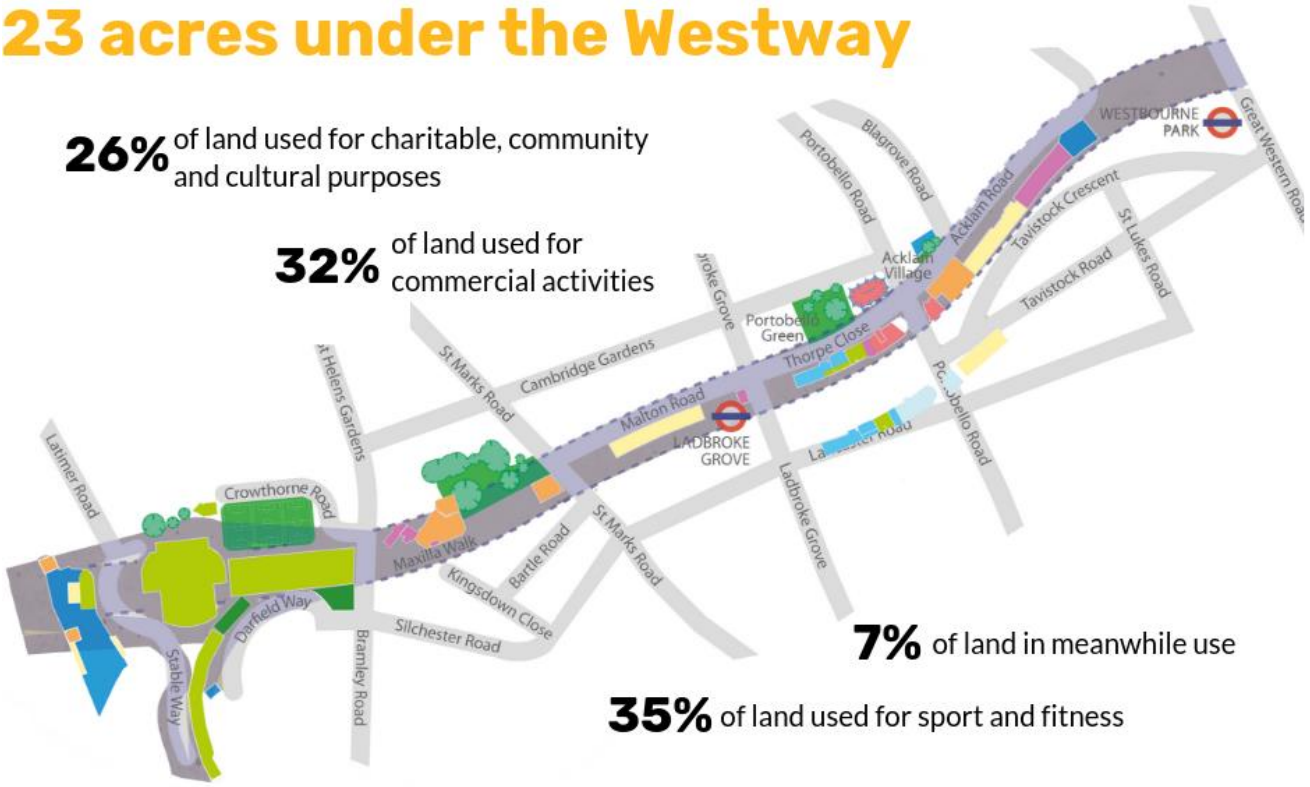
Introba

## THE WESTWAY TRUST

# Net Zero Strategy



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# Executive Summary

The Westway Trust (WWT) has commissioned Introba to develop a decarbonisation plan to align with the organisation's strong ambitions to reduce their carbon emissions and achieve compliance with the MEES minimum requirements.

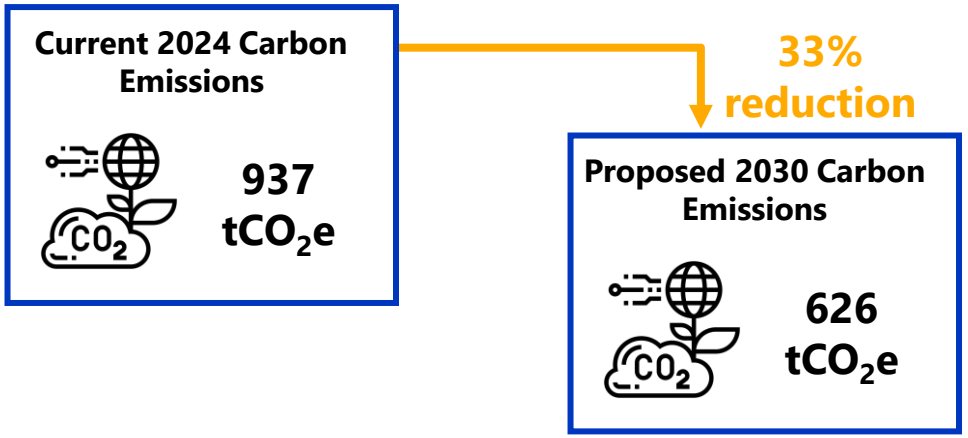
This study looked at understanding the Westway Trust's current operational carbon footprint. This was achieved by grouping the assets into typical archetype buckets within the estate and estimating their energy consumption using Introba's in-house decarbonisation tool, where high level assumptions have been made due to the limited metered data available.

Retrofit measures were then developed to reduce the Estate's operational carbon emissions and reach the MEES minimum compliance EPC B rating. To validate the impact of the retrofit measures on EPC ratings, a sensitivity test was undertaken for an existing asset to understand whether the proposed retrofit measures got it to EPC B.

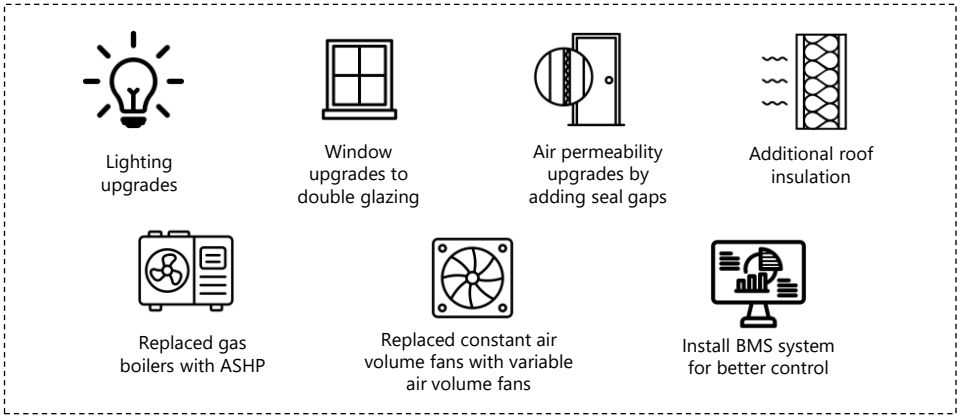
To evaluate the financial impact of the proposed retrofit measures, high level cost estimates have been provided by cost consultants Currie&Brown. The study also explored potential future commitments and going beyond mandatory compliance.

It is important to note that this study offers a preliminary decarbonisation plan to help the Westway Estate meet MEES minimum requirements. However, an EPC assessment of each asset will be required to confirm compliance.

## Proposed carbon emission reduction




## Proposed retrofit measures for different assets



# 1 Introduction

# The Climate Emergency

There is overwhelming scientific consensus that significant climate change is happening, which is evidenced in the latest assessment of the Intergovernmental Panel on Climate Change (IPCC AR6). The IPCC special report published in 2022 on the impacts of global warming of 1.5°C above pre-industrial levels highlights the urgency for action which has generated a high level of interest and concern globally. As a sector, the Built Environment is directly responsible for 25% of the UK emissions. Therefore, we have the moral and legal responsibility to act and accelerate decarbonisation.

## National Commitments

The UK's national commitment is set through the Climate Change Act 2008, which was updated in 2019. It legislates that the UK must be net zero carbon by 2050 and sets a system of carbon budgets to ensure that the UK does not emit more than its allowance between now and 2050. This legal requirement is underpinned by the Climate Change Committee's (CCC) report '*Net Zero: The UK's Contribution to Stopping Global Warming*'.

The concept of carbon budgets is critical to understand that Net Zero is not about a destination, but rather it's about a significant and fast required decarbonisation pathway from now on. By 2050, the majority of buildings then would have already been built. Therefore, it is important that we start decarbonising existing buildings to meet our climate change targets.

## Local Commitments

The Mayor of London has declared a climate emergency and committed to bring forward London's net zero target from 2050 to 2030. A 2030 net zero target represents a substantial increase in ambition relative to a 2050 target and will require action at a London-level in a timeframe that goes beyond that which is supported or funded at national-level.

Experts from Element Energy have been commissioned by the Mayor of London to analyse and develop net zero carbon pathways for London. From the four analysed possible pathways, the Mayor of London has selected the Accelerated Green Pathway which aims to reduce baseline emissions (30Mt$CO_2$e/yr in 2020) by more than 65% by 2030 down to 10Mt$CO_2$e/yr.

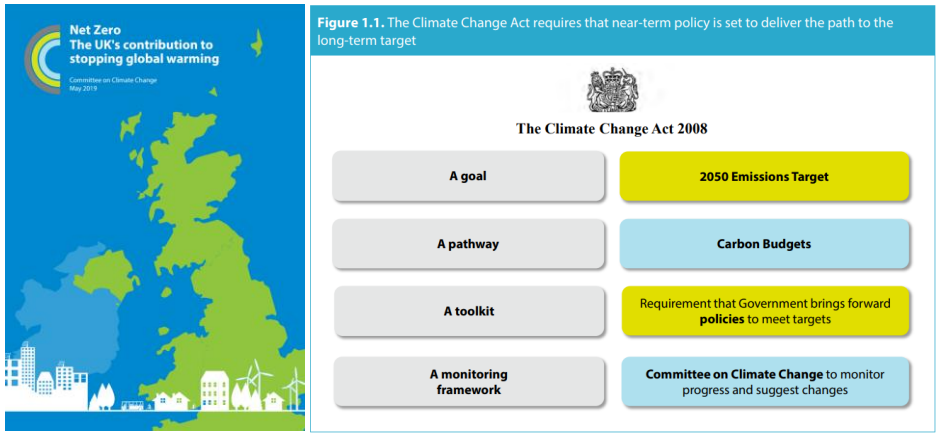



*Figure 1.1 – The UK's Contribution to Stopping Global Warming report.*

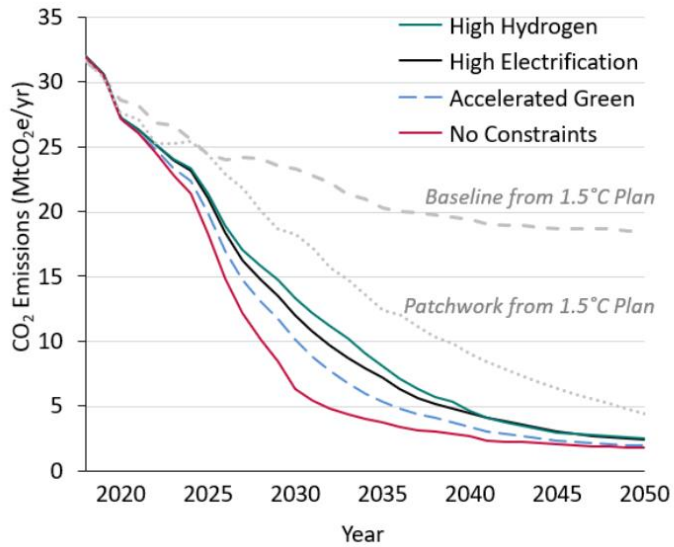



*Figure 1.2 - Four pathways were considered by Element Energy and the Mayor of London adopted the 'Accelerated Green' pathway, shown above with a blue dotted line.*

# Whole Life Carbon

A building emits carbon throughout its whole lifetime. Whole life thinking involves considering all life cycle stages of a project, from raw material extraction, product manufacturing, transport and installation on site through to operation, maintenance and eventual material disposal.

The BS EN 15978 and the RICS Professional Statement set out a modular approach to a built asset's life cycle, breaking it down into different stages, as shown in Figure 1.3.

- **Product stage (embodied carbon)**: Modules A1 – A3
- **Construction stage (embodied carbon)**: Modules A4 – A5
- **In-use stage (embodied carbon)**: Modules B1 – B5
- **In-use stage (operational carbon)**: Modules B6 – B7
- **End of life stage (embodied carbon)**: Modules C1 – C4

Whole life carbon is the sum of all asset related carbon emissions, both operational and embodied over the life cycle of an asset including its disposal (Modules: A1-A5, B1-B7,C1-C4), including biogenic carbon.

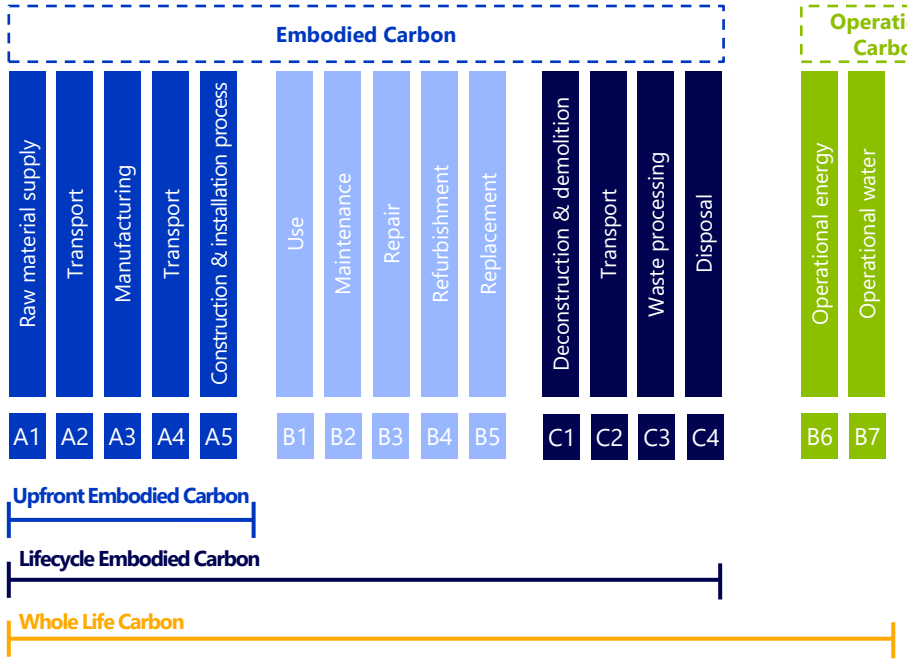



*Figure 1.3 – Whole Life Carbon Modules.*

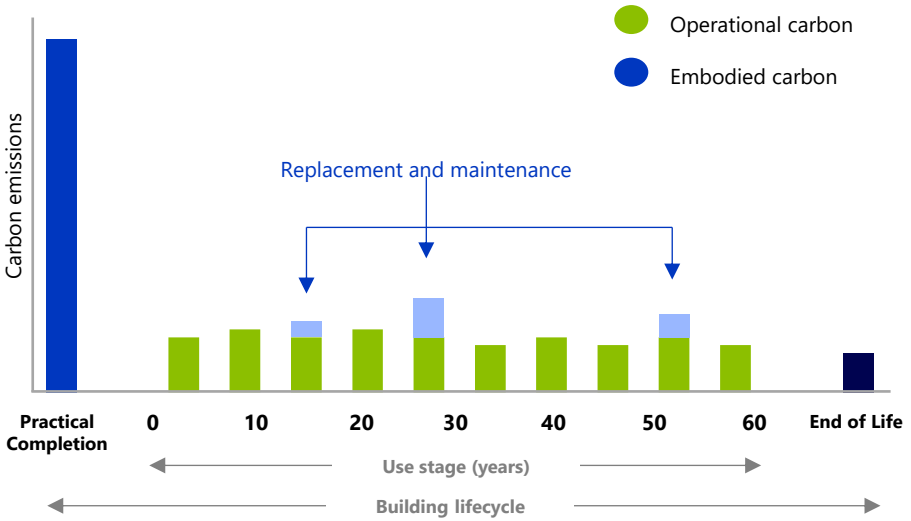



*Figure 1.4 – Interaction between operational and embodied carbon throughout the lifetime of a building (Source: LETI).*

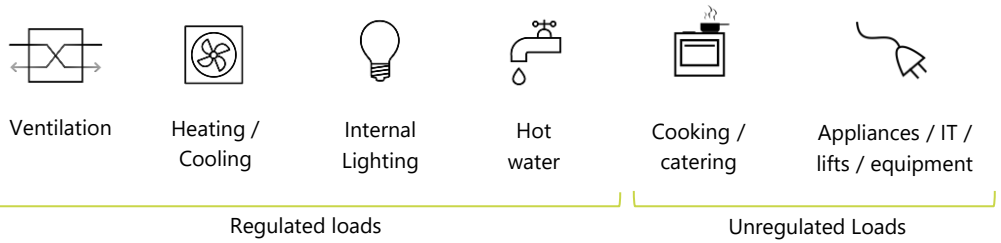
# Whole Life Carbon = Operational Carbon + Embodied Carbon

## Operational Carbon

Operational carbon is the carbon arising from all energy consumed by an asset in-use, over its life cycle (Module B6).

