



Local Plan Update

Leeds Local Plan

CARBON REDUCTION BACKGROUND PAPER

Development Plan Document

September 2022

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Introduction

The Carbon Reduction policies of the Local Plan Update aim to minimise energy demand and meet all demands for heat and power without increasing carbon emissions to allow Leeds to meet its climate emergency ambition of zero carbon by 2030.

Leeds City Council (LCC) has declared a Climate Emergency and has an ambition to make significant progress towards net zero carbon emissions across the city by 2030 through the adoption of science-based targets. The current version of the targets, the Net Zero Carbon Roadmap for Leeds, identifies and evaluates carbon reduction opportunities and sets out a league table of the most carbon-effective options for Leeds, emphasising the importance of focusing on housing, public and commercial buildings in achieving net zero. According to the latest available data, the city of Leeds emitted 3.8 mtCO₂ in 2019, reflecting a 33% reduction since 2005 whilst experiencing an 8% increase in population. Whilst this is good progress, with annual decreases of around 114 ktCO₂/year at the current trajectory, carbon emissions across the city would remain around 2.6 mtCO₂ in 2030. Buildings account for around a third of the carbon emissions from the city of Leeds¹.

There is a legal duty under section 19(1A) of the Planning and Compulsory Purchase Act 2004 to ensure that climate change mitigation and adaptation is a core objective of a local authorities' planning policy. Section 182 of the Planning Act 2008 puts a legal duty on local authorities to include policies on climate change mitigation and adaptation in Development Plan Documents.

Additionally, para 148 of the NPPF requires the planning system to help to:

"Shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure."

It is therefore essential for this legal and policy requirement to be addressed in the Local Plan.

The Local Plan currently has several policies that help reduce and mitigate against the impacts of climate change. However, these policies were written and adopted prior to the Council declaring its Climate Emergency. Therefore, it is essential to update and add new policies, using up to date evidence, to help Leeds meet its zero carbon goal by 2030.

Definitions

To provide clarity throughout the remainder of the Local Plan Update it is first necessary to establish clear definitions for what zero carbon means in the context of new development. To this end we will follow the framework definition by UKGC for net zero carbon buildings. The framework sets out two definitions for net zero carbon buildings – net zero carbon- construction and net zero carbon -operational.

¹ BEIS. Emissions of carbon dioxide for Local Authority areas. *Emissions of carbon dioxide for Local Authority areas* <https://data.gov.uk/dataset/723c243d-2f1a-4d27-8b61-cdb93e5b10ff/emissions-of-carbon-dioxide-for-local-authority-areas> (2021).

Net zero carbon – construction is when the amount of carbon emissions associated with a building’s product and construction stages up to practical completion is zero or negative, through the use of offsets or the net export of on-site renewable energy.

A building is recognized as being **net zero carbon - operational** when the amount of carbon emissions associated with the building’s operational energy on an annual basis is zero or negative. A net zero carbon building is highly energy efficient and powered from on-site and/or off-site renewable energy sources, with any remaining carbon balance offset ². Figure 1 details the steps expected of new development to achieve net zero.

² UKGBC. Net Zero Carbon Buildings: A Framework Definition <https://ukgbc.s3.eu-west-2.amazonaws.com/wp-content/uploads/2019/04/08141151/Net-Zero-Carbon-Buildings-A-framework-definition-print-version.pdf> (2019)

Steps to Achieving a Net Zero Carbon Building

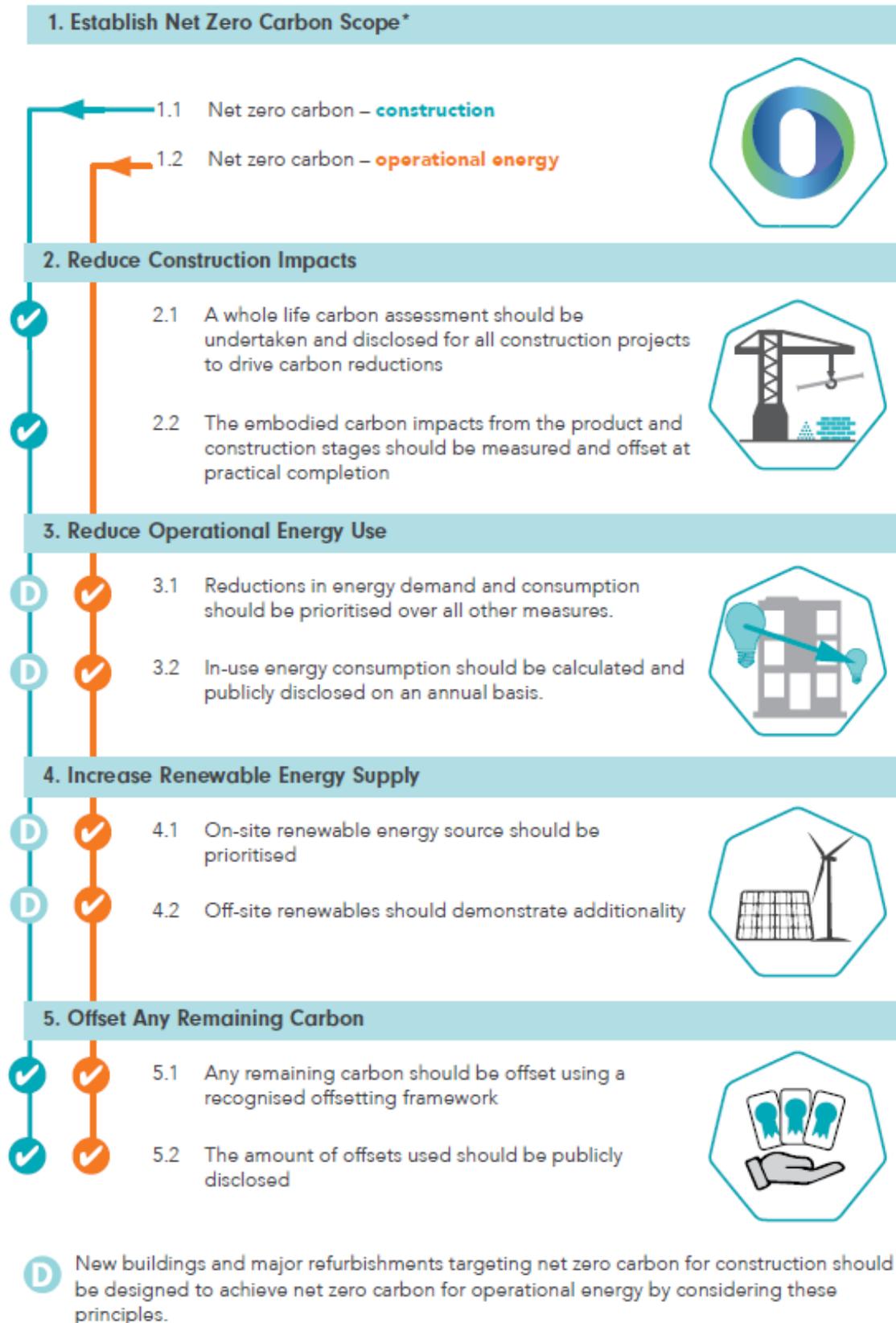


Figure 1 UKGBC diagram to demonstrate how to achieve carbon net zero buildings

POLICY EN1A: WHOLE LIFE CYCLE CARBON ASSESSMENTS

Why is the policy needed?

Whole life cycle carbon emissions or 'embodied carbon' refers to the carbon emissions resulting from the construction and use of a building over its entire life, including the carbon that is emitted from the operation of a building once it is complete and its end of life demolition and disposal. Embodied carbon can represent around 50% of total emissions over a building's lifetime³.

Our current planning policy approach is focussed on reducing operational energy use but we don't at present ask for any reduction or calculation of the embodied carbon which is emitted through construction materials and the processes used to create them and transport them and the maintenance of buildings, repair and replacement as well as dismantling, demolition and eventual material disposal.

Section 4 of the Study on The Carbon Reduction of Buildings by the University of Leeds, found within the Council's evidence base, sets out what whole life cycle carbon assessments are, and why they are necessary to truly understand the carbon emissions associated with the construction and use of buildings. Figure 2 demonstrates how we can reduce emissions by considering the implications of the cost of carbon at earlier stages in the design process.

