more complex and detailed calculation in line with CIBSE TM54 'Evaluating operational energy use at the design stage' (CIBSE, 2022). However, this approach is considered too onerous for single homes and small blocks of flats that are not typically considered "major developments".

Additionally, for most single homes and small blocks of flats, the additional non-regulated uses typically contribute to a smaller amount of energy use compared with non-domestic buildings and high-rise blocks.

For these reasons, a simplified approach was used in this study that treated the SAP DPER figures as equivalent to the dwelling's total EUI.

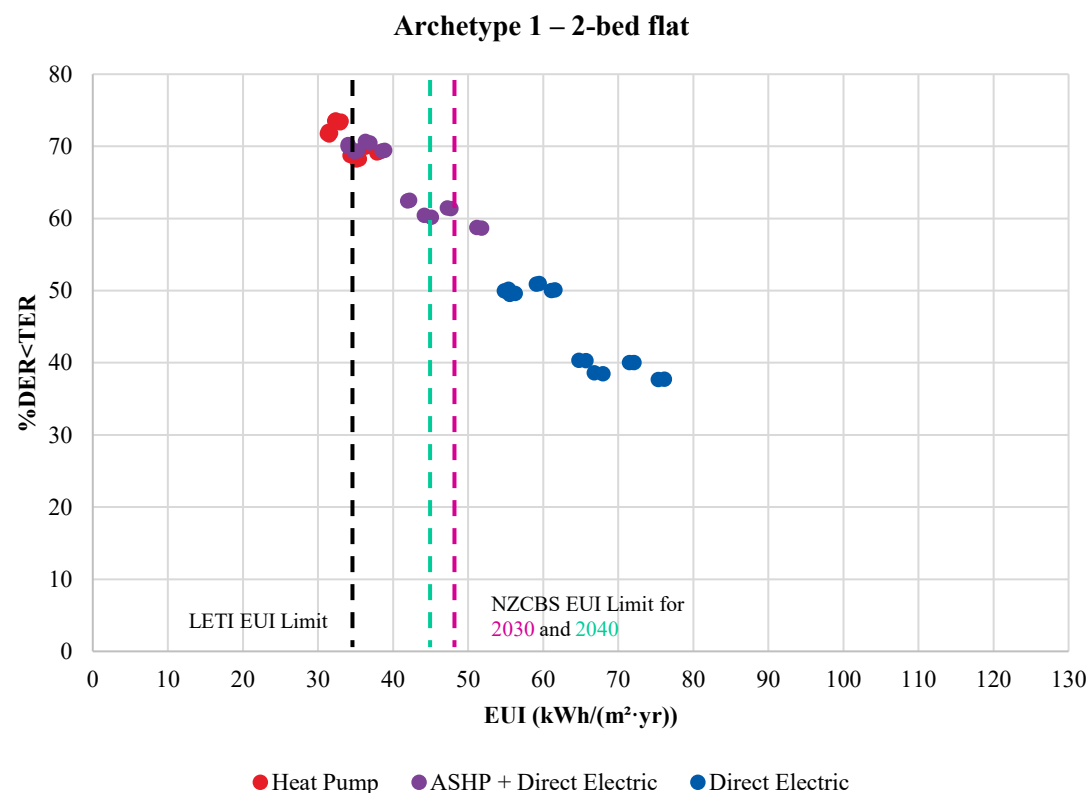


6. Results

6. Results

Archetype 1: 2-Bed Flat

The results from the modelling exercise outlined in the previous section have been plotted for the three archetypes. The results for EUI versus the percentage improvement against the notional dwelling are outlined in this section.



The results from Archetype 1 are shown on the left. As expected, the dwellings with a lower total EUI perform better against BR Part L.

The results show a clear linear correlation between the EUI and DER performance. The factor with the greatest effect on performance against both metrics is the heating system adopted: all modelled options that present direct electric system for both space heating and hot water generation (in blue) report EUI values well above the NZCBS limit for both 2030 and 2040, while those that are served exclusively by a heat pump (in red) achieve the highest performance, with the hybrid systems sitting in between.

Based on the options modelled, achieving an EUI below the 35 kWh/(m²·yr) LETI limit would require a 70% improvement over TER, while alignment with the UK NZCBS 2030 and 2040 limits (48 and 44 kWh/(m²·yr) respectively) could instead be achieved by setting a target improvement over TER of 60%.