The energy used per $m^2$ by a building over a year, which includes regulated and unregulated energy, is known as Energy Use Intensity (EUI) in kWh/$m^2$/year. EUI is an important metric when it comes to understanding operational carbon.

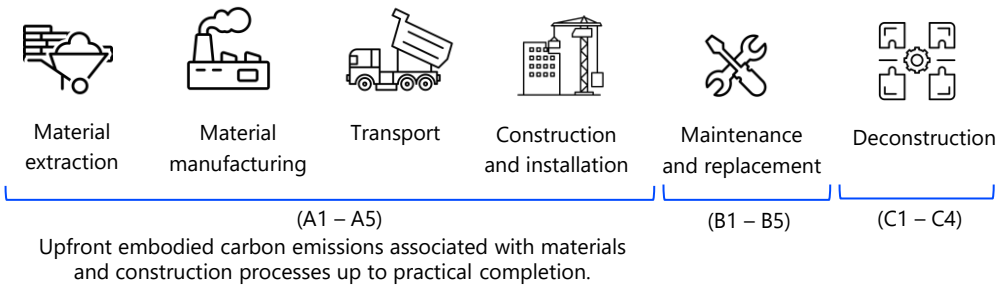
Operational energy includes the following energy uses:




## Embodied Carbon

The carbon emissions associated with materials and construction processes throughout the whole life cycle of an asset (Modules A1-A5, B1-B5, C1-C4).

Factors affecting the building's embodied carbon emissions



# 2 Regulation & Industry Best Practice

# Defining Whole Life Net Zero Carbon

There is currently no government definition of what a Net Zero Carbon building is, and the term 'Net Zero' is often used but with little clarity in what this practically means. However, over the past few years, the industry has developed a consensus towards the definition of a Whole Life Net Zero Carbon Building.

**A 'Net Zero (whole life) Carbon' building** is one where the sum total of all asset related greenhouse gas (GHG) emissions, both operational and embodied, over an asset's life cycle (Modules A1-A5, B1- B8, C1-C4) are minimised, which meets local carbon, energy and water targets or limits, and with residual offsets, equals zero[1].

Buildings cannot be 'absolute zero carbon' as there will always be some emissions resulting from them. Buildings are carbon neutral if you compensate for the carbon emissions through offsets. However, to respond adequately to the climate crisis and limit global warming to 1.5 °C, the built environment needs to limit its carbon emissions.

A different approach needs to be taken as there is a finite number of offsets available i.e finite amount of space for woodlands, buildings to retrofit, renewables to install. Furthermore, procuring carbon offsets does not improve, or add value to assets, as it is not possible to accurately know how well they work and how much carbon they can remove. If carbon offsets are not disclosed properly, it may be associated with greenwashing.

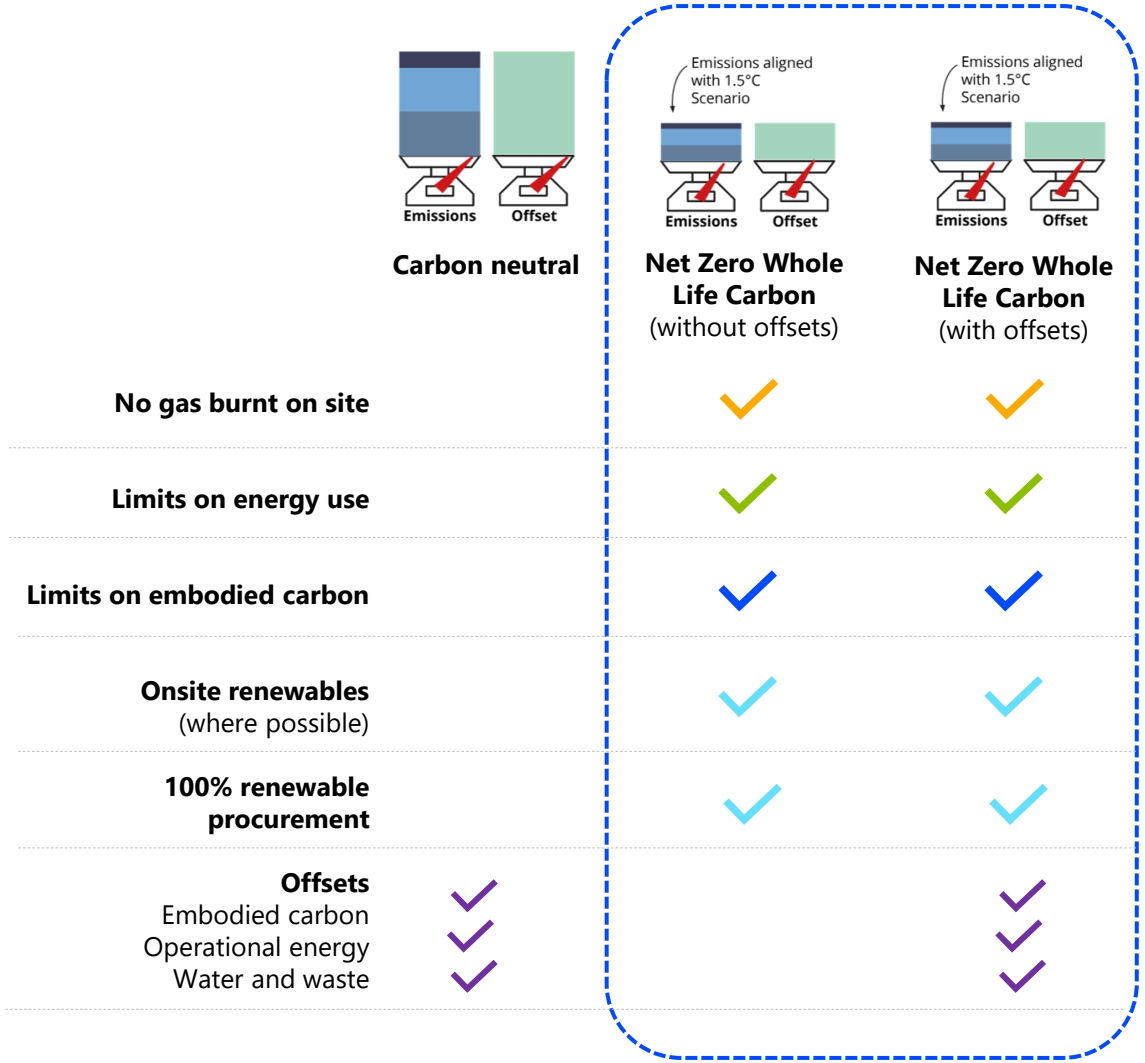



*Figure 2.1 – Industry best practice definition of Net Zero Whole Life Carbon Building.*

[1]LETI WLCN Carbon definitions for the built environment document

# Best Practice Industry Guidance

### The UK Net Zero Carbon Buildings Standard

The UK Net Zero Carbon Buildings Standard (UKNZCBS) has been collaboratively developed by a wide range of stakeholders in the UK's built environment industry including BBP, BRE, the Carbon Trust, CIBSE, IStructE, LETI, RIBA, RICS, and UKGBC. The Pilot Version of the UKNZCBS was launched in September 2024, which contains technical details on how a building should meet the Standard, including the limits and targets that need to be met, the technical evidence needed to demonstrate this and how the limits and targets should be reported. In the future, projects will be able to verify that a project conforms to the Standard.

The scope and applicability of this Standard is the design, construction and use of buildings in the UK, although its principles and approach could be adapted and applied to other nations and regions, or other UK sectors.

The Standard sets out mandatory requirements for net zero carbon aligned buildings that could – if the rest of the UK building stock were to collectively implement compatible interventions – enable the UK real estate sector to stay true to the built environment's share of our national carbon and energy budgets. This approach is defined by the term 'Net Zero Carbon Aligned Building' within the Standard.

The mandatory requirements within the Standard cover a range of topics such as upfront carbon, operational energy use, avoidance of fossil fuel use on site, renewables and refrigerants. Limits have been derived from measured performance data, combined with expert professional experience on future performance trends and buildability, which have been compared against a complex model of the entire existing stock and future UK build-out rates. Some of the relevant EUI limits to the WWT have been listed in Figure 2.3. More details can be found in the UKNZCBS Pilot Version document.

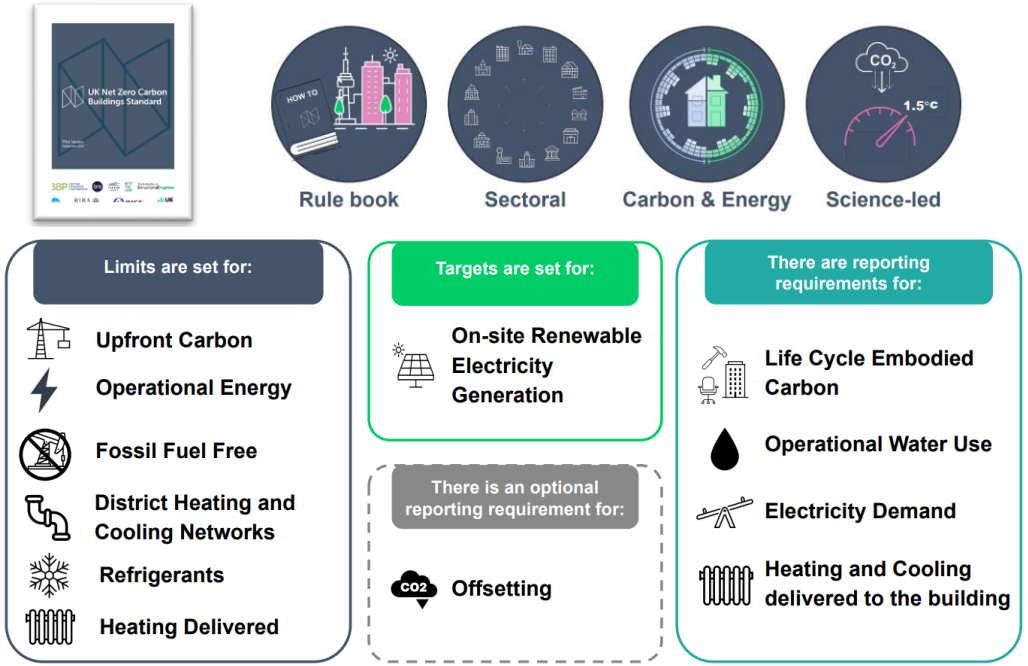



*Figure 2.2 – The UKNZCBS compliance requirements summary (Source: NZCBS Overview).*

| Energy Use Intensity (kWh/m²GIA/year) | | General Offices | Retail | | | | |
|---|---|---|---|---|---|---|---|
| | | | Supermarket | High street retail | F&B without catering | Landlord areas | Retail warehouse |
| New Build | By 2030 | 72 | 170 | 59 | 182 | 50 | 67 |
| | By 2050 | 45 | 110 | 35 | 115 | 40 | 40 |
| Existing build with One-Go Retrofit | By 2030 | 85 | 197 | 75 | 214 | 72 | 84 |
| | By 2050 | 55 | 130 | 45 | 140 | 55 | 50 |

*Figure 2.3 – The UKNZCBS energy use intensity limits (Source: NZCBS Pilot Version).*

# MEES: Minimum Energy Efficiency Standard

## Overview

The Energy Efficiency Regulations 2015 established MEES which set a minimum energy efficiency level for all non-domestic private rented property that are required to have an Energy Performance Certificate (EPC).

Since 2018, landlords of non-domestic rented properties have only been permitted to grant a new tenancy, or to extend or renew an existing tenancy, if their property has at least an EPC E rating (unless exempt).

In the year 2021, a consultation was carried out by the Government asking whether the current minimum EPC rating of 'E' aligned with the UK's net zero carbon ambition. In conclusion, a step-change was proposed – all buildings should achieve an **EPC rating of 'B' by 2030**. This means that energy saving retrofit works are required for a huge proportion of existing properties in the UK. However, this change will not come into force overnight, it will be a stepped change with expected milestones as described in Figure 2.4.

Regulations apply to all non-domestic properties that are legally required to have an EPC. Regulations do not apply when the tenancy is granted for a 'term certain' between 6 months and 99 years.

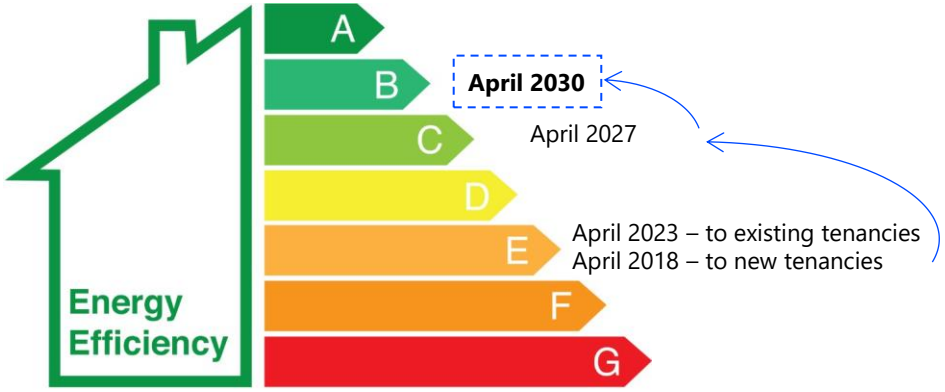



*Figure 2.4 – MEES regulation uplift timeline.*

## The issues with an EPC based metric

An EPC is a legally valid document which provides an energy efficiency rating (displayed on a scale of A-G) in relation to a property's energy use and running costs. However, the energy efficiency rating uses standard occupancy assumptions which may be very different from the way the occupier uses the space. Furthermore, EPCs do not account for unregulated energy, such as IT equipment, small power, lifts and external lighting which make up a significant proportions of a property's energy use.