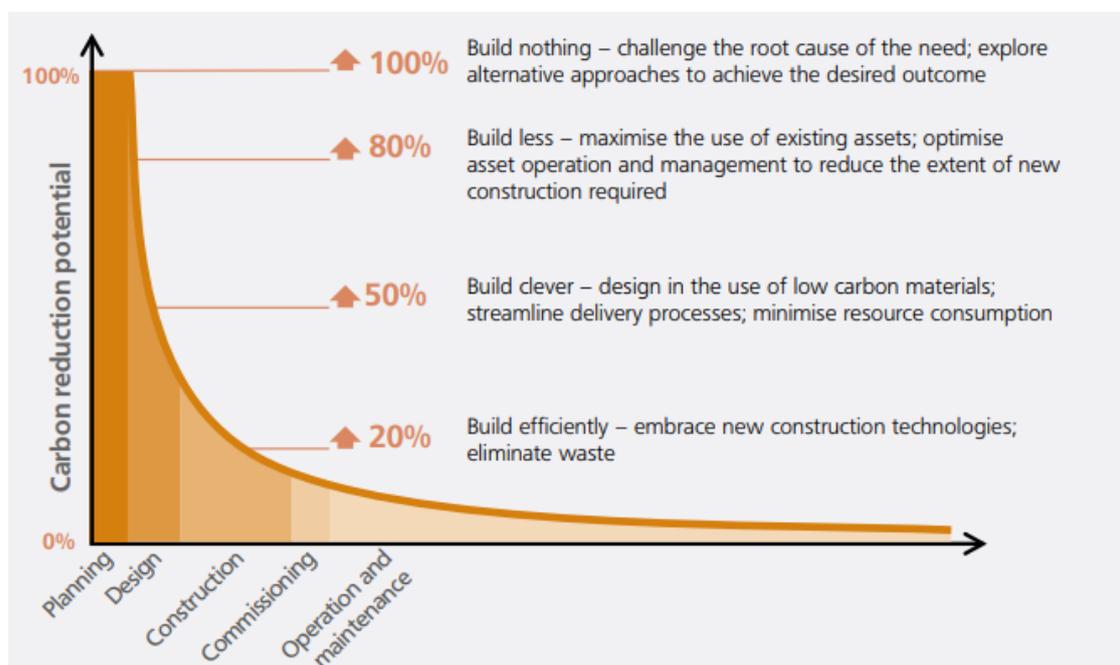


Figure 2 Graphic representation of how opportunities for carbon emissions reductions exist earlier in the development process⁴.

³ <https://www.ukgbc.org/wp-content/uploads/2021/01/New-Homes-Policy-Playbook-January-2021.pdf> (2021).

⁴ UKGBC. *Embodied Carbon: Developing a Client Brief*. <https://www.ukgbc.org/wp-content/uploads/2017/09/UK-GBC-EC-Developing-Client-Brief.pdf> (2017).

Policy Objectives

The policy is seeking new development to acknowledge the carbon cost of a development over its entire lifetime. As demonstrated above, the embodied carbon of a building can be responsible for up to 50% of its lifetime carbon emissions and often reusing a building could be an appropriate process to deliver a scheme. However, through consultation and stakeholder workshops, there are industry concerns about the resources and skill base required to deliver a whole life cycle carbon assessment to a Leeds set target. Therefore, the Council is only proposing that major developments will have to provide an assessment which demonstrates actions to reduce its embodied carbon. Minor developments will have to provide information for how their scheme has considered the Council's bespoke embodied carbon guidance.

Evidence

The University of Leeds has provided a study on the carbon reduction of buildings which explores the justification for the introduction of whole life cycle carbon assessments (section 4). To summarise that section of the report, it explains how embodied carbon represents around 50% of total emissions over a building's lifetime⁵ and how current national guidance and planning policy does not require developments to account for this. Figure 2 demonstrates the relationship between operational carbon and embodied carbon in the construction and lifecycle of buildings, and how there is a significant amount of carbon used during the construction, refurbishment and demolition of a building.

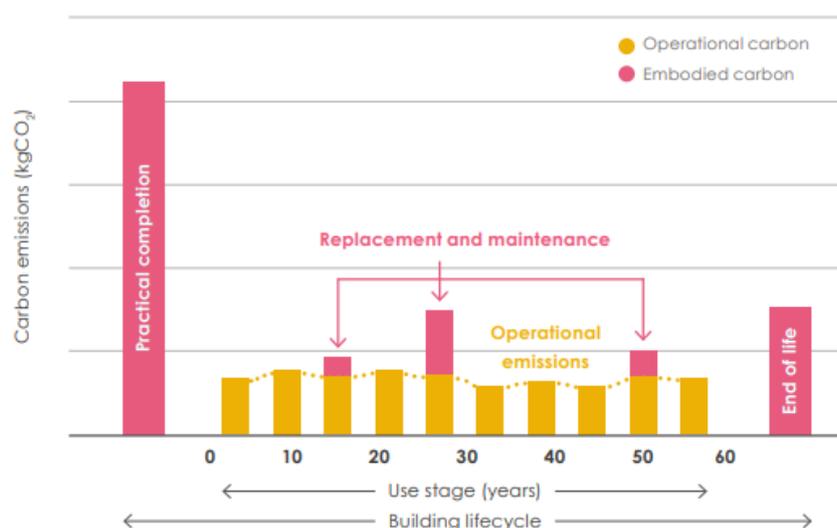


Figure 3: Embodied and operational carbon emissions within the whole lifecycle of a development, indicative⁶.

⁵ <https://www.ukgbc.org/wp-content/uploads/2021/01/New-Homes-Policy-Playbook-January-2021.pdf> (2021).

⁶ *LETI Climate Emergency Design Guide*.
https://www.leti.london/files/ugd/252d09_3b0f2acf2bb24c019f5ed9173fc5d9f4.pdf (2019).

Paragraph 4.6 of the Study on The Carbon Reduction of Buildings by the University of Leeds details how taking WLC approach may offset the costs of undertaking a whole life cycle carbon assessment:

A focus on embodied carbon emissions of materials and construction practices as part of WLC assessment and emissions reduction is likely to be a challenge for the sector, and supplementing current materials and products with like-for-like replacements will likely result in higher costs⁷. However, taking a WLC approach from the outset may realise potential cost savings through:

Promoting recovery and reuse of existing structures over demolition and new construction.

Designing to use less construction material from the outset of a development project

Construction methods (such as modular construction) which can deliver embodied carbon savings and higher levels of efficiency⁸.

It will be important that potential cost savings are recognised during viability assessment as well as likely cost increases which occur through the selection of lower carbon products and materials.

Whilst the report recommends the assessments for new development demonstrate that the scheme will be zero carbon (including offsetting), the Council believe that this is unlikely to be achievable in the short-term. This is echoed in other Local Authorities, where it is believed that the industry has a way to go in reporting and reducing embodied carbon whilst offsetting emissions for construction is not viable at this moment⁹. However, it is expected that the building industry's experience and knowledge of whole life carbon assessments will rapidly improve over the next 3-5 years, and therefore aligns with the policy approach of monitoring assessments up until a review of the policy.

NPPF Consistency

The environmental objective of the NPPF states that “*minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy*” is one of the ways in which achieving sustainable development should be pursued. Paragraph 20 also details how strategic objectives should be delivered through strategic policies, of which “*planning measures to address climate change mitigation and adaptation*” is included. Paragraph 154 part b also requires new development to be planned in ways that “*can help to reduce greenhouse gas emissions, such as through its location, orientation and design*”. The introduction of a whole life cycle carbon assessment policy would comply with the NPPF requirements above, by encouraging the reuse of

⁷ Pitman, K. Lowering embodied carbon: five trends in building design and construction. *RICS World Built Environment Forum* <https://www.rics.org/uk/wbef/megatrends/urbanisation/lowering-embodied-carbon-five-trends-in-building-design-and-construction/>

⁸ Delahunty, S. MMC cut carbon emissions by up to 45%, research finds. *Inside Housing* (2022).

⁹ [Spatial-Development-Strategy-Net-zero-new-buildings-Evidence-and-Guidance-to-inform-Planning-Policy-Jan-2022.pdf](#) (westofengland-ca.gov.uk)

materials and buildings and reducing the amount of greenhouse emissions through new development's design.

Monitoring

The policy itself directly refers to monitoring of the policy as no target has been set for whole life cycle carbon assessments to meet. This allows for a transitional period where developers can understand the methodology and the ways in which they can reduce the embodied carbon of a development. The Council will capture the results of the assessments, which would help set a target through a future plan review. The following indicators will be used to assess the policy:

Indicator	Reason
CO2 reduction	Applicants will have to consider, and subsequently publish, their assessments which may lead to lower embodied carbon and more energy efficient schemes. Therefore, new buildings will have lower CO2 emissions.
EPC Ratings	Applicants considering the whole life cycle carbon of a building may lead to more energy efficient buildings, and subsequently improved EPC ratings.

Implementation

The policy requires major applications to submit a whole life cycle carbon assessment using the RICS methodology¹⁰. Paragraph 4.8 to 4.29 of the Study on The Carbon Reduction of Buildings by the University of Leeds looks at potential methods to calculate the whole life cycle carbon of a building, however the Council has required the RICS Whole Life Carbon Assessment for the Built Environment assessment as it is a nationally recognised method and therefore provide consistency at a national level once more Local Authorities introduce assessments.

There are several reporting tools available for applications, both major and minor, to use:

One Click LCA, which includes collaborations with RICS, the GLA and the UKGBC to provide a variety of tools

UKGBC One Click Planetary tool covers A1-A5 of the RICs methodology and can be used for free to assess the embodied carbon of key construction materials.

Leeds City Council whole life cycle carbon assessment guidance for minor applications

¹⁰ <https://www.rics.org/uk/upholding-professional-standards/sector-standards/building-surveying/whole-life-carbon-assessment-for-the-built-environment/>

POLICY EN1B: OPERATIONAL CARBON

Why is the policy needed?