6. Results

Archetypes 2 & 3: Semi-detached and detached houses

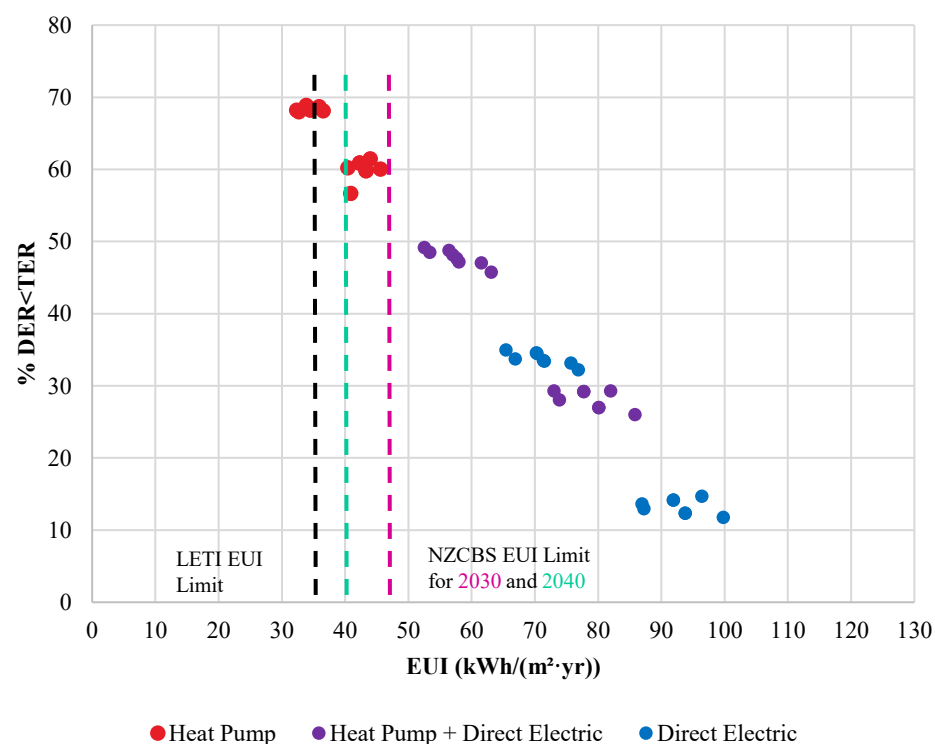
The house archetypes followed a similar trend to the 2-bed flat.

While none of the modelled options for the detached house achieved an EUI below the LETI limit of 35 kWh/(m²·yr), most semi-detached houses achieving a 65% over TER met it. Alignment with the UK NZCBS limits (both 2030 and 2040) would require a 55% improvement for the semi-detached houses and a 60% improvement

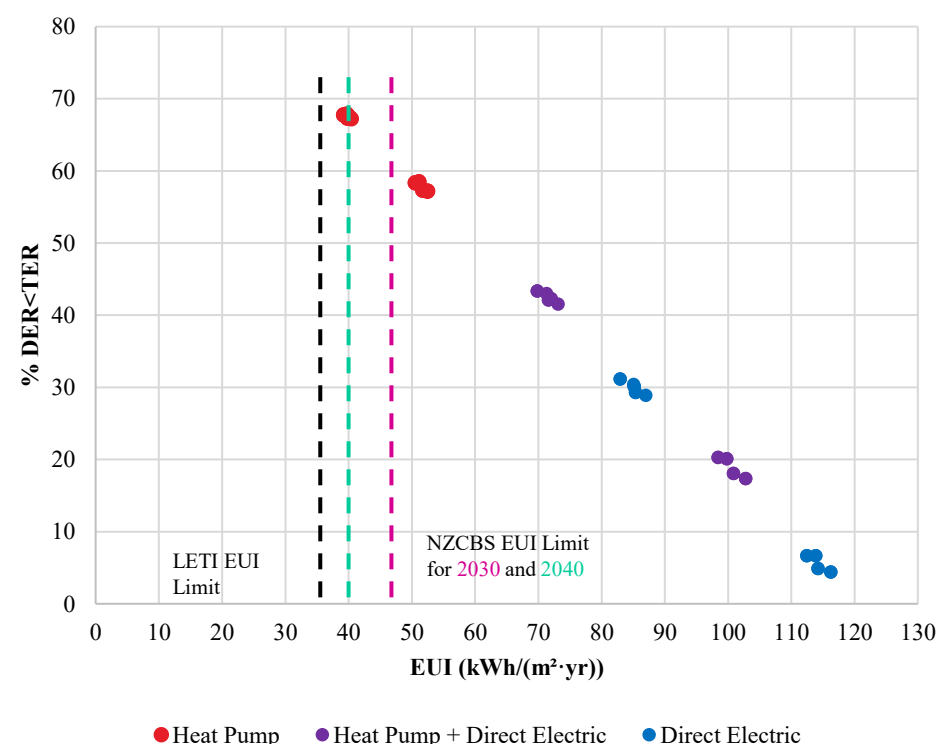
for the detached houses.