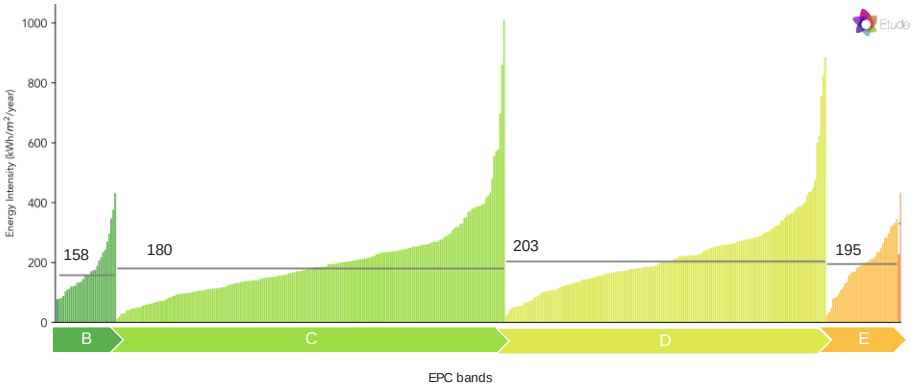



*Figure 2.5 – EPC data compared with measured energy consumption of 420 homes. The data shows there is little correlation and only marginal improvement on average energy consumption per EPC rating, which highlights the performance gap and the issues with an EPC based metric. (Source: Etude)*

# MEES: Exemptions and Enforcement

## Exemptions

It must be noted that it is not expected that all properties will be able to meet the minimum EPC rating, but every property must undertake improvements to achieve the highest EPC rating that a cost-effective package can deliver. The exemptions to this requirement are described in more detail below:

- **7-year payback exemption –** when the cost of purchasing and installing does not meet the 7-year payback test. A measure will fail the 7-year payback test where the expected value of savings on energy bills that the measure is expected to achieve over a period of 7 years (start date when installation is complete) are less that the cost of repaying it.
- **All improvements made exemption**: when all relevant energy efficiency improvements for the property have been made (or there are none that can be made).
- **Wall insulation exemption**: when the only relevant improvements for your property are cavity wall insulation, external wall insulation, or internal wall insulation (for external walls).
- **Third party consent exemptions**: when improvements require consent from another party and despite best efforts cannot be obtained or is subject to unreasonable conditions.
- **Property devaluation exemptions**: when there is evidence to show that improvements would devalue the property by more than 5%.
- **Temporary exemption due to recently becoming a landlord**: a landlord can claim 6 months exemption from the date they become a landlord.

## Enforcement

These regulations are enforced by Local Weights and Measures Authorities, who have a range of powers to check and ensure compliance.

If they believe a landlord has failed to fulfil their obligations, they can serve a compliance notice (up to 12 months after a suspected breach). A compliance notice may request information on an EPC, tenancy agreement, energy improvements made, energy advice report, any other relevant document.

If a breach is confirmed, the landlord may receive a financial penalty. This could be in breach of the 2018 and 2023 regulations or having registered false or misleading information on the PRS Exemptions register.

# Decarbonisation Plan for the Westway Trust

### The Westway Trust Estate

The Westway Trust is a unique charity that stewards 23 acres of space under the Westway (A40) in the north of the Royal Borough of Kensington and Chelsea (RBKC). The estate is home to more than three acres of public green space, 120 tenants, including more than 20 charities and non-profit organisations, two sports and fitness facilities, 48 light industrial units, 34 offices, 32 shops, and an Olympic-registered skate park.

### The Westway Trust Net Zero Carbon Ambitions

To align with the national and local climate change commitments, the Westway Trust has set strong ambitions to achieve Net Zero. The first step to achieving their Net Zero ambitions is meeting the mandatory MEES requirements set by the Government through the Energy Efficiency Regulations 2015.

Introba Consulting has been commissioned to develop a decarbonisation plan for future developments and refurbishments within the Estate to meet the MEES minimum compliance requirements. This is enabled by understanding how the current Estate is operating to develop a baseline operational carbon footprint from which retrofit measures can be developed to meet the decarbonisation ambitions and MEES requirements. The pie chart on the right shows the current EPC rating split for some of the assets within the estate. None of the assets are currently achieving an EPC rating of B, therefore retrofit measures should be developed accordingly.

It must be noted that the decarbonisation plan (Retrofit 1) will allow the Westway Trust to meet the MEES mandatory compliance requirements but will not fully achieve Net Zero carbon due to the issues highlighted with the EPC based metric on Page 12. In addition, EPC does not account for embodied carbon emissions.

## Decarbonisation Roadmap

**Current Baseline**
Estimate of WWT baseline carbon footprint based on existing building performance and information

**Retrofit 1**
To meet MEES regulations requirements

Current estate EPC rating split:

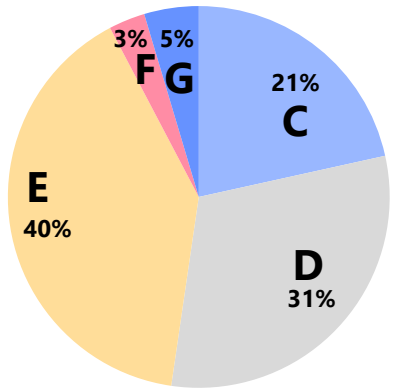



*Figure 2.6 – EPC rating split for some of the assets within the Westway Trust Estate.*

# 3 Carbon Footprint

# Carbon Emission Scopes

To understand the Westway Trust's baseline operational carbon footprint, it is important to understand and measure where they are sourced from. Measuring carbon footprint is a useful way of identifying the most significant emissions sources to focus on strategies for reducing these emissions. The Greenhouse Gas Protocol, which is the world's most widely used greenhouse gas accounting standard categorises three scopes of carbon emissions.

**Scope 1 emissions:**

Scope 1 covers emissions from sources that an organisation owns or controls directly – for example, heating demand provided by a gas boiler.

**Scope 2 emissions:**

Scope 2 are emissions that a company causes indirectly and come from where the energy it purchases and uses is produced. For example, emissions caused when generating electricity that we use in our buildings would fall into this category.

**Scope 3 emissions:**

Scope 3 encompasses emissions that are not produced by the company itself and are not the result of activities from assets owned or controlled by them, but by those that it's indirectly responsible for up and down its value chain. Scope 3 emissions include all sources that are not within scope 1 and 2 boundaries.

For the purpose of this project, all carbon emissions arising from spaces owned and managed by the Westway Trust have been classified under Scopes 1 and 2. The rest of the tenanted spaces carbon emissions have been classified under Scope 3. It should also be noted that this study only focusses on operational carbon.

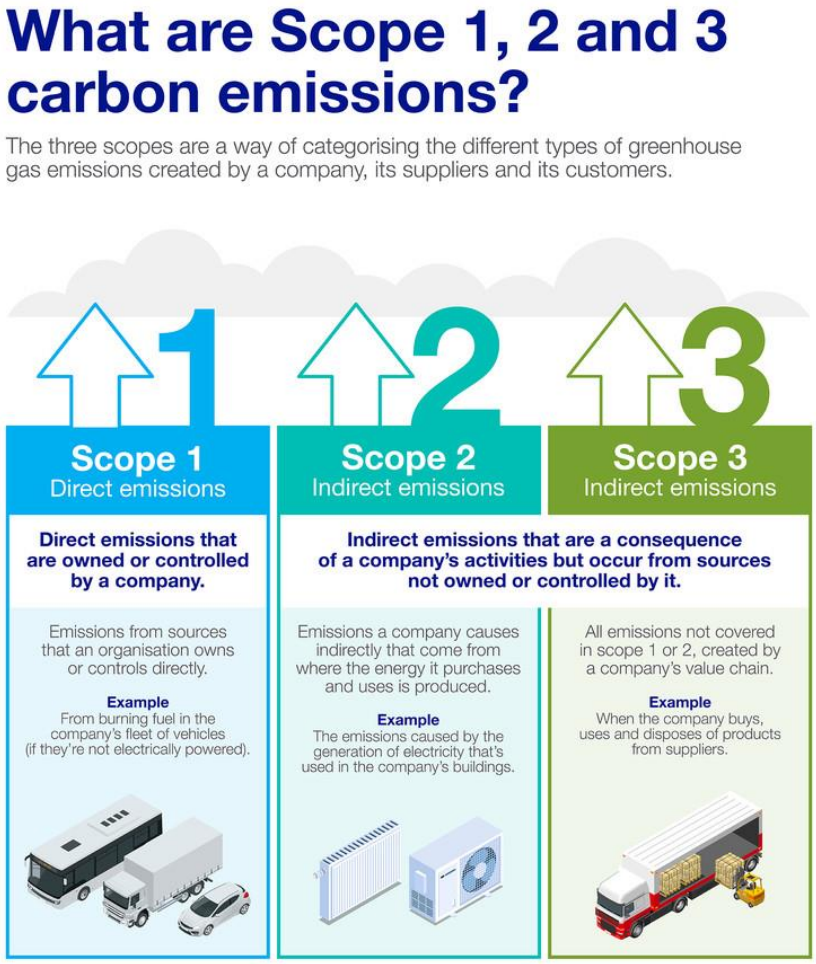



*Figure 3.1 – Scope of carbon emissions explained (Source: National Grid).*

# Carbon Emission Scopes – Asset Mapping

This page categorises each asset to their corresponding scope emissions. Note that emissions arising from embodied carbon, refrigerant leakage and vehicle emissions have not been included in this study.

## Scope 1 Emissions

**Direct emissions from sources owned or controlled by the organisation**

These emissions relate to on-site combustion (use of gas boilers).

- Westway Main Offices - 1 & 2 Thorpe Close (Gas Emissions)

## Scope 2 Emissions

**Indirect emissions from electricity used by the organisation**

These emissions relate to electricity used by the organisation's owned and managed spaces.

- Westway Main Offices - 1 & 2 Thorpe Close (Electricity emissions)
- 7 Thorpe Close – Office 9
- 10 Acklam Road (Unit 24)
- 12 Acklam Road
- Bay 66 Acklam Road (external lighting)
- 22 Stable Way (external lighting)
- Canopy (external lighting)
- Portobello Arcade (internal lighting and WCs)
- 10 Acklam Road (internal lighting and WCs)

## Scope 3 Emissions

**Indirect emissions from organisation's activities but from sources within their value chain**

These emissions relate to electricity used by the organisation's tenanted spaces that are within their value chain.

- Remaining tenanted estate

# Carbon Conversion Factors

To estimate the Estate's carbon emissions, the total energy consumption was converted to operational carbon emissions by multiplying the energy usage by the relevant carbon emission factor.

The carbon conversion factors used in this study are outlined below and in the tables to the right.

### 2024 Carbon footprint

The UK Government GHG Conversion Factors for Company Reporting for 2024 have been used.

*Table 3.1: Carbon factors for 2024*

| | **Carbon emissions** ($kgCO_2e/kWh$) |
|---|---|
| **Scope 1 –** Gas | 0.183 |
| **Scope 2 & 3 –** Electricity | 0.207 |
| **Scope 3 –** Electricity transmission and distribution | 0.018 |

### 2024 - 2030 Carbon footprint

The HM Treasury's Green Book electricity carbon emission factors have been used to estimate the future retrofit scenario's carbon emissions to take into account grid decarbonisation.

The gas emissions have been assumed to be constant.

*Table 3.2: Carbon factors for 2024 - 2030*

| | **Electricity carbon emissions** ($kgCO_2e/kWh$) | **Gas carbon emissions** ($kgCO_2e/kWh$) |
|---|---|---|
| **2024** | 0.23 | 0.18 |
| **2025** | 0.21 | 0.18 |
| **2026** | 0.19 | 0.18 |
| **2027** | 0.17 | 0.18 |
| **2028** | 0.14 | 0.18 |
| **2029** | 0.12 | 0.18 |
| **2030** | 0.09 | 0.18 |

# Classifying Archetype Buckets

The Westway Trust Estate is a mixed-use estate comprising of 139 units (excluding the pods), 15 micro units, and 56 buildings which vary in size. The Estate includes retail units covering a range of shops, restaurants, leisure, sports use, community use, offices, meeting rooms and workshops (for commercial and charity clients) and light industrial commercial use.

As energy consumption information was not available for the entire estate, a process was established to simplify the assets into six main archetype buckets. The buckets are Retail, Office, Food & Beverage, Leisure, Light Industrial and Storage. This process was undertaken to estimate the Estate's total energy and carbon emissions, establishing a baseline operational carbon footprint. The building use type dictated its placement in a specific bucket, based on the main drivers of its energy consumptions.

A breakdown of the energy consumption and energy efficiency of each archetype is listed on Pages 21-22.

A detailed list of which asset each archetype bucket includes can be found in Appendix A.

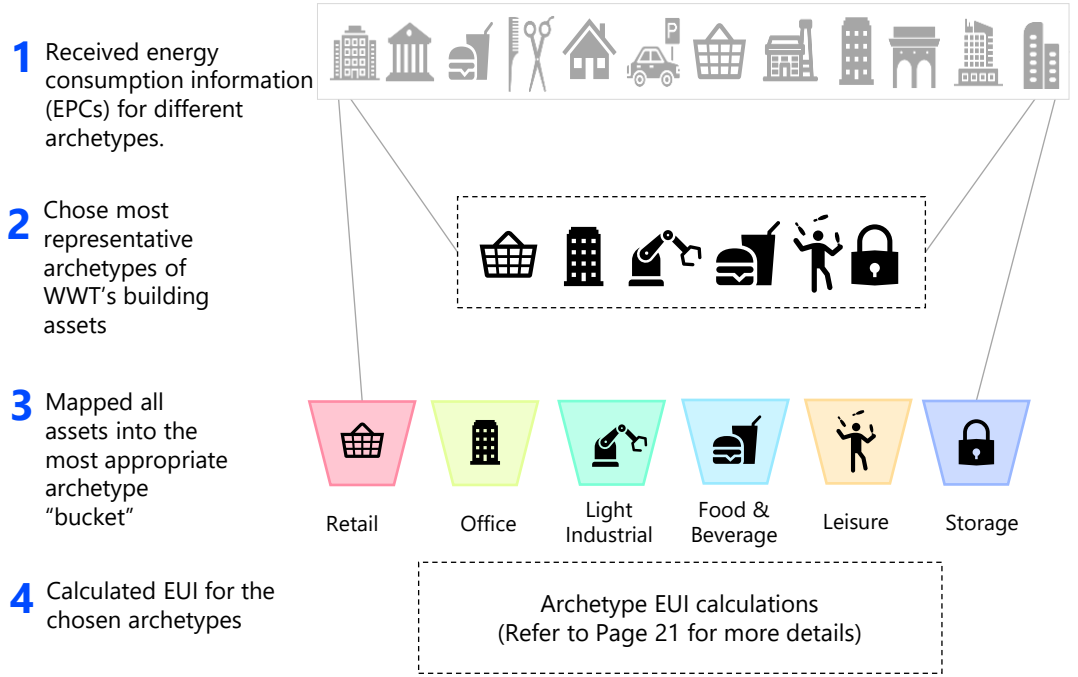



*Figure 3.2 – Workflow diagram explaining methodology followed for classifying the archetype buckets and estimating their energy consumption.*

Example of asset per bucket type:

Retail,
Portobello Green Arcade

Office,
10 Acklam Road


Light Industrial,
Mercedes Benz Garage


F&B,
Makan Cafe


Leisure,
Westway Sports &
Fitness Centre

Storage,
Acklam Loading Bay

# Modelling Assumptions

The following assumptions have been used to estimate the energy consumption of each archetype. The utility bills that were received only cover the landlord areas energy consumption, therefore Introba has utilised their decarbonisation tool to estimate the energy consumption of each tenanted archetype bucket. The energy consumption of each archetype has been validated against existing EPC certificates to make sure the estimate is realistic.