The Council have a planning policy that went beyond national building regulations when the core strategy was introduced. Core Strategy Policy EN1¹¹ requires major development to be 20% more energy efficient than the Building Regulations standard and requires 10% of the energy needs of the development to come from renewable or low carbon energy sources. The objective is also met by Core Strategy Policy EN2 which requires major commercial development to be built to the BREEAM Excellent standard (which includes mandatory energy standards).

Section 1 of the Planning and Energy Act 2008 gives local planning authorities the power to set energy efficiency performance standards that exceed those required in Building Regulations and for proportion of energy used in the development to be from low carbon or renewable sources¹². Whilst this power will be amended by Section 43 of the Deregulation Act 2015, the Government has confirmed that it has no current plans to commence Section 43 of the Act. In 2019, the Climate Change Act (2008) was amended to reflect the Government's commitment to phase out carbon emissions by 2050. This sets a reasonable expectation that local plans have not only the ability but a legal obligation to adopt policies that would be consistent with the Act. Several Local Planning Authorities have also gone beyond minimum national energy requirements¹³.

The Government has clarified its position on local authorities going beyond the energy requirements set by Building Regulations, stating that¹⁴:

“To clarify, the Framework does not prevent local authorities from using their existing powers under the Planning and Energy Act 2008 or other legislation where applicable to set higher ambition. In particular, local authorities are not restricted in their ability to require energy efficiency standards above Building Regulations. The Government remains committed to delivering the clean growth mission to halve the energy usage of new buildings by 2030”

The response to the Future Homes Standard consultation detailed how 86% of consultation respondents oppose the commencement to amend the Planning & Energy Act and were in favour of retaining local planning authorities' flexibility to set standards. The above sets out the national planning and legal context for why Local Planning Authorities should seek to go beyond building regulations to ensure that new development meets the Government's and Leeds' net zero targets.

It is estimated that buildings will face retrofit costs of between £15,000 and £25,000¹⁵ to meet the South West's 2030 climate objectives, and similar costs would be expected in Leeds. Therefore, in order to reduce the need for buildings to retrofit moving forward, it is in Leeds' best interests to ensure that as many new developments are net zero carbon operationally moving forward. By acting before, and going beyond, Building Regulations will help Leeds position the City as a leader in low carbon goods and services.

¹¹ [Core Strategy Adoption \(leeds.gov.uk\)](https://www.leeds.gov.uk/core-strategy-adoption)

¹² [Planning and Energy Act 2008 \(legislation.gov.uk\)](https://www.legislation.gov.uk)

¹³ [Interactive policy map - Jan 2021 - UKGBC - UK Green Building Council](#)

¹⁴ [Government confirms local authorities can set energy standards beyond Part L in NPPF - UKGBC - UK Green Building Council](#)

¹⁵ [The-costs-and-benefits-of-tighter-standards-for-new-buildings-Currie-Brown-and-AECOM.pdf \(theccc.org.uk\)](#)

Policy Objectives

The policy is seeking to reduce the energy demand for all new development with an aim to achieve net zero operational carbon emissions. This would be in line with the hierarchy of minimising carbon emissions, using renewable energy and low carbon energy sources onsite and as a last resort offsetting through a contribution. The policy would not support gas boilers. This policy also necessitates planning applications to be supported by energy statements that demonstrates measures undertaken to meet net zero operational carbon. A target has been set for energy use intensity and space heating demand and all applications would be expected to present performance metrics at design stage and pre-occupation within these targets.

Evidence

NET ZERO OPERATIONAL ENERGY

LCC have undertaken consultation on a requirement for developments to achieve zero or net negative carbon emissions during the operational phase of a building's lifecycle. Such a measure will be critical to Leeds meeting its science-based targets and 2030 net zero carbon goal.

The Climate Change Committee (CCC) recommends that no new gas boilers should be sold beyond 2033. Supply chains for heat pumps will need to scale up to replace this, with over a million heat pumps being installed each year by 2030, up from around 20,000 per year today. No new gas boilers will be installed in new homes from 2025¹⁶.

SCATTER¹⁷ provides local authorities and city regions with the opportunity to standardise their greenhouse gas reporting and align to international frameworks, including the setting of targets in line with the Paris Climate Agreement. Factoring in direct and indirect emissions and with no change to current technology for heating homes in Leeds the pathway will resemble figure 5. By 2050, if most heating comes from ground source heat pumps, community scale combined heat pumps and some by district heating, then there is a significant decline in our carbon emissions as seen in figure 4. It is to be noted that our ambition as a city is to reach net zero by 2030 and the no gas boiler measure is a part of a larger set of measures to reach that goal.