The fact that none of the options modelled for the detached house achieved an EUI below the LETI limit is related to the higher heat losses caused by the form factor and the ratio between external surfaces and floor area. A LETI EUI requirement would be extremely challenging for this archetype.

Archetype 2 – Semi-detached house



Archetype 3 – Detached house



6. Results

Summary

The results for all modelled options are plotted together in the graph to the right of this page to compare the overall trends.

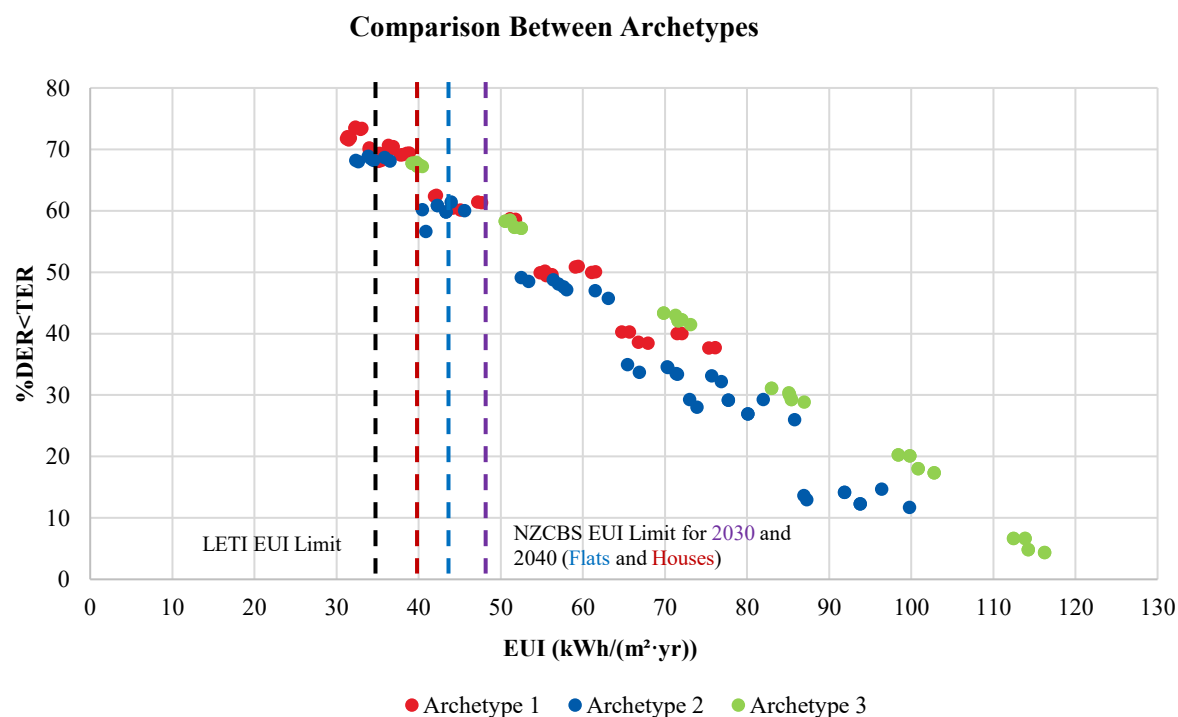
All archetypes produced comparable results, suggesting that a single target improvement figure over BR Part L can be set for all dwellings to align with the selected EUI limits.

While dwellings with higher energy use (towards the bottom right of the graph) produced greater variation in performance, it can be noted that more energy efficient homes (predominantly those served by heat pumps) generally show closer alignment and perform consistently better under both the SAP- and the EUI-based assessments.

The findings indicate that setting ambitious DER improvement targets is likely to produce buildings with efficient operational performance, achieving EUI values that align with the latest standards for net zero carbon.