*Table 3.3 – Modelling assumptions for estimating archetype buckets energy consumption.*

| | Inputs | Unit | Retail | Office | Light industrial | F&B | Leisure | Storage | Westway Head Office |
|---|---|---|---|---|---|---|---|---|---|
| General | Number of units represented | *No.* | 25 | 51 | 9 | 4 | 5 | 15 | 1 |
| | Total floor area | $m^2$ | 1,327 | 3,655 | 2,686 | 221 | 10,748 | 2,902 | 1,057 |
| | Average Floor Area | $m^2$ | 169 | 215 | 318 | 116 | 5286 | 461 | 1,057 |
| | Max Occupancy | no. | 17 | 20 | 5 | 10 | 100 | 1 | 75 |
| Fabric | Roof U-value | $W/m^2K$ | 0.4 | 0.4 | 0.4 | 0.4 | 0.19 | 0.4 | 0.4 |
| | Floor U-value | $W/m^2K$ | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| | Wall U-value | $W/m^2K$ | 1.0 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Glazing U-value | $W/m^2K$ | 4 | 4 | 4 | 4 | 3.5 | 4 | 4 |
| | Door U-value | $W/m^2K$ | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| | Air Permeability | $m^3/hr/m^2@50$ PA | 20 | 20 | 20 | 20 | 15 | 20 | 20 |
| Operating Hours | Weekday Start Hour | hr | 9 | 9 | 9 | 9 | 7 | 6 | 8 |
| | Weekday End Hour | hr | 18 | 18 | 18 | 22 | 22 | 18 | 18 |
| | Weekend Start Hour | hr | 9 | - | - | 9 | 8 | 7 | - |
| | Weekend Stop Hour | hr | 18 | - | - | 22 | 20 | 12 | - |
| Systems | Mech Vent System | - | - | - | - | Exhaust | Yes | - | Yes |
| | Space Heating | - | Direct Electric | Direct Electric | Direct Electric | Direct Electric | 40% Gas 60% Electric | - | 100% Gas |
| | Cooling | - | - | - | - | Yes | Yes | - | Yes |
| | Domestic Hot Water (DHW) | - | WCs DHW accounted separately | WCs DHW accounted separately | DE POU without tank | DE POU with tank | Gas Boiler | - | DE POU without tank |
| | DHW litres per year | L | - | - | 15,600 | 168,480 | 468,000 | - | 73,125 |
| | Catering | - | - | - | - | Yes | - | - | - |
| Lighting & Equipment | Internal Lighting Split | % | 75% LED | 75% LED | 70% LED | 80% LED | 95% LED | 60% LED | 80 LED% |
| | Internal Lighting Gain – non-LED | $W/m^2$ | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | Internal Lighting Gain - LED | $W/m^2$ | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | Internal Equipment Gain | $W/m^2$ | 5 | 5 | 5 | 17 | 14 | 1 | 9 |

# Westway Trust – Tenanted Estate

### Area of Tenanted Estate

The total tenanted Estate area assumed was 22,055 $m^2$. Table 3.4 breaks down the total area into the different asset archetypes in this study.

### Energy

Based on the assumptions listed on Page 20, the energy consumption per square meter of each tenanted estate archetype has been calculated and listed in Table 3.4.

Metered data was not available for the Westway's existing tenanted estate; therefore, Introba's in house decarbonisation tool was used for estimating energy consumption. The energy consumption was then converted to operational carbon emissions by multiplying the energy usage by the relevant carbon emission factor.

It is clear that for the retail, office and light industrial, heating forms a large proportion of the bucket's overall energy use which is around 85%. The space heating for these buckets is provided through direct electric radiators. Therefore, it is recommended that the fabric performance of these buckets is improved to reduce the space heating demand.

For the F&B bucket, DHW forms a large proportion of the overall energy use, namely 55% due to the hot water requirement for catering. Space heating also contributes to a big proportion of 35%. It is also recommended that the fabric performance is improved for this bucket. As for the DHW consumption, it is recommended that low flow taps are installed, or the point of use DHW system is replaced for an electric heat pump.

As for the leisure bucket, gas and electric heating also form 35% of the overall energy use. It is recommended that the gas heating is completely eliminated, and that the fabric performance is improved to reduce the electric space heating energy consumption. Small power relating to equipment usage and lighting also form a big proportion, and it would be recommended that control systems are placed to automatically control these equipment and lighting.

*Table 3.4 – Estimated energy consumption of each archetype bucket.*

| Asset Archetype | Units (no.) | Total Area ($m^2$) | % of Estate areas | Baseline EUI (kWh/$m^2$/year) | | |
|---|---|---|---|---|---|---|
| | | | | Electricity | Gas | Total |
| **Retail** | 33 | 1,843 | 8% | 195 | 0 | **195** |
| **Office** | 51 | 3,655 | 17% | 148 | 0 | **148** |
| **Light Industrial** | 9 | 2,686 | 12% | 193 | 0 | **193** |
| **F&B** | 4 | 221 | 1% | 623 | 0 | **623** |
| **Leisure** | 5 | 10,748 | 49% | 151 | 58 | **208** |
| **Storage** | 15 | 2,902 | 13% | 28 | 0 | **28** |

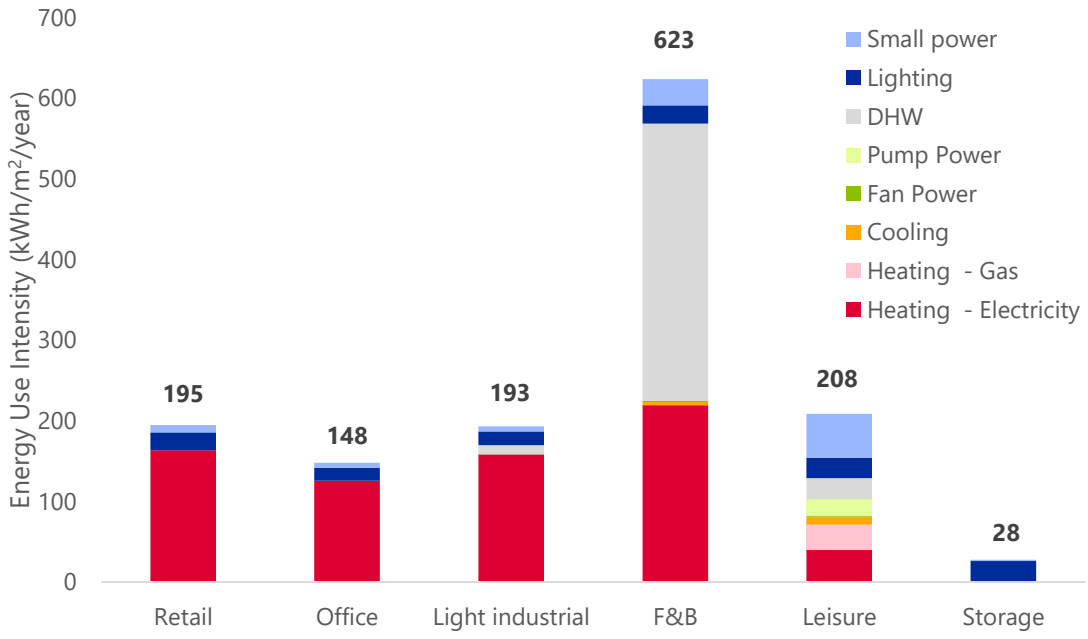



*Figure 3.3 – Energy breakdown of different archetype buckets.*

# Westway Trust – Head Office Building

In addition to the different archetype buckets, which represent the tenanted estate, the Westway Trust head office building also contributes to their carbon footprint, therefore the energy consumption and the associated carbon emissions of this building have also been estimated.

### Westway Offices

Calculations have been based on the head office (1&2 Thorpe Close) area of 1,057 $m^2$.

*Table 3.5 – Estimated energy consumption of each archetype bucket.*

| Asset Archetype | Total Area ($m^2$) | Baseline EUI (kWh/$m^2$/year) | | |
|---|---|---|---|---|
| | | Electricity | Gas | Total |
| **Westway Head Office** | 1,057 | 89 | 72 | **161** |

### Energy

Annual metered data was not fully available for the Westway's head office; therefore, Introba's in house decarbonisation tool was used for estimating energy consumption. The energy consumption was then converted to operational carbon emissions by multiplying the energy usage by the relevant carbon emission factor.

Results show that almost 50% of the Westway office energy consumption is associated with space heating provided through gas boilers. Pump power which is associated with the space heating system also forms 20% of the overall energy consumption. Based on that, it is recommended that the existing gas boilers are replaced with more efficient heat pumps to get rid of the on-site combustion and achieve lower space heating energy consumption.

Small power and lighting combined contribute to 22% of the overall energy consumption, and it is recommended that all existing non-LED light fittings to be replaced with LED ones, and a BMS system is put in place to automatically turn on/off the lighting and equipment when not in use.

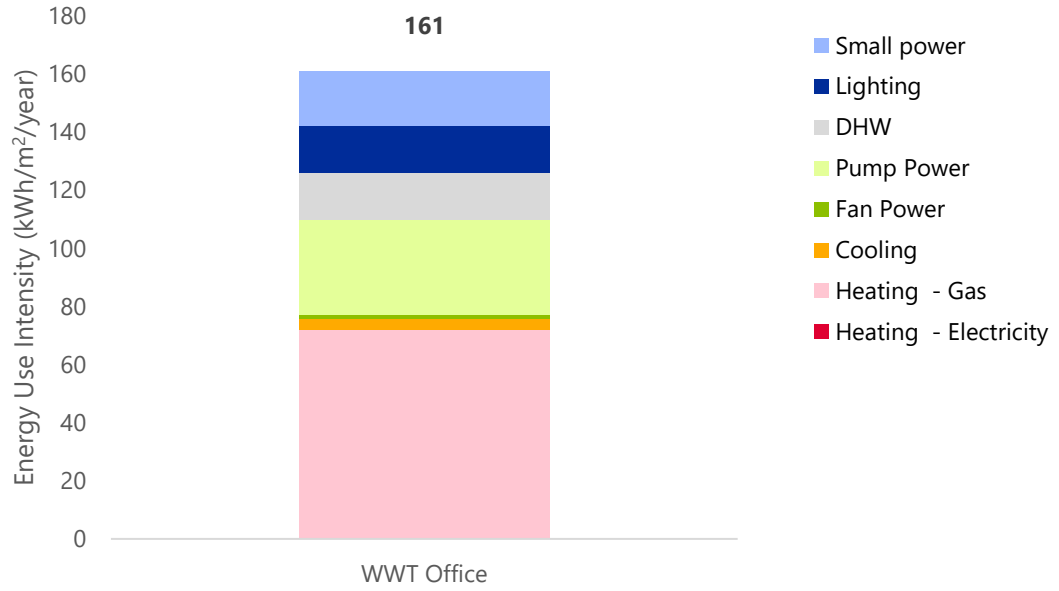



*Figure 3.4 – Energy breakdown of Westway Trust Office.*

# Industry Benchmark Comparison

Since metered energy data was not available, it was important to compare the estimated energy consumption of each bucket against industry benchmarks to sense check the results.

The calculated EUIs have been compared against the CIBSE TM46 benchmarks and the 2025 stepped retrofit target from the newly released UKNZCBS.

The majority of the buckets' calculated EUIs fall within the same range of the existing industry benchmarks.

The F&B calculated energy is slightly higher than the benchmark, this is due to the catering DHW requirements assumed.

Storage is lower as only lighting and equipment energy has been accounted for.

Leisure is lower than the industry benchmarks and targets, due to the nature of the leisure spaces within the Estate that do not represent a typical scenario.

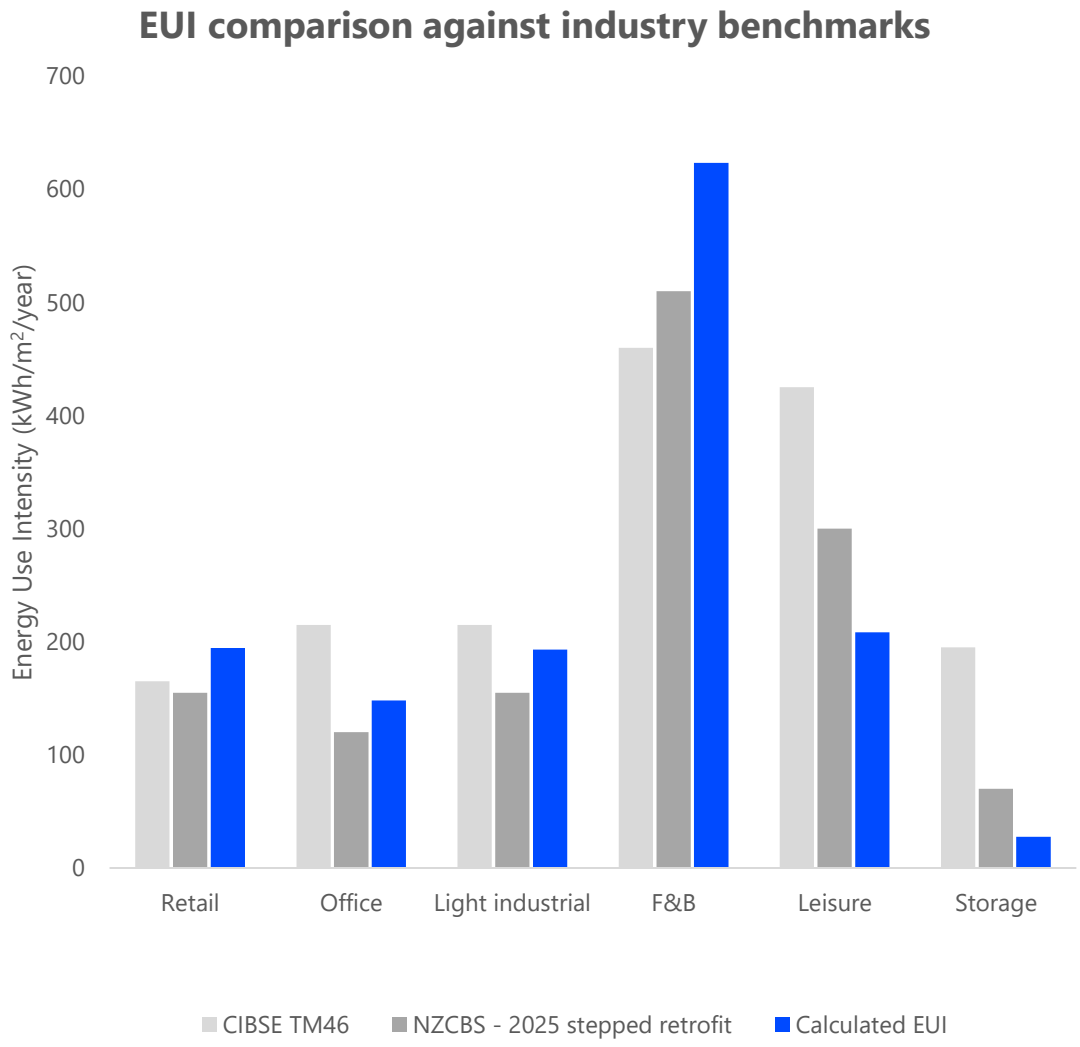



*Figure 3.5 – Calculated EUI comparison with industry benchmarks.*

# Westway Trust – External and Internal Lighting

Internal and external lighting energy of certain parts of the Estate fall within the Westway Trust's Scope 2 emissions. As metered energy data was not available, some assumptions have been made to estimate the existing lighting's energy consumption.

To estimate the internal and external lighting energy consumption, the amount of energy required to achieve a specified illuminance level (lux) over a given area was determined. The power requirement was then determined by assuming different illuminance efficiencies for different spaces. The energy consumption has been calculated over a given period of annual operational hours.

The lighting energy consumption of the spaces that fall within the Westway Trust's boundary have been listed in Table 3.6, along with the assumptions relating to the area served by the lighting, fitting type and illuminance efficiency.

*Table 3.6 – Estimated lighting energy consumption for different assets within the Estate.*

| **Lighting Type** | **Asset** | **Area Served** ($m^2$) | **Fitting Type** | **Illuminance Efficiency** (lm/W) | **Annual Energy** (kWh/year) |
|---|---|---|---|---|---|
| **External lighting** | **22 Stable Way** | 998.7 | Not LED | 10 | 21,872 |
| | **Canopy** | 500 | LED | 110 | 995 |
| | **Bay 66 Acklam Road** | 1705.8 | LED | 110 | 3,396 |
| **Internal lighting** | **Portobello Arcade** | 151 | LED | 110 | 501 |
| | **10 Acklam Road** | 120 | LED | 110 | 398 |

# Operational Carbon Footprint

The calculated Scopes 1,2 and 3 operational carbon emissions are reported below for the Westway Trust Estate for the year 2024. The below is the result of accounting for the Westway Trust's operational carbon emissions arising from their tenanted estate, head office (1&2 Thorpe Close), internal and external lighting, and WCs. Note that carbon emissions arising from waste, water and embodied carbon have not been accounted for in this calculation.