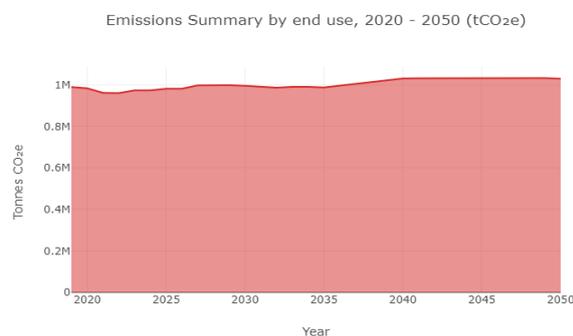


Figure 5: Carbon emissions SCATTER pathways – Business as usual

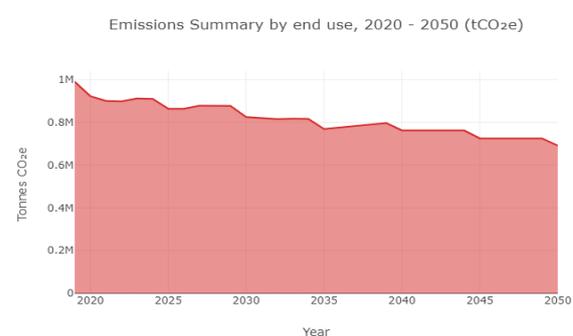


Figure 5: Carbon emissions SCATTER pathways - no gas boilers by 2050

¹⁶ See CCC (2020). Local Authorities and the Sixth Carbon Budget

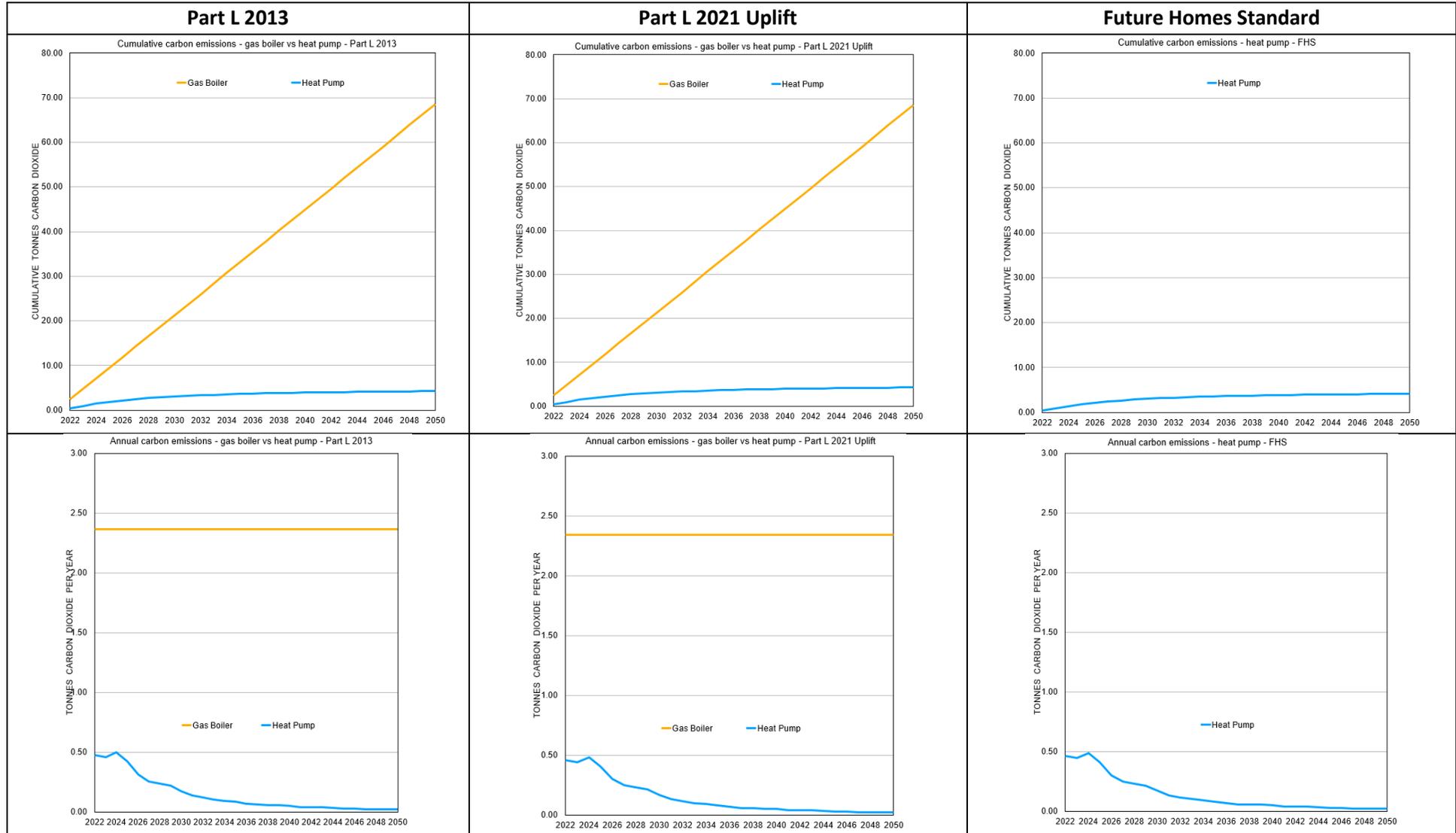
¹⁷ <https://scattercities.com/>

In the Study on the Carbon Reduction of Buildings by the University of Leeds, table 1 and 2 demonstrates how far changes to building standards and grid decarbonisation (if a heat pump rather than a gas boiler is installed) will go in delivering that. This was illustrated through the model runs for a typical home presented in Table 2. This evidence demonstrates why gas boilers are not an eligible heating option when zero carbon operational emissions are targeted. Beyond this, Tables 1 and 2 illustrate that under any building regulations scenario, carbon emissions remain which will need to be addressed if net zero operational emissions are to be achieved.

Table 1: Summary of cumulative carbon emissions by 2030 and 2050 for a typical 3 bedroom detached house with 'notional dwelling' characteristics under Building Regulations Part L 2013, 2021 Uplift and FHS (expected)

	2030, gas boiler	2030, heat pump	2050, gas boiler	2050, heat pump
Part L 2013	19.5 tCO ₂	2.9 tCO ₂	68.1 tCO ₂	4.24 tCO ₂
Part L 2021 Uplift	18.7 tCO ₂	2.8 tCO ₂	65.5 tCO ₂	4.09 tCO ₂
Future Homes Standard	N/A	2.83 tCO ₂	N/A	4.16 tCO ₂

Table 2: Cumulative and annual carbon emissions to 2050 for a typical 3 bedroom detached house with 'notional dwelling' characteristics under Building Regulations Part L 2013, 2021 Uplift and FHS (expected)



Paragraph 5.13 of the Study on the Carbon Reduction of Buildings by the University of Leeds uses the expected dwelling construction figures of the Core Strategy to compare the carbon impacts of a Leeds City Council net zero operational policy:

*Based on the expected dwelling construction figures in the Core Strategy, and assuming a linear housebuilding increase onwards to 2050, the total operational carbon emissions (for homes only) without an LPU policy to require net zero operational emissions in Leeds would be:*¹⁸¹⁹

- *Scenario 1 – Part L 2021 Uplift remains in force but Future Homes Standard with accompanying ban on gas boilers not introduced: **2.87m tonnes of carbon by 2050.***
- *Scenario 2 – Future Homes Standard implemented with accompanying gas boiler ban from 2025 onwards: **104,700 tonnes of carbon by 2050.***

The cumulative carbon emissions figures above illustrate the importance of a local policy requiring net zero operational carbon emissions from development to ensure that LCC targets can be met. This would become even more important should central government decisions be made not to pursue future upgrades to building regulations

ENERGY USE INTENSITY AND SPACE HEATING TARGETS

A decarbonising grid will mean that carbon emissions will decrease significantly, operational carbon emissions may become less useful over time in assessing the quality of developments in terms of energy efficiency and demand reduction. Other operational building performance metrics like the energy use intensity (EUI) will gain importance in such a situation.

EUI includes all the energy consumed in the building including regulated energy (heating, hot water, cooling, ventilation and lighting) and unregulated energy (plug loads and equipment e.g. kitchen white goods, ICT and AV equipment). It does not however include charging of electric vehicles. It is calculated as the annual kWh/ m², where area is taken as the gross internal area.

Energy Use Intensity (EUI) targets which describe a buildings operational energy targets on a maximum kWh/m²/year basis are one way of addressing this²⁰. A set of guidelines for EUI has been proposed by the London Energy Transformation Initiative (LETI), a network of 1,000 built environment professionals, and sets the targets for new developments shown in Table 3²¹:

Table 3: Energy use intensity targets for a range of development types proposed by LETI

Development type	Energy Use Intensity target	Space heating demand
Small-scale housing	35 kWh/m ² /year	15 kWh/m ² /year
Medium and large-scale housing	35 kWh/m ² /year	15 kWh/m ² /year

¹⁸ Model developed by Rod Holt, Otley 2030, and used with permission within the Study on the Carbon Reduction of Buildings by the University of Leeds

¹⁹ Approximate figures which relate to a standard detached 3 bedroom home.

²⁰ <https://www.ukgbc.org/wp-content/uploads/2021/11/UKGBC-Whole-Life-Carbon-Roadmap-A-Pathway-to-Net-Zero.pdf>

²¹ https://www.leti.london/files/ugd/252d09_3b0f2acf2bb24c019f5ed9173fc5d9f4.pdf

Development type	Energy Use Intensity target	Space heating demand
Commercial offices	55 kWh/m ² /year	15 kWh/m ² /year
Schools	65 kWh/m ² /year	15 kWh/m ² /year

The Committee on Climate Change recommendation of 15-20kWh/m²/year limit for space heating by 2025 at the latest for residential buildings²². The policy lists EUI targets for other building types, not based on the EUI and space heating demand table above. These have been taken from the Greater Cambridge Net Zero Carbon Evidence Base²³.

Passive design principles such as the list below can help developers meet EUI targets :

- Building orientation to maximise winter heat gain and minimise summer overheating.
- Fabric efficiency
- High levels of thermal insulation and air tightness to reduce heat demand.
- Use of Mechanical Ventilation & Heat Recovery (MVHR) in winter to capture internal warmth whilst maintaining ventilation.
- Hot water demand reduced e.g. by limiting shower flow rates.
- Designing out the need for additional mechanical cooling e.g. through optimised glazed area and associated solar gain, and use of natural ventilation in summer.

The UKGBC urges as an immediate priority to set up energy use intensity (EUI) targets. The future development of a market for Green Mortgages is also likely to result in an increased emphasis on measuring in-use performance of properties.²⁴

The Carbon Risk Real Estate Monitor (CRREM)²⁵ pathways support real estate market participants in formulating, setting, and implementing science-based targets to reduce operational carbon emissions of buildings by analysing property-specific energy consumption data, and then directly benchmark the results against the target paths (towards achieving a 1.5°C goal). CRREM tools and pathways rely on the EUI metric for evaluating existing buildings in operation. Using EUI as a metric to inform the planning process will only make the transition towards monitoring in operation smoother.

Implementing an EUI target without a space heating target would risk high fuel bills, implementing both targets without an onsite fossil fuel ban would allow gas to be used to meet the other targets²⁶. The policy therefore also introduces a space heating target of 15 kWh/m²/yr. This is derived from Passivhaus and the LETI net zero operational requirement²⁷. By ensuring homes have low space heating demand targets, this increases

²² [UK housing: Fit for the future? - Climate Change Committee \(theccc.org.uk\)](https://www.theccc.org.uk/our-reports/uk-housing-fit-for-the-future/)

²³ [Greater Cambridge Net Zero Carbon Evidence Base \(greatercambridgeplanning.org\)](https://www.greatercambridgeplanning.org/greatercambridgeplanning.org/)

²⁴ See EeMAP (2018). Creating an Energy Efficient Mortgage for Europe – Towards a new market standard. [online] Available at <https://eemap.energyefficientmortgages.eu/04-downloads-2/>.

²⁵ <https://www.crrem.org/pathways/>

²⁶ <https://www.westofengland-ca.gov.uk/wp-content/uploads/2022/01/Spatial-Development-Strategy-Net-zero-new-buildings-Evidence-and-Guidance-to-inform-Planning-Policy-Jan-2022.pdf>

²⁷ [leti-climate-emergency-design-guide.pdf \(levittbernstein.co.uk\)](https://www.leti-climate-emergency-design-guide.pdf)

the affordability of heat, addressing fuel poverty and helping to create a healthier environment.