Based on the results from the modelled options in this study, a 60% improvement over TER is likely to result in a dwelling's EUI in line with UK NZCBS requirements for new dwelling commencing construction before 2040.

The target could be set at a 70% improvement if a more ambitious EUI limit was desired, although this might pose significant challenges to some housing typologies, based on current typical design approaches.



7. Conclusions

7. Conclusions

Overview of results

This study has analysed the performance of 144 modelled options across three residential archetypes in relation to both energy use intensity (EUI) and percentage improvement over reference building performance as defined by Building Regulations, Approved Document L (BR Part L).

The results from this study show a clear correlation between these two metrics for building energy efficiency performance, with options using heat pumps showing the strongest alignment between the two assessment methodologies.

Based on the results of this assessment, a 60% improvement over TER can be considered to guide the design of new residential buildings to align with the latest net-zero carbon standards in terms of operational energy efficiency, while a 70% improvement could be considered aligned with the LETI limits covered in the 2023 Climate Change Study developed by Arup for RDC.

Key recommendations

Based on the current study, the following recommendations are made in relation to setting targets for the new Local Plan:

Option 1: EUI-based target

Only adopt an EUI-based approach to setting energy efficiency requirements if appropriate advanced dynamic simulation modelling, in line with CIBSE TM54, is included as a deliverable for planning submission (note that this is likely to be considered overly onerous for single-dwelling developments due to significant consultancy fees and time required).

Recommended limit: EUI limits to align with the UK NZCBS, depending on the expected year of commencement of the construction works.

Option 2: DER-based target

A more realistic approach, in line with the 2023 WMS on Local Energy Efficiency Standards and typical design approaches for small and medium residential developments, would be to set the energy efficiency targets in terms of percentage improvement over TER based on the SAP methodology;

Recommended limit: Target improvement over TER to be set to 60% to align with the UK NZCBS EUI limit for buildings built in 2030.

7. Conclusions

Key limitations of the study

- The conclusions of this study were derived from the energy modelling exercise described in this report, which looked at the performance of modelled options across 3 geometric archetypes and a range of variables such as orientation, fabric and heating systems. A statistical correlation was identified in this sample, as described in this report. However, buildings designed with different layouts and systems could perform differently from the modelled options.
- As per LETI and the UK NZCBS methodologies, EUI shall be calculated to account for regulated and unregulated energy, including lifts, communal lighting and small power. Unregulated energy is significantly variable and depends on factors such as the number and behaviour of occupants, building height and number of lifts, presence of communal areas, etc. The use of advanced modelling techniques and specific information on the building use are required to assess EUI, which was not part of this study, nor is it possible for generalised case studies. This study adopted the SAP DPER metric (which accounts for appliance energy use as per National Calculation Methodology) as a proxy for EUI given that additional non-regulated uses (lifts and communal lighting) are typically less significant in the typologies commonly found in the RDC area. However, this is not fully aligned with the CIBSE TM54 methodology to estimate EUI.
- The UK's domestic building regulations are undergoing significant change through the introduction of the Future Homes Standard and associated updates to Part L of the Building Regulations. These changes are driving much higher levels of energy efficiency, with greater emphasis on ed fabric performance and renewable technologies. From a compliance perspective, achieving a satisfactory DER relative to TER will become increasingly challenging as the notional specification evolves. It is recommended that, while the set target in terms of improvement over TER should be sufficiently ambitious to deliver net-zero carbon buildings in the short term, this is not set to a level that could prove unachievable as the Building Regulations landscape evolves.
- The earlier draft of Policy GTC1 of RDC's Local Plan outlined a 100% reduction of DER to TER. This would be a regulatory net zero emissions design, but does not reflect buildings' actual energy performance, only a comparison between the actual and the notional dwelling. The definition of 'net zero' in the UK built environment is evolving rapidly. The introduction of the UK NZCBS aims to create a unified definition and consistent methodology for demonstrating that a building is aligned with the UK's carbon reduction pathway. It is expected that national policy will align with the NZCBS in the next few years.

Additional considerations

- In this study, no photovoltaic panels or wastewater heat recovery were considered. The BR Part L 2026 update requires these as standard on new buildings, which will contribute to lower DER figures. It is expected that the inclusion of roof-mounted PV panels on detached and semi-detached houses could align their performance with those obtained for 2-bed flats in this study.