*Table 3.7 – Baseline operational carbon emissions breakdown.*

**Scope 1 Emissions**

**1.5%**

**13.9 $tCO_2e$**

Direct emissions from WWT's own gas boilers

**Scope 2 Emissions**

**4.1%**

**38.15 $tCO_2e$**

Indirect emissions from purchase of energy for head office

**Scope 3 Emissions**

**94.4%**

**884.84 $tCO_2e$**

Indirect emissions from WWT's activities, e.g. tenant energy consumption

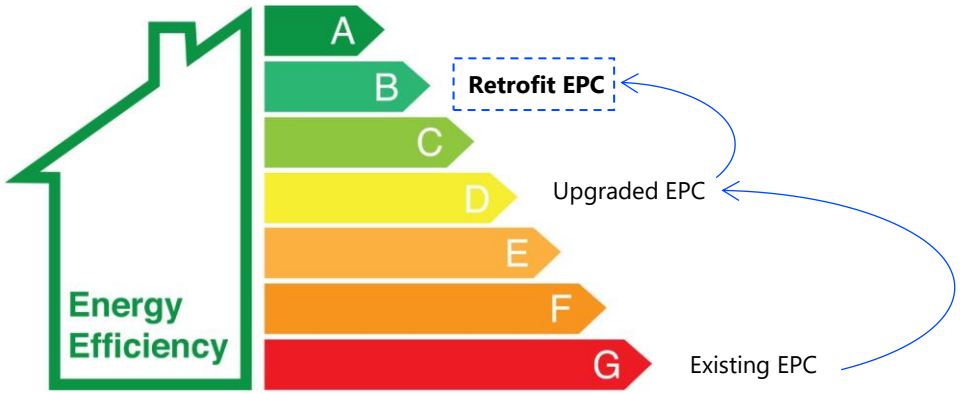
| Business Sub-Area | Energy Consumption (kWh) | Carbon Emissions ($tCO_2e$) | % Carbon Emissions |
|---|---|---|---|
| Head office energy use – Gas | 75,982 | 13.90 | 1.5% |
| Head office energy use – Electricity | 94,344 | 19.53 | 2.1% |
| Landlord purchased energy – Electricity | 89,941 | 18.62 | 2.0% |
| Tenant purchased energy (electricity & fuels) | 4,036,624 | 884.84 | 94.4% |

# 4 Delivery Plan

# EPC Improvement – Sensitivity Testing

The majority of the Westway Trust's Estate has had EPCs lodged against Part L 2013 Regulations. The Part L 2021 regulations came into force in June 2022, which means that EPCs assessed before that date will give a different EPC rating if re-assessed against the new regulations. This is mainly because of the changes related to the grid emissions factors that are used to generate EPC ratings.

To understand the impact of regulatory changes, one of the Westway's Estate assets which has an existing EPC under Part L 2013 regulations was modelled and tested against the updated Part L 2021 regulations to evaluate the performance uplift. Following this, the asset was further modelled with proposed retrofit changes to determine the improvements in EPC performance. This exercise helped develop the relevant retrofit measures for achieving the mandatory compliance EPC rating.




**Sensitivity testing of 10 Acklam Road – Unit 13**

The unit tested is Unit 13 of 10 Acklam Road which was modelled on the VE compliance module of IES Virtual Environment version 2023. Building fabric assumptions have been made based on the age of the building as this information was not readily available. The assumptions are listed in Figure 2.3.

Results indicated that the same building achieved a three-band energy efficiency uplift from G to D when modelled against regulatory changes from Part L 2013 to Part L 2021. This is because under Part L 2013 regulations, gas carbon emissions (*0.216 kgCO2/kWh*) were less than half the carbon emissions from electricity (*0.519 kgCO2/kWh*). However, since the release of Part L 2021 regulations, the electricity grid has significantly decarbonised (*0.136 kg$CO_2$/kWh*) and the gas carbon emissions have remained roughly the same. This means that properties heated by electricity are expected to achieve an improved EPC rating while gas-heated properties are expected to remain the same.

The same unit was then modelled with retrofit measures to understand whether the proposed retrofit measures will meet the MEES minimum EPC B rating. Results showed that with improved fabric performance and lighting controls, the tested unit was able to meet the minimum EPC B rating.

| **EPC Rating** | **Existing EPC** (Part L 2013 Regulations) | **Upgraded EPC** (Part L 2021 Regulations) | **Retrofit EPC** (Part L 2021 Regulations) |
|---|---|---|---|
| Office (10 Acklam Unit 13) | **G (167)** | **D** (78) | **B** (38) |
| Air permeability ($m^3/h.m^2$@50Pa) | 25 | | 10 |
| Roof U-value ($W/m^2K$) | 0.40 | | 0.22 |
| Wall U-value ($W/m^2K$) | 3.17 | | 1.40 |
| Windows<br>U-value ($W/m^2K$)<br>G-Value | 3.17<br>0.71 | | 1.40<br>0.50 |
| Ventilation System | Natural Ventilation | | Natural Ventilation |
| Space Heating & DHW | Direct Electric (100% efficiency) | | Direct Electric (100% efficiency) |
| Internal Lighting | 95 lm/W (LED)<br>No lighting controls | | 95 lm/W<br>Presence detection |
| Cooling | No | | No |

*Figure 4.1– EPC Improvement Sensitivity Testing for an Office space (10 Acklam unit 13) and modelling assumptions.*

# Decarbonisation Delivery Plan

Retrofit measures were developed to reduce the operational carbon emissions of the Westway Trust Estate and reach the MEES minimum compliance EPC B rating. Different retrofit measures have been established for the tenanted estate and Westway offices main building. The measures are listed in more detail below:

**Tenanted Estate (except for Leisure bucket):**

- **Lighting upgrades** – Install 100% LED lighting for all the spaces.
- **Window upgrades** – Replace single glazed windows with double glazing.
- **Air permeability upgrades** – Installing window and door seals to improve airtightness.
- **Roof upgrades** – Installing additional insulation (100mm of Rockwool) to improve roof thermal performance.

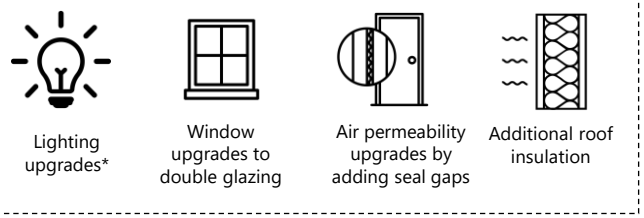
**Westway Offices and Leisure Bucket:**

- Same measures as tenanted estate, in addition to:
- **Space heating system upgrade** – Replacing gas boiler with a more efficient Air Source Heat Pump (ASHP).
- **Fan upgrade** – Replacing constant air volume fans with variable air volume fans.
- **BMS System** – Install a Building Management System (BMS) to monitor and control the building's mechanical and electrical systems.

Implementing the retrofit measures listed above is expected to improve the energy consumption of the Westway estate. The expected improvement in EUI is listed in Table 4.1 and explained in more detail on the next page.

**Recommended retrofit measures**

**Tenanted Estate** (except for Leisure and Storage)
*Only lighting upgrades have been recommended for the Storage bucket.




**Tenanted Estate** (Leisure bucket) **& Westway Head Office** (1&2 Thorpe Close)

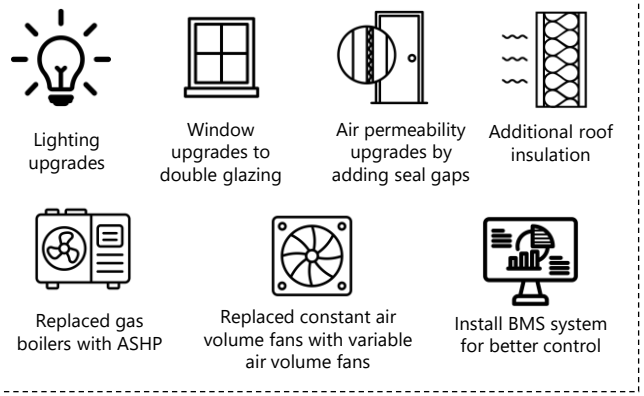



*Table 4.1 – EUI improvement after retrofit.*

| Asset Archetype | Baseline EUI (kWh/m²/year) | | | Retrofit 1 EUI (kWh/m²/year) |
|---|---|---|---|---|
| | Electricity | Gas | Total | |
| Retail | 195 | 0 | 195 | **156** |
| Office | 148 | 0 | 148 | **115** |
| Light Industrial | 193 | 0 | 193 | **163** |
| F&B | 623 | 0 | 623 | **575** |
| Leisure | 151 | 58 | 208 | **107** |
| Storage | 28 | 0 | 28 | **11** |
| Westway Head Office | 89 | 72 | 161 | **80** |

# Retrofit Measures

The following page explains the reduction impact of each of the proposed retrofit measures.

**Lighting upgrades**: replacing existing non-LED fittings with LED ones will save energy because they are more efficient, produce minimal heat, and have a longer lifespan.

**Window upgrades:** replacing the existing single glazed windows with double glazing will reduce heat loss in the winter and minimise heat gains in the summer. This leads to a more stable indoor climate, which reduces the heating and cooling demand and ultimately reduces the space heating and cooling energy consumption.

**Air permeability upgrades**: this measure goes in conjunction with the window upgrades, as they offer more properly sealed models which reduce the amount of unwanted air leakage in the building. Sealing the cracks and gaps around existing walls and doors is also recommended to minimize air leakage. This will reduce the heating demand and lower the space heating energy consumption.

**Roof insulation:** installing additional roof thermal insulation will create a thermal barrier to reduce the heat transfer between the internal conditioned space and the outdoors. This will lead to a reduction in space heating demand therefore lower space heating energy consumption.

**Replace gas boilers with Air Source Heat Pumps (ASHP) for heating:** ASHPs mainly rely on electricity to transfer heat, rather than generating it through combustion which means they produce fewer greenhouse gas emissions. Furthermore, ASHPs have a much higher efficiency ranging between 300% to 400%, as opposed to gas boilers with an efficiency of around 90-95%, making them significantly more energy efficient and reducing the heating energy consumption. It is recommended that this is done in conjunction with replacing the existing constant speed pumps with variable speed models. These pumps offer significant advantages over traditional fixed-speed pumps, as they adjust their speed to match the real-time demand for water flow. This reduces energy consumption compared to fixed-speed pumps that constantly operate at maximum output.

**Mechanical ventilation fans replacement**: replacing the existing constant air volume (CAV) fans with variable air volume (VAV) ones. VAV fans can reduce fan energy consumption significantly as they adjust their speed and air volume based on real-time demand, making sure that they only deliver the amount of air needed to maintain the desired indoor temperatures. These fans will have to be installed in conjunction with $CO_2$ sensors which assess occupancy levels or temperature sensors which focus on temperature control. This allows the VAV systems to adjust air delivery based on the real-time needs of the occupants, ensuring thermal comfort while minimising energy consumption.

**Building Management System (BMS) installation**: a BMS system saves energy by enabling centralised control of the heating, cooling, ventilation, equipment and lighting systems. It can adjust the system operations based on scheduling and time controls which reduces the energy consumption in non-operational hours, in addition to occupancy levels which reduces the overall energy requirement when spaces are unoccupied/lightly occupied. This system will also have to be installed with $CO_2$ or temperature sensors as mentioned before to be able to monitor the performance of the building and adjust the systems accordingly.

# Capital Cost Analysis

A high-level exercise has been undertaken by Currie & Brown to calculate the capital cost of the retrofit measures, which has been scaled up to represent the cost of retrofitting the entire Estate to different retrofit measures depending on the archetype explored.

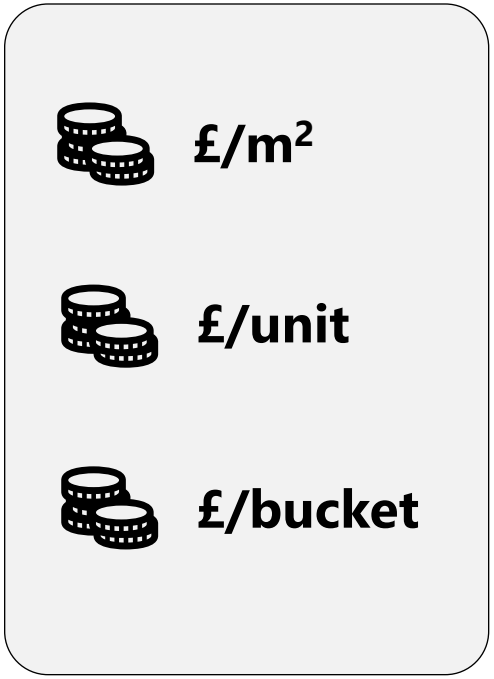
The capital cost prices for the retrofit measures set out in the costing tables have been built up on the following basis:

For each intervention, assumption has been made as to the component work activities involved and, where necessary, the specification levels, required to achieve the desired outcome, and then a cost calculated as a £/functional unit, by applying individual rates and prices to each component.

The rates and prices used reflect the levels of pricing that one could expect from an appropriate trade contractor undertaking the work as part of a larger building upgrade contract of work. The rates are 'all-inclusive' trade prices representing fully installed costs including labour, materials, plant, ancillary items, and general builder's work. Provision is also made, where applicable for consequential works required to facilitate the measure, for instance removal and reinstatement of existing finishes or where specific protection is required. The pricing takes account of the expected quantity (area, nr. etc), advised to us, and as set out in the costing tables.

The pricing has been derived from externally published sources as well as Currie & Brown's own in-house database. So, for each measure, it has been assessed that the pricing has an estimating tolerance of approximately 10%, which is typical for this level of pricing.

All rates and prices include allowance for contractor preliminaries, overheads & profit (OH&P), and a general build contingency all applied on a percentage basis (prelims – 15%; OH&P 7%; Contingency 5%). All rates are at Q4 2024 pricing. Beyond Q4 2024 price levels, no allowance is made for inflation or technology learning rates that may reduce capital costs in the future. The costings exclude design fees, insurance, financing costs/ interest payments, or VAT.



# Decarbonisation Plan – Energy Savings and Cost Uplift

**Retail**

The following chart shows the energy reduction impact of each retrofit measure individually (R1 – R3) in addition to the impact of combining all the measures and undergoing a one-go retrofit (R4).

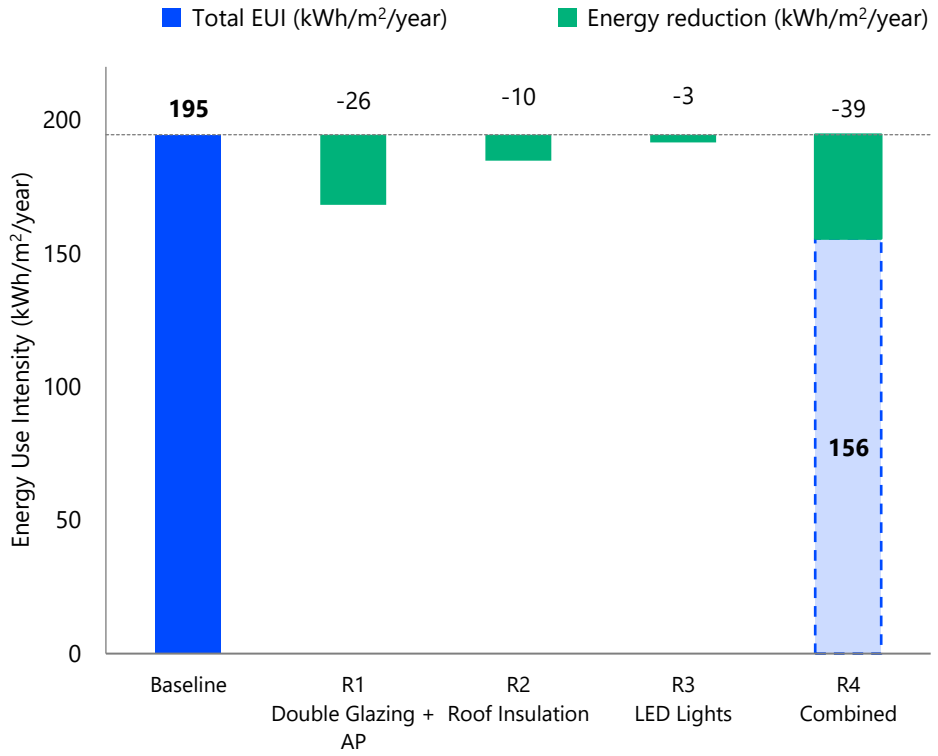
Results show that the R1 (double glazing and air permeability upgrades) has the highest impact, reducing the overall energy use intensity by 26 kWh/m$^2$/year.