Offsetting

It is important to understand the true cost of carbon if the option of carbon offset payments is to be offered to developers in Leeds. Section 6 of the Carbon Reduction of Buildings by the University of Leeds sets out other Local Authorities approach to offsetting and the options available to Leeds. Offsetting should be seen as a last resort, as outlined in the London plan energy hierarchy diagram (Figure 6)

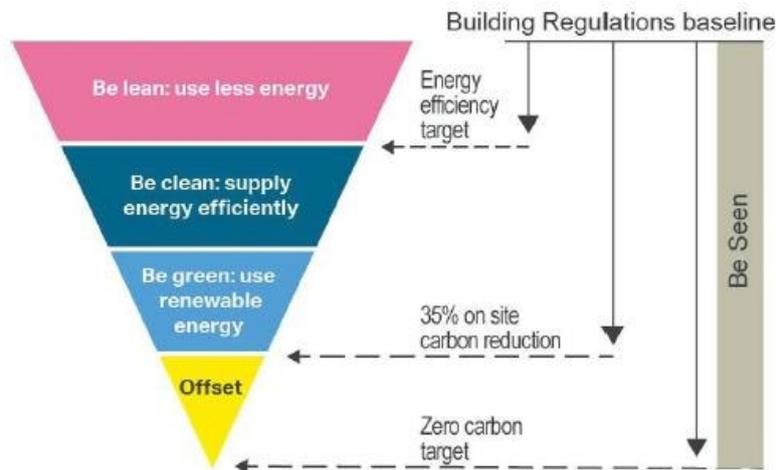


Figure 6: The London Plan energy hierarchy

Paragraphs 6.5 to 6.7 of the Carbon Reduction of Buildings report by the University of Leeds explores the true cost of carbon, and it is often underestimated. Whilst other authorities offset payments range from 30 years (Reading²⁸), £200/tonne of operational carbon for 1 year (Milton Keynes²⁹) and £210/tonne of operational carbon for one year (Southampton)³⁰. As of 2022, the cost of carbon is set at £248/tonne, and this will increase to £280/tonne by 2030 and this is the figure the policy will refer to.

The contributions in lieu will be used to deliver Council run projects that help reduce carbon across the district. These will include:

- Upgrading and retrofitting of existing housing stock
- Generating and supporting renewable and low carbon energy and heat projects
- Energy projects for community buildings
- Carbon sequestration projects (including tree planting)

The above projects are not exhaustive, and liable to change as the Council continues to support and introduce new carbon reducing projects. The annual sum of commuted sums

²⁸ <https://images.reading.gov.uk/2019/12/Sustainable-Design-and-Construction-SPD-Adopted-December-19.pdf>

²⁹ <https://www.milton-keynes.gov.uk/sites/default/files/2022-02/2021%2012%2003%20Sustainable%20Construction%20SPD%20adoption%20version.pdf>

³⁰ https://www.southampton.gov.uk/media/x21pvzzy/carbon-offset-fund-guidance-2015_tcm63-371698.pdf

collected will be monitored through the AMR, which will also detail the projects that receive financial assistance through this mechanism.

Policy Exemptions

Whilst the Council supports every application reducing its embodied and operational carbon as much as it can, it is understood that it would be unreasonable for every type of application to be subject to the policy, as the burden of delivering a net zero operational building may not be possible. Those developments are:

1. Buildings exempt from building regulations
2. Alterations and extensions to buildings of up to 1,000 square metres
3. Change of use or conversion of buildings
4. Ancillary buildings that stand alone and cover an area less than 50 square metres
5. Buildings which have an intended life of less than two years
6. Gypsy and Traveller and Showpeople caravans

The above developments have been identified as exceptions as it may create too much of a burden on cultural practices or may be impossible to achieve within existing buildings (which would also promote the reuse of existing buildings).

NPPF Consistency

Paragraph 154 of the NPPF states New development should be planned for in ways that:

- a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
- b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. ***Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards***

However, in the Government's summary response³¹ to the draft revised NPPF consultation it stated that:

*"A number of local authority respondents stated the view that the text in the revised Framework restricted their ability to require energy efficiency standards above Building Regulations. **To clarify, the Framework does not prevent local authorities from using their existing powers under the Planning and Energy Act 2008 or other legislation where applicable to set higher ambition. In particular, local authorities are not restricted in their ability to require energy efficiency standards above Building Regulations.** The Government remains committed to delivering the clean growth mission to halve the energy usage of new buildings by 2030"*

³¹ [Title \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk)

In response to the revisions to the Part L of the Building Regulations, the government confirmed that:

“To provide some certainty in the immediate term, the Government will not amend the Planning & Energy Act 2008, which means that local planning authorities will retain powers to set local energy efficiency standards for new homes”

The wording of this response makes clear that local authorities can go further than the equivalent of Code for Sustainable Level 4. Therefore, Leeds requiring that new development goes beyond building regulations is legal and consistent with national guidance.

Monitoring

The UKGBC recognizes the requirement for monitoring and reporting energy performance of new developments for first years of operation as an opportunity area for local policy towards net zero carbon – operational.

The following indicators will be used to assess the policy:

Indicator	Reason
Air Quality	New buildings will promote the use of renewable energy, or provide financial contributions through offsetting, that can help improve Leeds air quality.
CO2 reduction	New buildings will be net zero operational energy, or offset to other carbon reduction schemes, which will help decrease the amount of CO2 emissions within Leeds.
EPC Ratings	As buildings will be built to net zero operational energy and meet EUI targets, EPC ratings should improve in new domestic and non-domestic buildings.
Renewable Energy generation	The policy requires new development to provide renewable energy onsite, and therefore should result in an increase in the amount of renewable energy delivered within Leeds.

The annual sum of commuted sums collected through carbon offsetting will also be monitored through the AMR, which detail the projects that receive financial assistance through this mechanism.

Implementation

Measures undertaken to reach net-zero operational need to be already set out at the pre-assessment or outline stage with detailed modelling results furnished during a full application.

EUI targets can be assessed at design stage through the planning process through SAP/SBEM/PHPP modelling, as well as measure in-use to support as-built monitoring through EPC reports.

POLICY EN2: SUSTAINABLE CONSTRUCTION STANDARDS

Why is the policy needed?

Leeds City Council wants all development to be built to a high standard across a range of sustainability measures. To achieve this we adopted Policy EN2 in our Core Strategy to require specific construction standard ratings to be achieved, and adopted the Building for Tomorrow Today— Sustainable Design and Construction Supplementary Planning Document (SPD) to help developers design and construct sustainable developments within Leeds. For major residential development it was required to be built to Level 6 of the Code for Sustainable Homes and major commercial development to be built to BREEAM excellent standard.

However, in 2015 the Government abolished the Code for Sustainable Homes and consequently the Council amended Policy EN2 accordingly through the Core Strategy Select Review (2019). Policy EN2 currently still asks for BREEAM Excellent for non-residential development but for residential development it only asks for a water consumption standard (in line with the Government's Technical Standards).

As set out above, our current policies for sustainable construction have been limited by changes to national guidance and are not as ambitious as was originally intended. Whilst we have not been able to set policy to encourage all development to achieve these standards where we are able (e.g. through our own development) we have sought to go further.

Energy efficiency is a key component of most sustainable construction standards but the options proposed now for development to achieve zero carbon across the whole life cycle of a development need to improve even more. One way of helping to achieve this is through measuring of the improvement through accreditation by a sustainable construction rating method, which provides a standard against all of the different sustainable construction factors. Sustainability standards also provide a system of accountability and monitoring for intentions and measures set out during the application stage.

Policy Objectives

As set out above, our current policies for sustainable construction have been limited by changes to national guidance and are not as ambitious as was originally intended. Whilst we have not been able to set policy to encourage all development to achieve these standards where we are able (e.g. through our own development) we have sought to go further.

The policy is seeking to ensure that all new development (non-domestic and residential) is delivered to a high standard. To achieve this, all residential development will have to meet Level 4 Home Quality Mark and non-domestic meet BREEAM Outstanding.

The Home Quality Mark (HQM)³²³³ certification scheme from BRE awards a 1-5 star rating for new homes against a set of criteria which include living costs, health and wellbeing and environmental footprint.

Indicators include reducing energy and carbon emissions, improving biodiversity, home security and recreational space, flood risk, internal noise and temperature. Promotion of public or active travel options and access to local amenities would support reductions in household carbon emissions outside of the scope of the buildings themselves.

³² <https://www.homequalitymark.com/wp-content/uploads/2018/09/HQM-ONE-Technical-Manual-England.pdf>

³³ [HQM-Guide-document BRE 115302 0120-v2.3.pdf \(homequalitymark.com\)](#)

Credits can be obtained from a range of indicators within three indicator bands - 'my costs', 'my wellbeing' and 'my footprint'. A minimum number of credits have to be achieved in each to obtain a 1-5 star rating. By requiring a 4 star rating, it ensures that 'a home is designed and built to have very low running costs, many positive impacts upon your health and wellbeing, all with an extremely low impact upon our environment'³⁴.

The HQM involves a two-stage assessment to ensure principles are incorporated at design stage and to verify the standard has been met post-construction. Assessment is undertaken by independent assessors, trained and licensed by BRE. According to a UKGBC (UK Green Building Council) project in association with Core Cities UK, HQM can also help minimise performance gap related issues in the following ways:

- Calculation methodologies are intended to be more accurate than standard practices, particularly in relation to energy and carbon calculations (see opposite)
- A focus on better inspection, commissioning and testing including detailed planning and scheduling to ensure homes are being reviewed throughout the whole delivery process
- Requirements which reward smart home solutions, better aftercare, accessible controls and home information for occupiers to encourage good in-use behaviours
- An integrated approach to project preparation and post occupancy evaluation; helping encourage the transfer of learning from one site to the next
- Outcome focused assessment criteria and an 'each home' certification process whereby every home has its own certificate which represents its individual ratings and indicator scores reducing the risk of averaged assumptions³⁵

BREEAM New Construction 2018 is the UK version of BRE's international sustainable building standard for non-domestic buildings. This includes commercial, office, retail, education, healthcare, and public buildings, as well as short and long stay residential institutional buildings such as hotels, care homes, and sheltered accommodation etc, and can include part new-build, part refurbishment projects. BREEAM is referred to by over 190 Local Authorities within their Local Plans across the UK, so is standard that national developers will have experience of using.

Assessment and certification must be carried out by a licensed BREEAM Assessor and includes a range of evidence and site inspection. The criteria include reducing energy and carbon emissions, sustainable materials and construction practices, health and wellbeing of building users, accessibility and sustainable transport options.

Ultimately, developments attaining accreditations for HQM and BREEAM from independent experts will give householders and end users confidence that their buildings are well designed and built, whilst being cost effective to run.

There are other sustainable construction standards and targets that applications can achieve as of 2022, these include the Passivhaus Standard, Living Building Challenge and RIBA 2030 targets. Whilst the Council will support applications meeting these standards, they may not include a holistic approach to sustainable design that the Home Quality Mark and BREEAM assessments require.

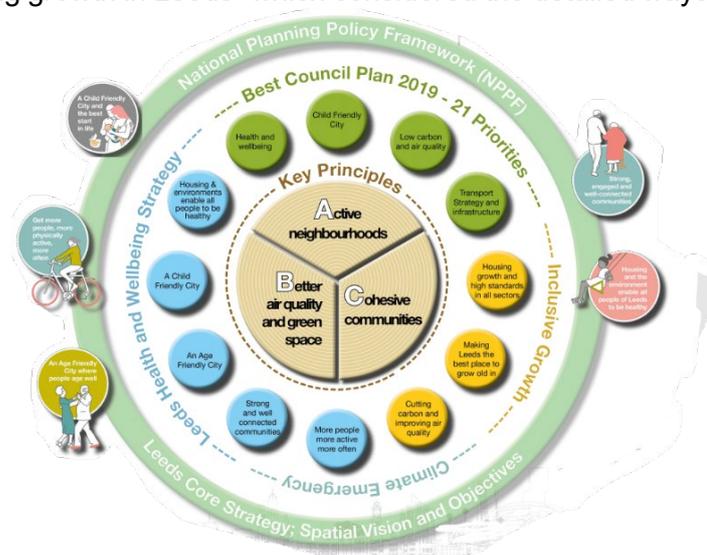
³⁴ [Ratings and Stars - Home Quality Mark](#)

³⁵ [Slide 1 \(goodhomes.org.uk\)](#)

Evidence

The policy will result in high quality, sustainable development. The evidence on high quality and sustainable places is qualitative however the many reports on climate mitigation and adaptation return to quality of place being central to achieving well designed places that respond to the impacts of climate change through mitigation (reducing greenhouse gas emissions and minimising embodied energy) and adaptation (such as rising temperatures and increased risk of flooding).

There is also much research on the relationship between planning and good design and health benefits (Public Health England (2017)³⁶) that share the benefits of addressing climate change (mitigation and adaptation) through improvements to the layout and form of buildings and spaces and better use of resources that has clear physiological and psychological health benefits. This is reflected locally in the Leeds 2014 Director of Public Health Report “Planning a Healthy City: housing growth in Leeds” which considered the detailed ways that Leeds could



plan a healthy city around housing growth reflecting on the need to connect the public health benefits of good urban design and planning to people, place and the planning process.

Following the 2014 Planning a Healthy City report, the Council has established a Planning and Design for Health and Wellbeing and Climate Change group looking at influencing the built environment and has drawn together the key principles diagram above. These three principles promote:

- **Active neighbourhoods** – promoting cycling and walking, reducing car usage and improving children’s opportunities for independent mobility.
- **Better air quality and green space** – using green and blue infrastructure to provide opportunities for outdoor recreation and promote mental wellbeing.
- **Cohesive communities** – encouraging co-located services and high-quality neighbourhood spaces to encourage social interaction and combat isolation.

The HQM and BREEAM standards also promote the delivery of energy efficient buildings that consider the carbon cost of the materials and construction process. The justification for requiring new development to deliver to that standard can be found within Carbon Reduction

³⁶ [Spatial Planning for Health: an evidence resource for planning and designing healthier places \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

Whole Life Cycle Carbon Assessment and Operational Carbon section of the background paper.

The scoping consultation, and alternative policy options, assessed whether Leeds City Council should require set standards or offer a flexible approach, which includes standards such as Passivhaus and targets such as RIBA 2030³⁷. However, with policies such as the proposed EN1 covering energy efficiency targets, it was decided that a standard which would cover a holistic design approach would be the most appropriate standard to require. As both the HQM and BREEAM are nationally recognised standard and ensure the delivery of development that will have a reduced effect on the environment, improve health and wellbeing and cost less to run, they were chosen as Leeds' standards to meet.

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NPPF Consistency

The NPPF Consistency section of the Operational Carbon aspect of this background paper outlines this policy's consistency with national policy and demonstrates how this sound and legal approach supported by the latest Government statements on technical standards.

³⁷ [2030 Climate Challenge \(architecture.com\)](https://www.architecture.com/2030-climate-challenge)

³⁸ [2030 Climate Challenge \(architecture.com\)](https://www.architecture.com/2030-climate-challenge)

Monitoring

The policy will be measured using the following indicators:

Indicator	Reason
Air Quality	The policy promotes development to be located in sustainable locations and ensure that there are sustainable travel options to and from the site. This would result in more journeys through sustainable transport measures (walking/cycling/public transport) which would improve the air quality within Leeds.
Renewable Energy generation	BREEAM Outstanding and the HQM Level 4 both require credits in energy efficiency. Delivering onsite renewable energy generation to power and heat developments will help developments secure those credits.
EPC Ratings	BREEAM Outstanding and the HQM Level 4 both require credits in energy efficiency. As a result, EPC ratings should improve as new residential and non domestic buildings are delivered.

Implementation

The HQM involves a two-stage assessment to ensure principles are incorporated at design stage and to verify the standard has been met post-construction. Assessment is undertaken by independent assessors, trained and licensed by BRE. Applicants will be expected to deliver a design stage report as part of their application and will be required (by condition) to provide a post-construction assessment once the development has been delivered. At both stages, the reports will have to have been independently assessed by an accredited assessor.

Non-domestic buildings are expected to deliver an 'Outstanding' rating. This should ensure the delivery of very high-quality non-residential developments which reduce their environmental impact and provide a much better environment for those working within them. Again, applicants will be expected to deliver a design stage report as part of their application and will be required (by condition) to provide a post-construction assessment once the development has been delivered. At both stages, the reports will have to have been independently assessed by an accredited assessor.

If an applicant seeks to build to another standard, such as the standards detailed in section 3 of the Carbon Reduction of Buildings report by the University of Leeds, then they will have to justify how the development would deliver a high quality and sustainable development that would be equal to Home Quality Mark 4 or BREEAM Outstanding. The justification should be detailed as part of the energy statement at both design and post completion stage and demonstrate how the development aligns with the BREEAM Outstanding/HQM Level 4 technical standards³⁹⁴⁰.

³⁹ [Standard - Home Quality Mark](#)

⁴⁰ [BREEAM Technical Standards - BRE Group](#)

POLICY EN3: RENEWABLE ENERGY

Why is the policy needed?

National policy recognises the role of the planning system to ‘support renewable and low carbon energy and associated infrastructure’ (para 148). To promote the use of renewable energy to reduce carbon emissions at a local and national level, and also to increase Leeds’ energy security, the Local Plan Update needs to promote the development of renewable energy generation, and its associated infrastructure, within the Leeds district. The UK Government’s Energy Security Strategy⁴¹ has an ambition for 95% of the UK’s electricity generation to be low-carbon by 2030 and for unabated fossil-fuelled electricity generation to come offline by 2035. In order for Leeds to meet these ambitions, then an updated renewable energy policy that encourages renewable energy development in the right locations is required.

Policy Objectives

There have been no planning applications for wind energy development in Leeds since 2015. This follows the Government’s 2015 changes to planning policy relating to onshore wind development, combined with the withdrawal of subsidies for renewable energy generation. Those Government changes have meant that our existing Local Plan maps showing the wind resource across Leeds will not be a sufficient basis for the consenting of wind farm applications.

Consequently, if Leeds is to give any further consents for wind turbines the wind speed map in the Core Strategy will need to be replaced with a map showing areas with potential for wind energy development, which would then be shown on the Policies Map.

A similar approach is taken for solar farms. This approach would ensure that Leeds was maximising opportunities for local renewable energy generation and reduce reliance on fossil fuels ahead of the Government’s plans for decarbonisation of the grid by 2050.

Local renewable energy generation helps Leeds to be more energy secure, it avoids the inefficiencies associated with loss of energy during its transmission (which is greater the further it has to go), it creates local jobs and it can provide opportunities for community benefits. Furthermore, local renewable energy generation, such as solar farms, may provide opportunities for new developments to be directly powered by them and therefore achieve zero carbon in their operational energy use.