R2 (roof insulation) results in a smaller reduction impact, at 10 kWh/m$^2$/year. As for R3 (LED lights). It was assumed that 25% of the lighting is non-LED, therefore the 3 kWh/m$^2$/year energy saving is the result of swapping the remaining 25% light fittings with LED ones.

Combining all the measures as one-go retrofit (R4) gives an overall energy reduction impact of 39 kWh/m$^2$/year, reducing the overall EUI from 195 kWh/m$^2$/year to 156 kWh/m$^2$/year .

The table below gives a breakdown of the total cost for each retrofit measure. The costs are presented per square meter, per unit and per bucket. As expected, R1 (double glazing and air permeability upgrades) has the highest cost due to the high material and installation costs involved with replacing windows. Although replacing windows could be seen as a high upfront investment, it will deliver long term benefits by reducing energy bills and improving the indoor climate.

*Figure 4.2– Energy reduction impact of each retrofit measure – Retail.*




**Cost Uplift**

| | | | | | |
|---|---|---|---|---|---|
| £/m$^2$ | - | 1,053* | 58 | 84 | **1,195** |
| £ per unit | - | 17,555 | 9,723 | 3,559 | **30,837** |
| £ per bucket | - | 137,972 | 76,415 | 27,968 | **242,355** |

**Cost per m$^2$ of opening area per unit*

*Table 4.2– Cost of each retrofit measure – Retail.*

# Decarbonisation Plan – Energy Savings and Cost Uplift

## Office

The following chart shows the energy reduction impact of each retrofit measure individually (R1 – R3) in addition to the impact of combining all the measures and undergoing a one-go retrofit (R4).

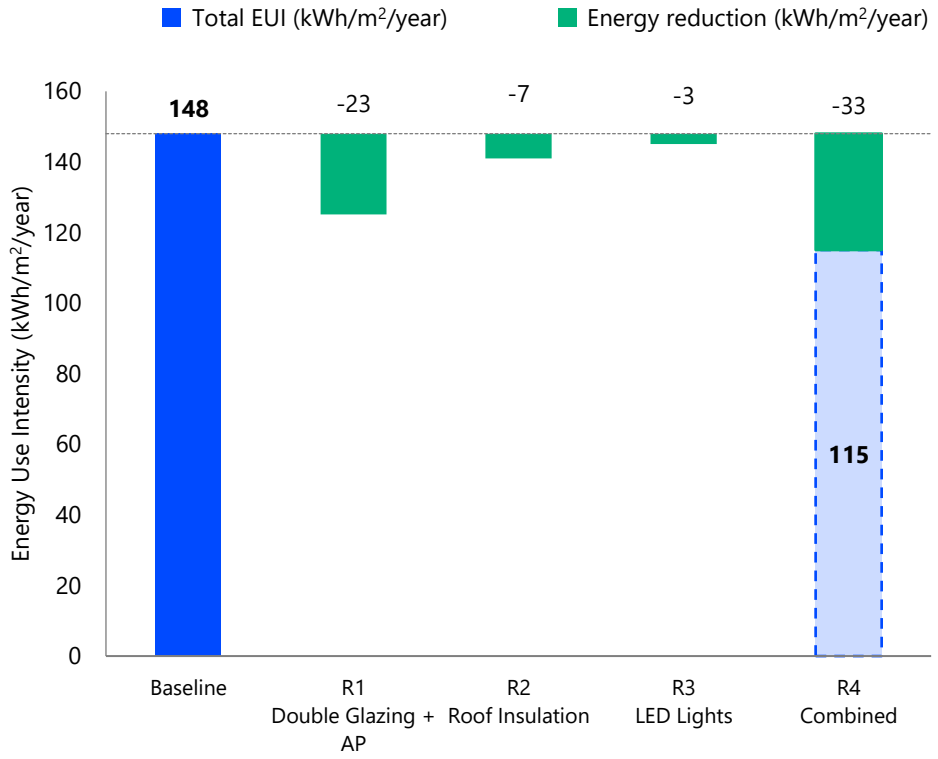
Results show that the R1 (double glazing and air permeability upgrades) has the highest impact, reducing the overall energy use intensity by 23 kWh/m$^2$/year.

R2 (roof insulation) results in a smaller reduction impact, at 7 kWh/m$^2$/year. As for R3 (LED lights), it was assumed that 25% of the lighting is non-LED, therefore the 3 kWh/m$^2$/year energy saving is the result of swapping the remaining 25% light fittings with LED ones.

Combining all the measures as one-go retrofit (R4) gives an overall energy reduction impact of 33 kWh/m$^2$/year, reducing the overall EUI from 148 kWh/m$^2$/year to 115 kWh/m$^2$/year.

The table below gives a breakdown of the total cost for each retrofit measure. The costs are presented per square meter, per unit and per bucket. As expected, R1 (double glazing and air permeability upgrades) has the highest cost due to the high material and installation costs involved with replacing windows. Although replacing windows could be seen as a high upfront investment, it will deliver long term benefits by reducing energy bills and improving the indoor climate.

*Figure 4.3– Energy reduction impact of each retrofit measure – Office.*




**Cost Uplift**

| | | | | | |
|---|---|---|---|---|---|
| £/m$^2$ | - | 1,053* | 58 | 157 | **1,267** |
| £ per unit | - | 30,948 | 12,399 | 8,425 | **51,772** |
| £ per bucket | - | 525,424 | 210,502 | 143,032 | **878,959** |

**Cost per m$^2$ of opening area per unit*

*Table 4.3– Cost of each retrofit measure – Office.*

# Decarbonisation Plan – Energy Savings and Cost Uplift

## Light Industrial

The following chart shows the energy reduction impact of each retrofit measure individually (R1 – R3) in addition to the impact of combining all the measures and undergoing a one-go retrofit (R4).

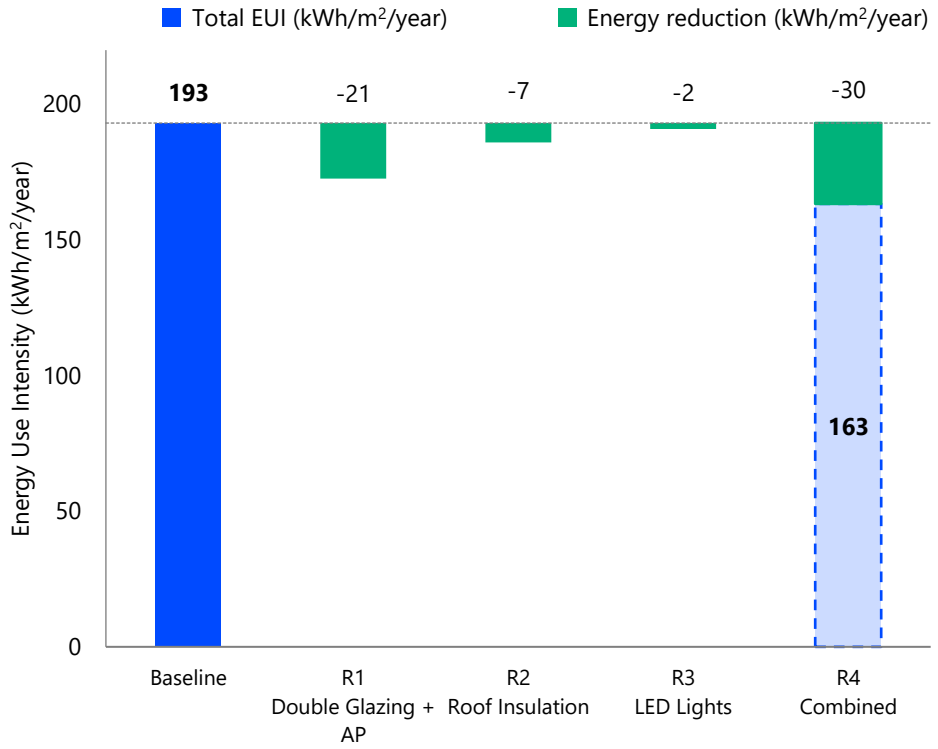
Results show that the R1 (double glazing and air permeability upgrades) has the highest impact, reducing the overall energy use intensity by 21 kWh/m$^2$/year.

R2 (roof insulation) results in a smaller reduction impact, at 7 kWh/m$^2$/year. As for R3 (LED lights), it was assumed that 30% of the lighting is non-LED, therefore the 2 kWh/m$^2$/year energy saving is the result of swapping the remaining 30% light fittings with LED ones.

Combining all the measures as one-go retrofit (R4) gives an overall energy reduction impact of 30 kWh/m$^2$/year, reducing the overall EUI from 193 kWh/m$^2$/year to 163 kWh/m$^2$/year .

The table below gives a breakdown of the total cost for each retrofit measure. The costs are presented per square meter, per unit and per bucket. R1 (double glazing and air permeability upgrades) has the highest cost per square meter (of glazing area), however due to the nature of the light industrial spaces, glazing area is very limited, therefore R2 (roof insulation) results with the highest retrofit cost per unit.

*Figure 4.4 – Energy reduction impact of each retrofit measure – Light Industrial.*




**Cost Uplift**

| | | | | | |
|---|---|---|---|---|---|
| £/m$^2$ | - | 1,053* | 58 | 84 | **1,195** |
| £ per unit | - | 7,614 | 18,299 | 8,037 | **33,949** |
| £ per bucket | - | 64,370 | 154,697 | 67,944 | **287,011** |

**Cost per m$^2$ of opening area per unit*

*Table 4.4– Cost of each retrofit measure – Light Industrial.*

# Decarbonisation Plan – Energy Savings and Cost Uplift

**F&B**

The following chart shows the energy reduction impact of each retrofit measure individually (R1 – R3) in addition to the impact of combining all the measures and undergoing a one-go retrofit (R4).

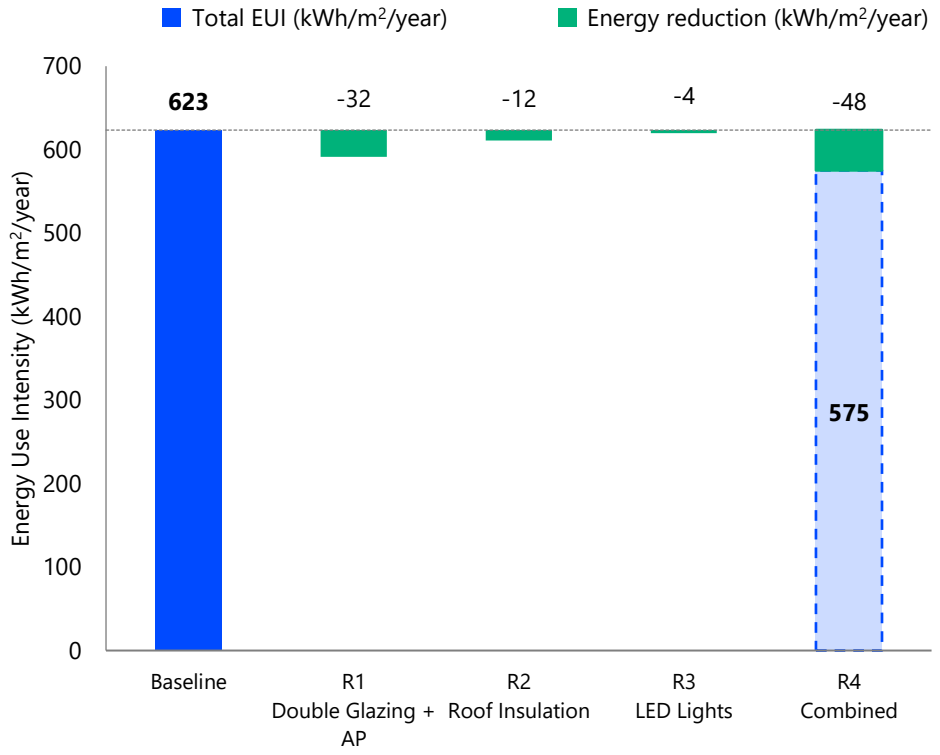
Results show that the R1 (double glazing and air permeability upgrades) has the highest impact, reducing the overall energy use intensity by 32 kWh/m$^2$/year.

R2 (roof insulation) results in a smaller reduction impact, at 12 kWh/m$^2$/year. As for R3 (LED lights), it was assumed that 20% of the lighting is non-LED, therefore the 4 kWh/m$^2$/year energy saving is the result of swapping the remaining 20% light fittings with LED ones.

Combining all the measures as one-go retrofit (R4) gives an overall energy reduction impact of 48 kWh/m$^2$/year, reducing the overall EUI from 623 kWh/m$^2$/year to 575 kWh/m$^2$/year.

The table below gives a breakdown of the total cost for each retrofit measure. The costs are presented per square meter, per unit and per bucket. As expected, R1 (double glazing and air permeability upgrades) has the highest cost due to the high material and installation costs involved with replacing windows. Although replacing windows could be seen as a high upfront investment, it will deliver long term benefits by reducing energy bills and improving the indoor climate.

*Figure 4.5– Energy reduction impact of each retrofit measure – F&B.*




**Cost Uplift**

| | | | | | |
|---|---|---|---|---|---|
| £/m$^2$ | - | 1,053* | 58 | 157 | **1,267** |
| £ per unit | - | 11,105 | 6,671 | 3,626 | **21,402** |
| £ per bucket | - | 21,150 | 12,706 | 6,907 | **40,763** |

**Cost per m$^2$ of opening area per unit*

*Table 4.5– Cost of each retrofit measure – F&B.*

# Decarbonisation Plan – Energy Savings and Cost Uplift

## Leisure

The following chart shows the energy reduction impact of each retrofit measure individually (R1 – R6) in addition to the impact of combining all the measures and undergoing a one-go retrofit (R7).

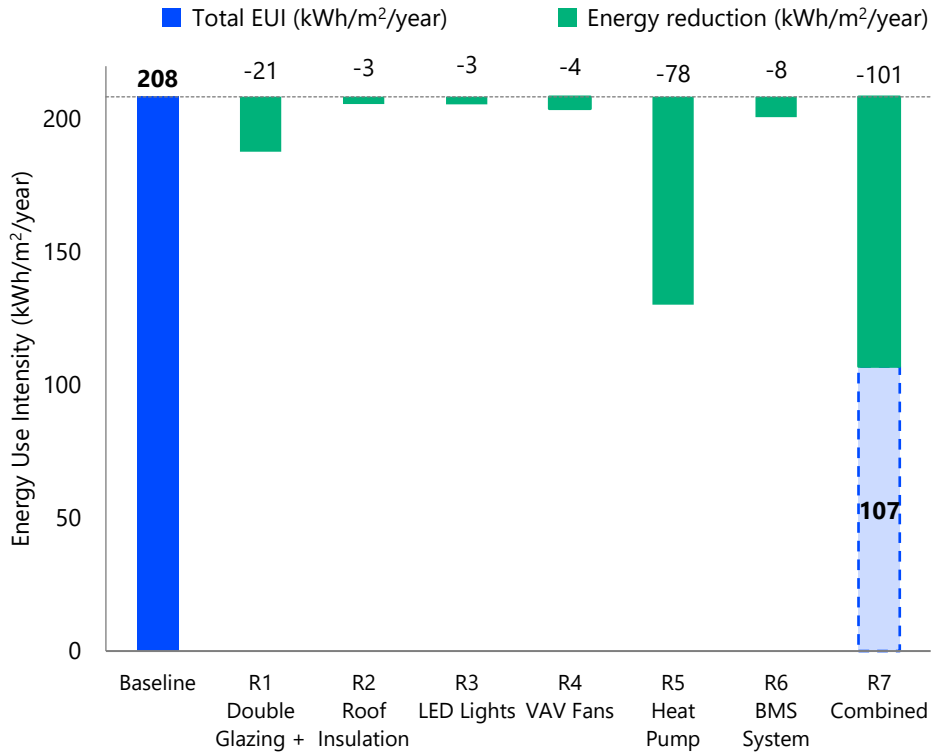
Results show that the R5 (replacing the existing gas boilers with an ASHP) has the highest impact, reducing the overall energy use intensity by 78 kWh/m$^2$/year. This is because ASHPs have a significantly higher efficiency than gas boilers, meaning for every unit of electricity it consumes, it can produce 2 to 4 units of heat.