An increase in renewable energy generation would also require new energy storage infrastructure to help support renewable energy development and the national grid.

Renewable energy can sometimes result in energy being produced when it is not needed and therefore can be lost. Energy storage can help reduce this loss by storing this energy for future use. Whilst storage can take a number of different forms, the most commonly used for electricity is the chemical battery. Storage has the following benefits:

- Storage of renewable energy for use later when it’s needed
- Provide backup power when blackouts occur
- Provide voltage stabilisations or other grid balancing services

⁴¹ [British Energy Security Strategy - House of Commons Library \(parliament.uk\)](https://www.parliament.uk/library/publications/default.asp?documentID=10000)

Ultimately, the policy aims to promote the delivery of renewable energy and its associated infrastructure in the right places. These right places will be assessed against the opportunity area mapping and criteria based policies that ensure minimum harm to the local community.

Evidence

AECOM's Renewables Areas for LCC Local Plan Update report, which can be found within the evidence base, provides evidence for the following;

- Detailed mapping illustrating opportunity areas for large scale solar photovoltaic installations should be identified.
- Detailed mapping illustrating opportunity areas for onshore wind turbine installations should be identified.
- Consideration of the potential for other renewable energy generation (e.g. anaerobic digestion, hydro (maps to be provided by LCC), waste, biomass, hydrogen etc.) should also be considered as justification for potential criteria based policy.
- To advise on how much energy storage may be needed in Leeds. From both a strategic capacity perspective (i.e. grid demands and potential for different connection methods and different renewable technologies arising from installed capacity) and a local demand. Opportunity mapping for significant areas i.e. where grid connection is strategically important. This may include guidance on electricity storage, current technologies and business models.
- Identify for the strategic potential the preferred site characteristic and importance of grid connection proximity and capacity.
- Requirement 6: Quantitative figure for technical potential for each energy type.

Section 3 of the report provides the methodology for the solar and wind opportunity area mapping. The opportunity maps are created by factoring out areas that are unsuitable for that energy type adding constraints onto the map. These constraints consider physical factors, such as protected woodland and buildings, existing and future development, and biodiversity constraints such as bird flight paths and protected landscape areas. A list of all constraints used can be found in Appendix A of the AECOM Renewables Areas for LCC Local Plan Update report. The study also considers the potential energy generation on brownfield land, all land excluding Green Belt and all land including Green Belt. As the scenarios show, most of the potential for solar and wind within Leeds is found within the Green Belt.

Section 4 looks at other renewable energy sources, such as anaerobic, energy from waste, hydro-electric and provides information on how to assess and plan for those types.

According to the UK Battery Storage Project Database Report⁴², the UK has The UK has 1.3GW of installed battery storage capacity with a further 16.5 GW in the pipeline. Section 5 covers energy storage, and what criteria are necessary to consider when determining a planning application and how much may be required for Leeds depending on certain scenarios.

⁴² [UK Battery Storage Project Database Report – Solar Media Market Research](#)

Section 7 looks at the energy potential. Assuming an extensive build-out of the following technologies, to generate:

- Energy from waste (EfW) plants: 360,000 MWh/yr
- Anaerobic digestion CHP plants: 3,060 MWh/yr
- Hydro-electric plants: 2,260 MWh/yr
- Solar PV farms: 2,000,000 MWh/yr
- Wind farms: 380,000 MWh/yr

NPPF Consistency

Section 2 of AECOM's Renewables Areas for LCC Local Plan Update report sets out the Key International and UK legislation that supports the adoption of these policies. This includes how the policy aligns with the objectives of the Paris Agreement 2015, COP26, the Environment Bill, Climate Change Act of 2008 and Planning and Compulsory Purchase Act.

The NPPF requires Local Plans to demonstrate how they are addressing Climate Change. Chapter 14 details how planning policy can help mitigate, and adapt to, climate change, flooding, coastal change, water supply, biodiversity, landscapes, and the risk of overheating from rising temperatures.

Paragraph 152 states that *“The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.”*

Paragraph 153 of the NPPF states that *“policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure”*.

And most importantly, Paragraph 155 states that:

To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);*
- b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and*
- c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers*

Monitoring

The policy will be measured using the following indicators:

Indicator	Reason
Renewable Energy generation	The policy will encourage the delivery of renewable energy and its infrastructure in the most appropriate places. This should result in an increase of renewable energy across the district.

Implementation

Proposals for new renewable energy development will be expected to comply with the criteria detailed within Policy EN3. Where development falls within the Green Belt, the application will be expected to demonstrate Very Special Circumstances as required by the NPPF.

POLICY EN4: HEATING NEW DEVELOPMENT

Why is the policy needed?

Leeds City Council and its partners Vital Energi are constructing a heat network, via underground pipes, around Leeds City Centre which re-uses the heat produced from the Recycling and Energy Recovery Facility (RERF) to supply a low carbon form of heat in the urban area to local homes and businesses.

When complete, the network will connect nearly 2,000 homes and businesses providing low carbon heat and hot water, equating to a saving of 11,000 tonnes of carbon emissions per year.

Core Strategy Policy EN4 asks for developments to connect into the heat network where possible and, in areas that are too far away from the heat network, to create a new district heat network serving the development. In all cases development should be designed to be ready to connect to a future heat network. This policy has been successful and is addressed by developers. The Local Development Order for the district heating network was renewed in February 2022.

However, where it may not be technically viable or appropriate for the development to connect to, or create, a district heating network then there is only so much a development can be expected to do. This policy requires developers to use low carbon sources to heat new development.

Policy Objectives

The policy's key objective is to ensure that new development is heated through low carbon and cost-effective energy production. This will help meet the Council's and the nation's climate objectives by prioritising low carbon energy generation and helping to reduce the cost of living crisis by providing cheap and reliable heat to homes and businesses.

Applicants must also be made aware of potential changes to national guidance and the introduction of heat network zoning. Paragraphs 7.28 to 7.32 covers the potential introduction of these zones and the implications for developments within them.

Evidence

Section 7 of the Carbon Reduction of Buildings report by the University of Leeds details how heat networks can provide low carbon heat to development and a review of other current heating technologies.

The council has recently conducted a benchmarking exercise with other operators of DHNs fed by EfW plants and used this to refine the approach to calculating the carbon factor for the heat supplied through the DHN. This is now done using the methodology created by the Building Research Establishment (BRE) for use in SAP assessments for planning and Building Regulations. This is based upon establishing the amount of grid electricity and gas that has been displaced by the DHN, utilising up to date carbon factors for both. Therefore, as the grid decarbonises, so the CO2 factor for the DHN reduces.

Details of the BRE methodology can be found within the BRE technical note "Recognition of energy from waste in SAP assessments"⁴³

⁴³ [BRE Technical Note-Energy from Waste Facilities \(ERF\) 1.0.pdf \(bregroup.com\)](#)

The carbon factor of grid electricity is now quoted at 0.136 kg CO₂/kWh, which means that the carbon factor of the Leeds PIPES network is 0.031403 kg CO₂/kWh.

However, if not possible to connect to a heat network, then the Table 4, taken from the Carbon Reduction of Buildings report by the University of Leeds details how air source heat pumps, ground source heat pumps and shared ground heat exchanges should be prioritised through policy over gas boilers and direct electric resistive heating.

Table 4: Summary of heating technology options

Heating technology	Energy source	Advantages	Disadvantages	Eligible system
Air source heat pumps	Electricity (grid or locally generated) + air	Highly efficient, net zero compliant as grid decarbonises, price competitive with natural gas when designed and operated effectively	High capital costs, requires outside space for fan unit and inside space for thermal storage, efficiency reduces in colder weather	Yes
Ground source heat pumps	Electricity (grid or onsite) + ground heat	Highly efficient, net zero compliant as grid decarbonises, price competitive with natural gas when designed and operated effectively	High capital costs, require outside space for ground heat exchanger and inside space for TES	Yes
Shared ground heat exchange	Electricity (grid or onsite) + environmental energy (ground)	Highly efficient, can be installed where there is no or little outside space, net zero compliant as grid decarbonises	High capital costs, requires inside space for thermal storage, requires pipework and borehole installation	Yes
Heat network	Multiple, but going forwards should be on net zero carbon trajectory	Can make use of a range of low carbon heat sources which could otherwise not be exploited, can offer low running costs to users	High capital costs, cost and complexity of metering and billing users	Yes
Individual gas boiler	Natural gas (methane)	Well-liked by users, established supply chains, low capital cost	No path to net zero carbon, will need to be replaced at household expense	No

Heating technology	Energy source	Advantages	Disadvantages	Eligible system
Direct electric resistive heating	Electricity (grid or locally generated)	Easy to install, low capital cost	Inefficient, can lead to higher energy bills, grid impacts	No
Hydrogen boiler	Hydrogen generated by renewable electricity or methane + CCS	Will be more of a like-for-like replacement for gas boilers	Very low efficiency (c18%), hydrogen leaks could increase global warming, no hydrogen network available	No
Biomass boiler	Wood, wood pellets / chips	Operates in a similar way to a typical gas boiler	Potential air pollution, health impacts	In limited rural settings

NPPF Consistency

Section 182 of the Planning Act 2008 puts a legal duty on local authorities to include policies on climate change mitigation and adaptation in Development Plan Documents. Section 14 of the National Planning Policy Framework (NPPF) details how the planning system should meet the challenge of climate change, flooding and coastal change. Paragraph 153 requires the planning system to help to:

Shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Paragraph 154 states that new development should be planned for in ways that:

a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and

b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

Paragraph 155 states that to help increase the use and supply of renewable and low carbon energy and heat, plans should:

a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts)

b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.

Paragraph 156 requires:

Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.

The revision of Core Strategy EN4 is consistent with the NPPF paragraphs referred to above.

Monitoring

The impact of policy will be measured using the following indicators:

Indicator	Reason
Renewable Energy generation	The policy will encourage the delivery of low carbon heat. This should result in an increase of renewable energy across the district.

It would also be helpful to understand the annual carbon emissions and running costs of new developments so to allow developers and assessors compare carbon emissions and end-user costs to choose the most balanced option.

Implementation

The current district heating policy refers to the Department of Energy and Climate Change's (DECC) heat map for England, which helps to identify areas of high heat demand and potential sources of heat supply. The highest priority within this is to connect to the district heating network. If that is not possible then, owing to the hierarchical nature of the policy, the use of a site wide low and zero carbon energy source must be explored. If that is not possible then, attempts must be made to collaborate with neighbouring development sites or existing heat loads/ sources to develop a viable shared District heating network. The last aspect of the policy in case all the others are infeasible calls for futureproofing for a district heating connection at a later stage.

For developments taking place within officially designated heat network zones, connection to a heat network is likely to be mandatory under the legislation to be implemented by 2025.

For development located outside of a district heating area, then the policy requires applications to deliver a low cost and low carbon heating source. This may be through heat or air source heat pumps. Paragraph 7.37 – 7.39 of the Carbon Reduction of Buildings report by the University of Leeds sets out how LCC officers can properly assess planning applications:

In order that LCC officers can properly assess planning applications, the policy could require developers to model a range of options and present the results of that modelling, against two primary criteria:

- 1. Annual carbon emissions each year for 30 years, using the government's official electricity grid carbon intensity factors.*
- 2. Annual running costs for occupants each year for 30 years, using the government's official retail fuel costs.*

Both (1) and (2) are available from HM Treasury Green Book Supplementary Guidance⁴⁴ and are updated regularly. The most up-to-date figures should be used.

The results of the analysis should be presented clearly for planning officers to be able to assess and verify the predicted carbon and fuel cost figures. If a developer chooses an option which does not deliver the lowest carbon and cost combination, they must provide a sound justification for this decision, with planning officers retaining the right to refuse on this basis.

⁴⁴ HM Treasury Green Book Supplementary Guidance
<https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal> (carbon factors: Table 1, grid average; retail fuel prices: Tables 4-8 'High' scenario)

Council's Corporate Objectives

The Council has adopted several holistic plans and strategies that aim to make Leeds the best it can be. The Carbon Reduction Local Plan Update policies will help the Council meet its ambitions through the following ways:

The **Best City Ambition's**⁴⁵ mission is to tackle poverty and inequality and improve quality of life for everyone who calls Leeds home. It aims to achieve this through improving outcomes across the 3 Pillars of the Best City Ambition which are:

- health and wellbeing
- inclusive growth
- and zero carbon.

As part of the Council's approach to net zero, Leeds will focus on addressing the challenges of housing quality and affordability, improving energy efficiency, tackling fuel poverty and creating vibrant places where residents have close access to services and amenities. It also prioritises inclusive green jobs, and how the Council can promote a whole city approach to better harness our collective capital investments, not least those aimed at pursuing our shared net zero carbon targets.

Policy EN1, which introduces whole life cycle carbon assessments and the requirement of net zero operational buildings, will both help deliver more energy efficient homes which cost less to use and heat. It would also help drive the local green economy, by promoting skills such as assessing the whole life cycle carbon of a building and constructing zero carbon homes at a local level before these standards are required nationally.

The intention of Policy EN2 is to improve the quality of all new development in Leeds. Using the HQM and BREEAM standards ensures that new development will be sustainably delivered. This will again promote investment in skills and services within the green economy and ensure quality housing is delivered, in line with the Best City Ambition.

Policies EN3 and EN4 promote the use and delivery of renewable energy. Policy EN4 requires the use of low carbon and low cost heating technologies, which will help with tackling fuel poverty and providing energy security. Promoting the delivery of renewable energy generation schemes in Leeds will also promote investment in the local renewable energy sector and green economy whilst making the region more energy secure.

The Council's **Affordable Warmth Strategy** aims to make sure all homes in the city are of a decent standard and that everyone can afford to stay warm. The strategy aims to increase the average SAP rating of housing in Leeds to band C by 2020 as a whole, and to ensure that no properties are below band E by 2030. Policy EN1 will ensure that new houses are as energy efficient as possible, which will reflect in better EPC ratings upon completion and less energy to use.

⁴⁵ [Best City Ambition \(leeds.gov.uk\)](https://leeds.gov.uk)

Equality Impact Assessments

EN1: Whole Life Cycle Carbon Assessments and Net Zero

The policy is split into Part A and Part B. Part A requires major applications to submit a whole life cycle carbon assessment that details the carbon emissions associated with the development over its entire lifetime including construction, materials, operation and demolition. It also requires minor applications to consider the materials and construction methods used.

Part B requires all applications to be net zero with regards to the energy required to operate the building. To achieve this, it is recommended that developments are energy efficient as possible and use onsite renewable generation to supply the remaining energy needs. If not technically possible to deliver the above requirements, then an offsetting through a financial contribution will be sought.

Whilst the policy only effects new development, and therefore inhabitants and users of new dwellings and buildings, it will result in a positive outcome for all protected characteristics as they all will inhabit and use new buildings. These new buildings will be more energy efficient and therefore require less energy to use and heat, which will especially help those who experience fuel poverty during the winter months. As a last resort, the policy will also collect financial contributions that could go toward retrofitting existing Council housing stock or provide money towards renewable energy generation schemes. Again, this will help those who have trouble with energy costs connected to heating their homes.

EN2: Sustainable Construction Standards

The policy requires all new major residential development to meet Level 4 of the Home Quality Mark and all new major non-domestic application to meet BREEAM Outstanding. The above standards ensure that new development in Leeds is delivered to a high quality in the following sustainable credentials:

- Energy: building operational energy and CO2 emissions
- Management: management policy, commissioning, site management and procurement
- Health and Wellbeing: indoor and external issues (noise, light, air, quality, etc.)
- Materials: environmental impacts of building materials
- Transport: transport-related CO2 and location-related factors
- Water: building consumption and efficiency
- Waste: construction and operational waste management
- Pollution: water and air pollution
- Land Use & Ecology: site and building footprint and ecological value and conservation

The policy will ensure that all new development across Leeds is delivered to a consistent high-quality standard that addresses the above sustainability credentials. Whilst it will only impact new development, it will equally have a positive impact on all of the protected characteristic groups who inhabit and use new buildings. The positive impacts will include more energy efficient buildings, that will require less energy to use and heat, and developments that deliver high quality amenity areas and less pollution, which will have a positive impact on people's health.

EN3: Renewable Energy

The policy promotes the delivery of renewable energy generation, and its infrastructure, in appropriate places within Leeds. The list of criteria that new development will have to meet ensures that new renewable energy generation schemes do not create significant harm on the environment and local communities.

The desired outcome of this policy is to increase the amount of renewable energy being generated and stored in Leeds. Whilst some of the renewable energy may directly feed into Leeds buildings, energy generated from larger schemes will more than likely feed into the national grid and therefore the direct positive results may not be delivered within Leeds. Where the energy is generated and delivered within Leeds, those using the energy will experience greater energy security from a more sustainable energy supply, which may also be cheaper than reliance upon the national grid and gas. This would be a positive impact for all protected characteristics who use and inhabit the buildings that utilise the energy from Leeds based low carbon renewable sources.

EN4: District Heat Network

The policy has been amended from the current Core Strategy (2019) EN4 policy. The policy is unchanged where it requires new development, where technically feasible and appropriate, to connect or design for future connection to a heat network. The amendment to the policy introduces a list of heating technologies that should be used if outside of a viable heat network. These alternative heating technologies include air source heat pumps, ground source heat pumps and shared ground heat exchanges and the policy requires new development to preference to the technology that balances the lowest cost for inhabitants and the lowest carbon used.

The outcome of this policy should see more connections made to the district heating network, a low carbon source of energy, and more sustainable and lower cost heating technologies being implemented in new builds. Whilst the previous version of the policy focussed on areas that could connect to the heat network, which is primarily found within the City Centre boundary, the new version now promotes low carbon and cost heating technology across the whole Leeds district. This results in the positive outcomes of this policy now having the potential to impact all protected characteristics across Leeds, where new buildings connect or use a low carbon heat source.