Following this measure is R1 (double glazing and air permeability upgrades) which gave an overall reduction of 21 kWh/m$^2$/year. The other retrofit measures (R2 – R4, R6) gave incremental reductions

Combining all the measures as one-go retrofit (R7) gives an overall energy reduction impact of 101 kWh/m$^2$/year, reducing the overall EUI from 208 kWh/m$^2$/year to 107 kWh/m$^2$/year .

The table below gives a breakdown of the total cost for each retrofit measure. The costs are presented per square meter, per unit and per bucket. R1 (double glazing and air permeability upgrades), R5 (heat pump installation) and R6 (BMS System) are the most expensive upgrades per unit. Although these retrofit measures have a high upfront investment, they will lead to substantial long term operational savings as the energy consumption of the building is reduced as reflected in the chart above. R3 (LED lights) and R4 (VAV fans) have a lower cost which make them an attractive option, however the energy saving impact is not as significant as the other retrofit measures.

*Figure 4.6– Energy reduction impact of each retrofit measure – Leisure.*




**Cost Uplift**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| £/m$^2$ | - | 1,053* | 58 | 60 | 13 | 60 | 68 | **1,310** |
| £ per unit | - | 426,246 | 304,397 | 15,799 | 67,383 | 315,997 | 356,793 | **1,486,615** |
| £ per bucket | - | 866,741 | 618,970 | 32,127 | 137,019 | 642,558 | 725,513 | **3,022,927** |

**Cost per m2 of opening area per unit*

*Table 4.6– Cost of each retrofit measure – Leisure.*

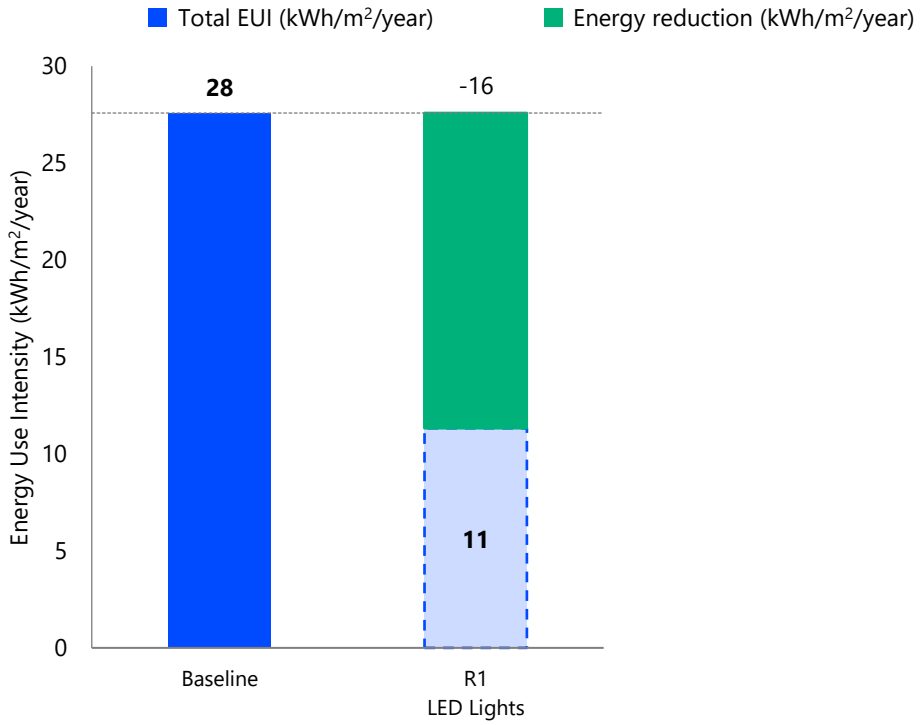
# Decarbonisation Plan – Energy Savings and Cost Uplift

## Storage

The following chart shows the energy reduction impact of R1 for the storage bucket. Only one retrofit measure has been modelled due to the nature of activity in this space, which does not have any heating, cooling or mechanical ventilation system.

Improving the lighting specifications gives an overall energy reduction impact of 16 kWh/m$^2$/year, reducing the overall EUI from 28 kWh/m$^2$/year to 11 kWh/m$^2$/year. The table gives a breakdown of the total cost for the retrofit measure. The costs are presented per square meter, per unit and per bucket.

*Figure 4.7– Energy reduction impact of each retrofit measure – Storage.*




**Cost Uplift**

| | | |
|---|---|---|
| £/m$^2$ | - | **28** |
| £ per unit | - | **5,178** |
| £ per bucket | - | **32,625** |

*Table 4.7 – Cost of each retrofit measure – Storage.*

# Decarbonisation Plan – Energy Savings and Cost Uplift

## WWT Office

The following chart shows the energy reduction impact of each retrofit measure individually (R1 – R6) in addition to the impact of combining all the measures and undergoing a one-go retrofit (R7).

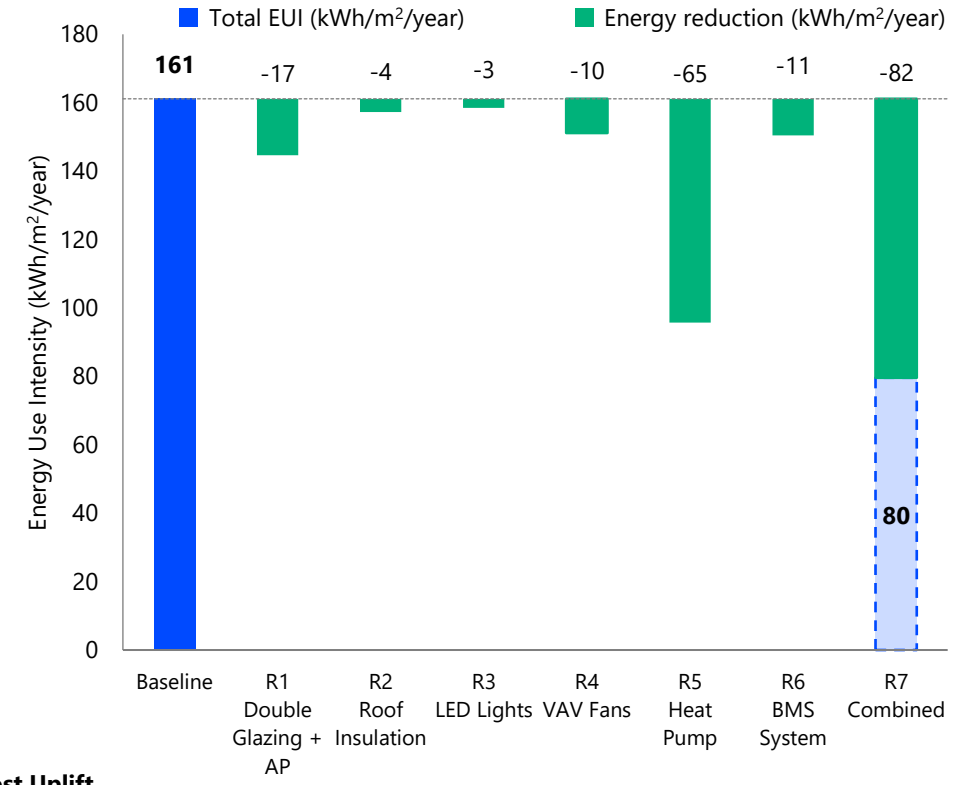
Results show that the R5 (replacing the existing gas boilers with an ASHP) has the highest impact, reducing the overall energy use intensity by 65 kWh/m$^2$/year. This is because ASHPs have a significantly higher efficiency than gas boilers.

Following this retrofit measure is R1 (double glazing and air permeability upgrades) which gave an overall reduction of 17 kWh/m$^2$/year. R4 (replacing the constant air volume fans with variable flow models) gave a 10 kWh/m$^2$/year energy reduction, as the fans adjust their speed and air volume based on real-time demand, making sure that they only deliver the amount of air needed to maintain the desired indoor temperatures. The BMS retrofit measure (R6) also achieved a fair energy reduction of 11 kWh/m$^2$/year, due to better control and monitoring of the building's systems.

Combining all the measures as one-go retrofit (R7) gives an overall energy reduction impact of 82 kWh/m$^2$/year, reducing the overall EUI by half from 161 kWh/m$^2$/year to 80 kWh/m$^2$/year .

The table below gives a breakdown of the total cost for each retrofit measure. The costs are presented per square meter, per unit and per bucket. R5 (heat pump installation) has the highest overall cost, due to equipment and installation requirements associated with switching the gas boiler system to a heat pump system. R1 (double glazing and air permeability upgrades) has a higher cost per square meter, but a smaller total cost than R6 (BMS system). R1 also has a higher energy reduction impact than the R6 BMS system, which could make it a worthwhile investment opportunity to reduce overall energy bills along with the heat pump option (R5).

*Figure 4.8– Energy reduction impact of each retrofit measure – WWT Office.*




**Cost Uplift**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| £/m$^2$ | - | 1,053* | 58 | 157 | 15 | 183 | 102 | **1,566** |
| £ total | - | 61,705 | 60,878 | 33,092 | 16,016 | 192,983 | 107,564 | **472,238** |

**Cost per m$^2$ of opening area per unit*

*Table 4.8– Cost of each retrofit measure – WWT Office.*

# Decarbonisation Plan – Total Carbon Savings

The following graph shows the carbon emissions between 2024 – 2030.

The graph shows the reduction in total carbon emissions of the estate if a **"Do Nothing"** scenario is followed, and that is due to the decarbonisation of the UK grid.

The carbon emissions of the **tenanted estate** and **Westway Trust** assets are also represented on the graph assuming a full retrofit is implemented. A phased approach for the retrofit has been assumed, at an average rate of 20% per year until 2030.

The carbon emission reduction has been calculated by comparing the carbon emissions in the year 2030 against the 2024 carbon emissions "Do Nothing" baseline, which achieves an overall 72% reduction in carbon emissions.

The carbon emission reduction has also been compared against the decarbonised "Do Nothing" scenario in 2030, which achieves an overall 44% carbon emission reduction.

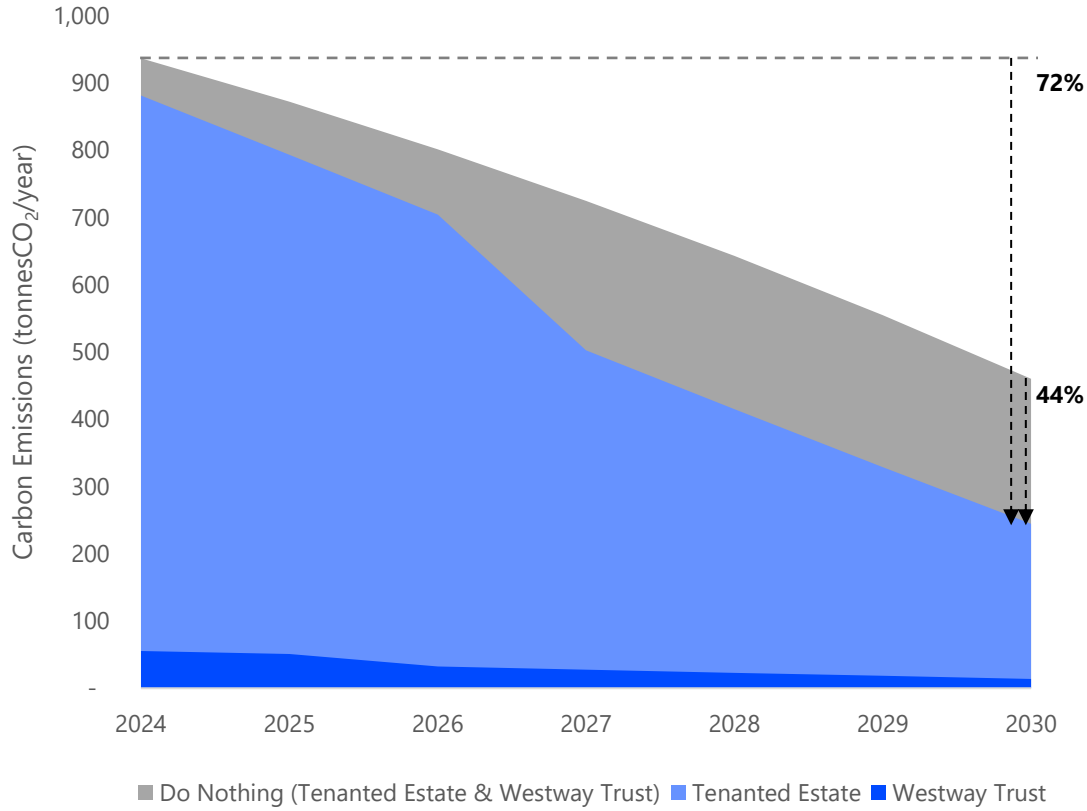



*Figure 4.9 – Retrofit measures carbon emission savings between 2024 and 2030.*

# Decarbonisation Plan – Total Energy Savings

The following charts show the total energy reduction for the Westway Trust assets and Tenanted Estate.

It has been assumed that a full retrofit is implemented for each of the buckets. A phased approach for the retrofit has been assumed, at an average rate of 20% per year until 2030.

Results show a 42% reduction in the total energy consumption of the Westway owned and managed assets, and a total energy consumption reduction of 35% for the tenanted estate, against the current 2024 baseline.

For the Westway Trust owned and managed assets, it has been assumed that the gas boilers are replaced by an electric heat pump in the year 2026, therefore all energy consumption is assumed to be electric onwards. For the Tenanted Estate, it has been assumed that the Leisure bucket undergoes a retrofit and replaces all existing gas boilers with electric heat pump in the year 2027. The following years until 2030 have a small proportion of gas energy consumption, which is associated with the Sainsbury's Supermarket, as it has been assumed that they will target reaching Net Zero post 2030.

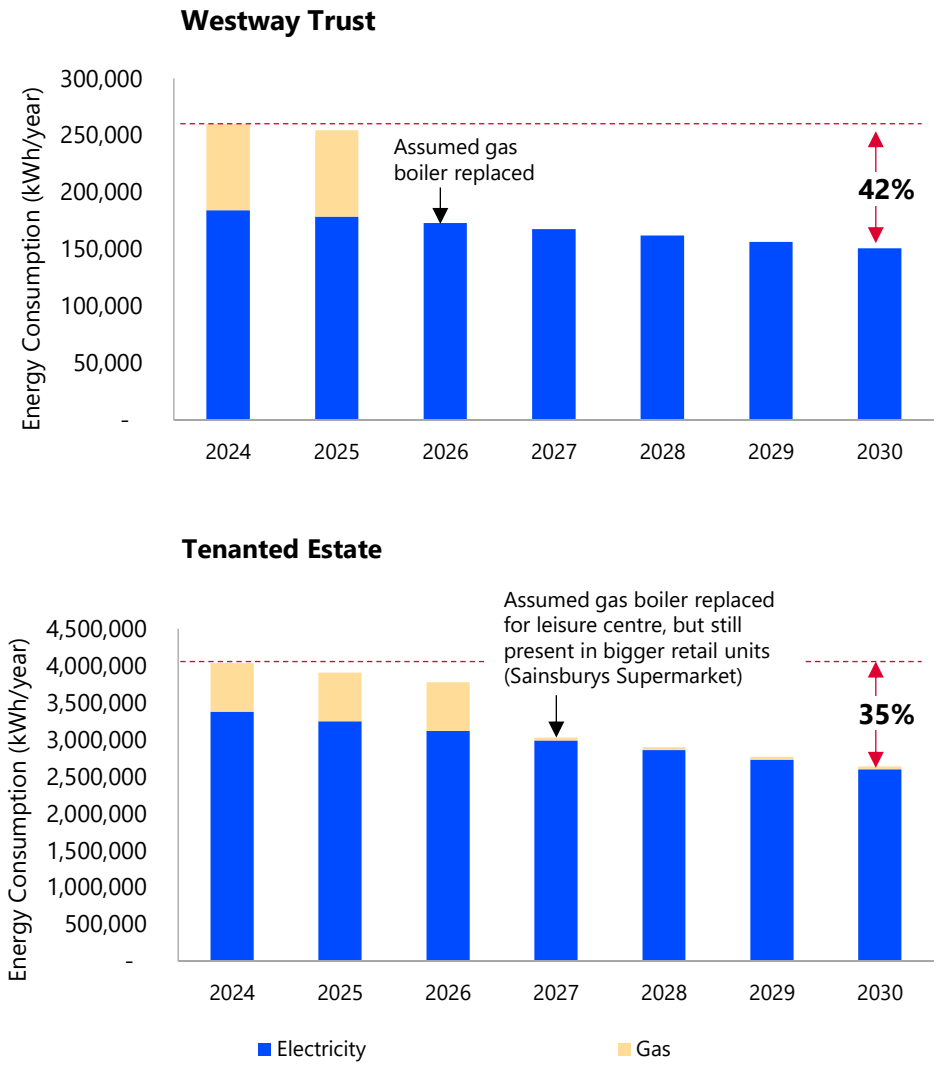



*Figure 4.10– Retrofit measures energy savings between 2024 and 2030 for the Westway Trust and Tenanted Estate.*

# Decarbonisation Plan – Total Cost

The following chart shows the total cost of retrofit for each of the archetype buckets, in addition to the Westway Main Office (1&2 Thorpe Close). The diagram under the chart shows which retrofit measure has been implemented and costed for each archetype.

The costs include labour, materials, plant, ancillary items, and general builder's work. Provision is also made, where applicable for consequential works required to facilitate the measure, for instance removal and reinstatement of existing finishes or where specific protection is required.

It must be noted that these costs represent high level indicative costs, and that a detailed energy audit would have to be undertaken for each asset individually to be able to get more accurate cost results.

Furthermore, these costs are not reflective of achieving the minimum MEES compliance standard, as they have been costed on the basis of implementing all the retrofit measures combined. To obtain the exact cost of achieving the minimum compliance standard, each asset would have to be individually assessed as the assets currently have different EPC ratings.

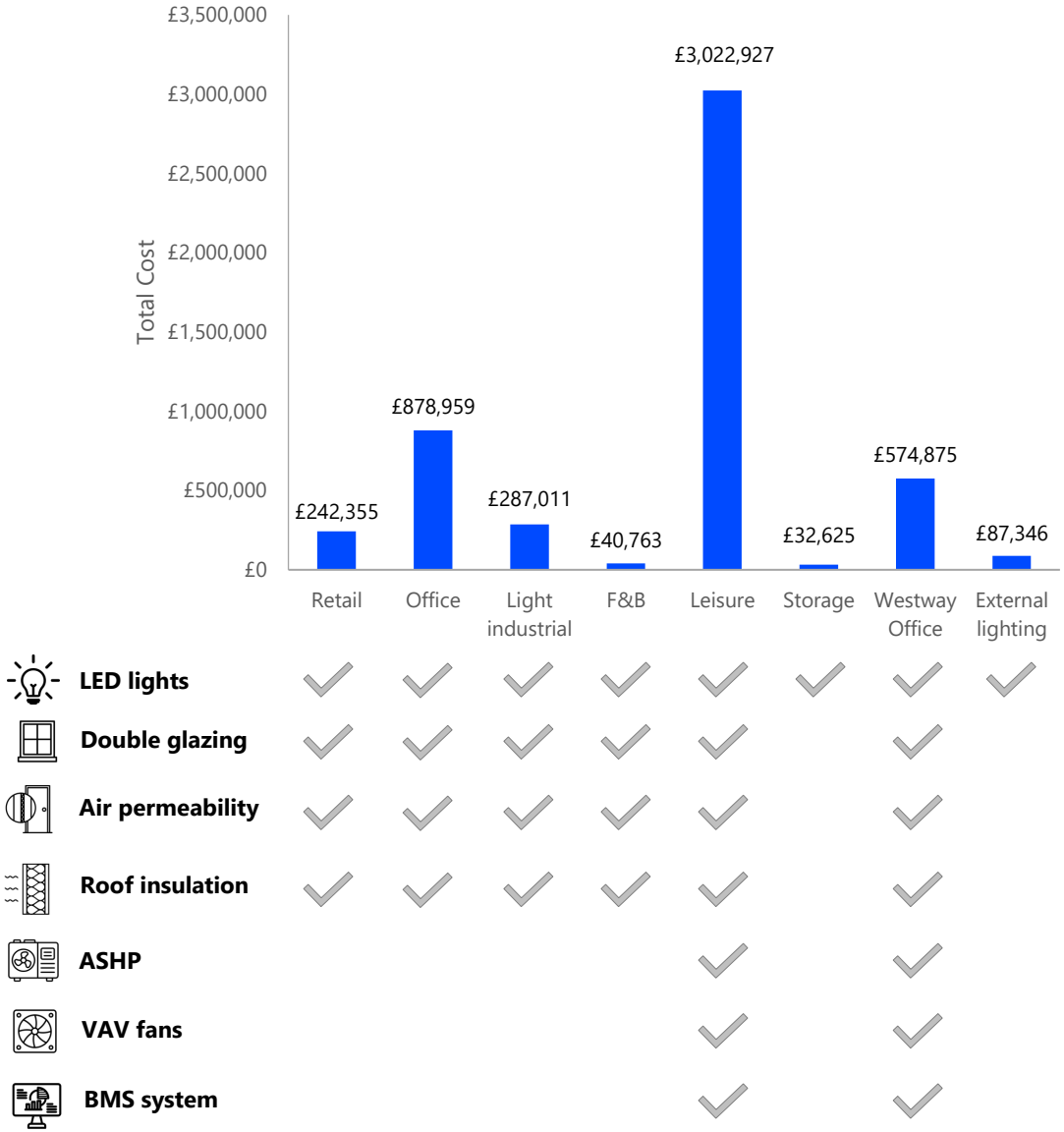



*Figure 4.11– Retrofit total cost for the different archetypes.*

# Decarbonisation Plan – Operational Carbon Footprint

The following is an updated calculation of the Scopes 1, 2 and 3 operational carbon emissions for the Westway Trust Estate for the year 2030, assuming a full retrofit is implemented which achieves a 33% reduction against the 2024 baseline carbon emissions. The carbon emissions have been calculated against the current 2024 carbon emission factors. As seen below, Scope 1 emissions are completely reduced due to the complete phase out of fossil fuels. The below is the result of accounting for the Westway Trust's operational carbon emissions arising from their tenanted estate, head office (1&2 Thorpe Close), internal and external lighting, and WCs. Note that carbon emissions arising from waste, water and embodied carbon have not been accounted for in this calculation.

**Scope 1 Emissions**

**0%**

**0 $tCO_2e$**

Direct emissions from WWT's own gas boilers

**Scope 2 Emissions**

**5%**

**31.23 $tCO_2e$**

Indirect emissions from purchase of energy for head office

**Scope 3 Emissions**

**95%**

**594.98 $tCO_2e$**

Indirect emissions from WWT's activities, e.g. tenant energy consumption

*Table 4.9 – Retrofit operational carbon emissions breakdown*

| Business Sub-Area | Energy Consumption (kWh) | Carbon Emissions ($tCO_2e$) | % Carbon Emissions |
|---|---|---|---|
| Head office energy use – Gas | 0 | 0 | 0% |
| Head office energy use – Electricity | 84,133 | 17.42 | 1.9% |
| Landlord purchased energy – Electricity | 66,718 | 13.81 | 1.5% |
| Tenant purchased energy (electricity & fuels) | 2,636,352 | 594.98 | 63.5% |

# 5 Beyond 2030

# Setting Your Commitments

This report has emphasised the essential requirements to comply with MEES building regulations. In this section, we go beyond mandatory compliance to establish targets that support alignment with net zero goals. These factors will help to set your Net Zero Carbon definition.

To set realistic and achievable commitments, the following factors should be considered:

- **Setting the boundary** – What scopes should be included?
  Scope 1 and 2 will cover Westway Trust's emissions in the spaces that they occupy. Scope 3 emissions will include additional categories, the main contributing one being tenant emissions.

- **Existing estate** – What is your current existing baseline?
  This has been assessed as a high-level 'bucket' methodology in this assessment. A true baseline should be determined across all asset types using meter readings or energy bills. This should improve current data quality.

- **Timeline** – What is a realistic timeline for your targets and commitments?
  Typical target dates within the industry are 2030, 2040 and 2050.

- **Best practice industry guidance** – What existing standards and frameworks can be used to help identify targets?
  In depth research has been carried out by multiple industry professional bodies to set realistic targets and limits.

- **Existing relationships** – How will these targets affect landlord-tenant relationships?
  Consider limitations on existing tenants when setting targets and commitments for the Westway Trust. Consider implementing green lease clauses with existing tenants.

- **Measurement and verification** – What processes are being set up to track, report and measure against these targets?
  Targets should be measured at regular intervals to track progress against any specified targets.

- **Accountability** – What level of transparency should be included in your commitments?
  Commitments can be made publicly to declare transparency to building occupants, users and the general public.

As outlined on Page 11, this is the current industry best practice definition of a Net Zero Whole Life Carbon Building.

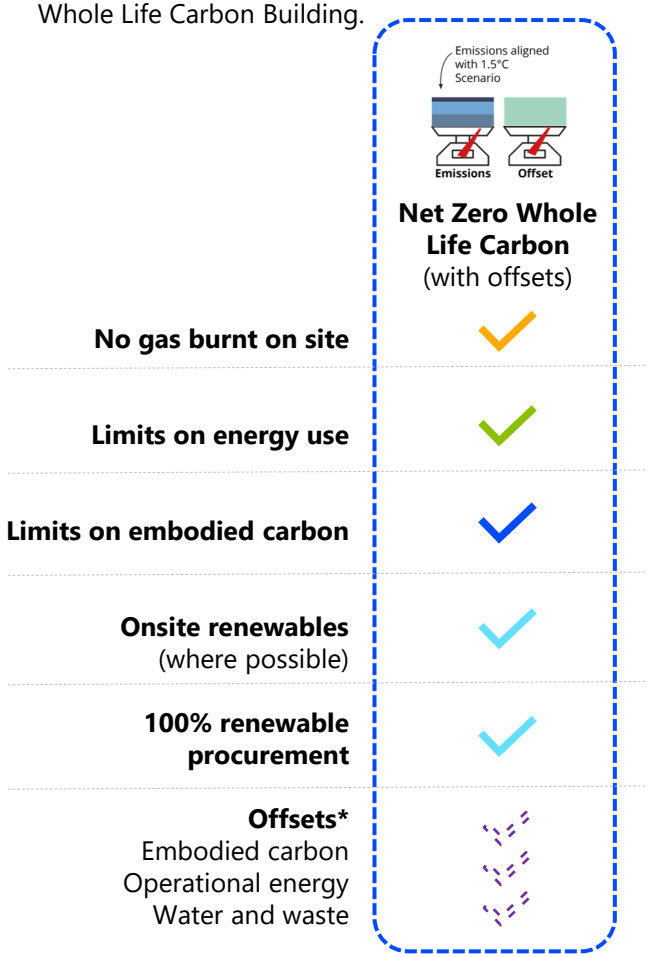



*Figure 5.1 – Industry best practice definition of Net Zero Whole Life Carbon Building.*

**This is included in some industry definitions.*

# Working Towards Net Zero – Existing Assets

While the delivery plan focused primarily on regulatory compliance, this section aims to explore additional goals for all existing assets within the Westway Trust. Although the primary focus should be on Westway Trust occupied assets – as this addresses Scope 1 and Scope 2 – targets for tenants should also be considered to further drive the ambition of net zero across the Estate.

| Measures | Setting targets for new project development | Guidance |
|---|---|---|
| **Measure ongoing emissions** | Continue on-going measurement of energy consumption of the estate, this should include Westway occupied and tenanted spaces. |  **UK Net Zero Carbon Buildings Standard** |
| **Increase metering** | Review existing metering strategy and deploy additional sub-meters to account for different energy use types, this will help to assess data and identify reduction opportunities | |
| **Eliminate fossil fuels** | Existing heating sources relying on gas should be switched to electricity. The delivery plan in this reports includes this for all Scope 1 emissions. | |
| **Set targets for carbon and energy reduction** | Implement a large scale retrofit plan to reduce the energy consumption across the Estate. Percentage reduction targets can be set year-on year. Consider green lease clauses for tenants. |  **LETI Climate Emergency Retrofit Guide** |
| **Procure renewable energy** | Complete a review of any available roof space for on site renewables. For on going energy use, explore implementing Power Purchase Agreement (PPA) and Renewable Energy Guarantees of Origin (REGO) backed renewable procured energy. | |
| **Consider additional offsets** | Consider additional offsets for the embodied carbon of retrofits, and on-going emissions associated with energy use and refrigerant leakage. | |

# Working Towards Net Zero – New Builds

While the delivery plan focused primarily on regulatory compliance, this section aims to explore additional goals for the new build project's development. The following areas are recommended for consideration in any new construction to support the goal of achieving net zero.

| Measures | Setting targets for new builds | Guidance |
|---|---|---|
| **Eliminate fossil fuels** | Eliminate fossil-fuel based emissions by requiring all new projects to ensure no gas is burnt on site. This should include space heating, hot water and kitchen equipment. |  [UK Net Zero Carbon Buildings Standard]   [LETI Climate Emergency Design Guide] [LETI Embodied Carbon Primer] |
| **Set energy limits for different use types** | Any new projects should be designed to meet Energy Use Intensity (EUI) limits, specific to their use type. | |
| **Set embodied carbon limits** | Any new projects should be designed to meet embodied carbon limits, specific to their use type. | |
| **Maximise on-site renewables** | Maximise on-site renewables for all new projects. This is typically dependent on available roof area and therefore is only applicable to projects that are not constructed under the Westway. | |
| **Procure renewable energy** | Once occupied, any electricity should be procured through renewable energy sources. | |
| **Consider additional offsets** | Aside from mandatory offsets that are informed by local councils and the GLA, consider additional offsets for embodied carbon, water and waste. | |

# Appendix – Asset Archetype Bucket Classification

The following breaks down the Westway Trust's tenanted estate into the different archetype buckets. Assets not listed in the table have been discarded from the calculations.

| Retail | Office | F&B | Leisure | Light industrial | Storage |
|---|---|---|---|---|---|
| - 14 Malton Road<br>- 6 Malton Road<br>- 281 Portobello Green Arcade (All Units except Unit 1,15,18)<br>- 266 Portobello Road<br>- Sainsbury's Supermarket<br>- Thorpe Close Pods | - 4 Maxilla Walk<br>- 6 Thorpe Close<br>- 7 Thorpe Close<br>- 9 Thorpe Close<br>- 281 Portobello Green Arcade (Unit 18)<br>- 10 Acklam Road<br>- 20 Acklam Road | - Swimfarm<br>- Westway Sports and Fitness<br>- 2 Maxilla Walk<br>- 71 St Marks Road<br>- 5 Thorpe Close | - 281 Portobello Green Arcade (Unit 1,15)<br>- 268 Portobello Road<br>- 272 Portobello Road | - 3 Maxilla Walk<br>- 18 Malton Road<br>- 16 Malton Road<br>- 12a Malton Road<br>- 12 Malton Road<br>- 10a Malton Road<br>- 10 Malton Road<br>- 8a Malton Road<br>- 8 Malton Road | - 22 Stable Way<br>- 21 Stable Way<br>- 23B Stable Way<br>- 27 Stable Way<br>- 29 Stable Way<br>- 35 Stable Way<br>- Yards 31-33<br>- 301 Latimer Road<br>- 7 Thorpe Close (Office 5)<br>- 10 Acklam Road (Loading Bay)<br>- 12 Acklam Road |