



Towards a net zero carbon London: Energy Monitoring Report 2024

MARCH 2026

Contents

This report	3
Key findings	4
Overview	
The role of the planning system in the climate emergency	11
Meeting the net zero carbon target	12
London's approach to Part L 2021	13
Energy Use Intensity and Space Heat Demand	14
Whole life-cycle carbon emissions reporting	15
'Be Seen'	16
Overall results	
Total on-site carbon savings	18
Carbon savings breakdown	19
Distribution of carbon savings	20
Carbon offsetting	21
Whole life-cycle carbon emissions	22
Energy Use Intensity and Space Heat Demand	25
Local highlights	26
'Be lean'	
'Be lean': Residential	28
'Be lean': Non-residential	29
Overheating	30
Cooling proposals	31
Case study 1: London Chest Hospital	32
Case study 2: Former Gasworks Printworks	33

'Be clean'	
'Be Clean'	35
District heating network (DHN) connections	36
Communal heat networks	37
'Be green'	
Solar energy	39
Heat pumps	40
Case study 3: 17-19 Thames Road	41
Case study 4: Hill Street	42
Conclusions	43
Appendices	45

Purpose of this report

This report summarises the expected energy performance of all referable developments¹ that gained **planning approval** from the Mayor in the **calendar year 2024**, against the London Plan energy policies.

In 2024, 129 referable planning applications were granted provisional approval by their local planning authority and were subsequently approved by the Mayor. Of these applications, **125 had an energy element** to the proposal that could be assessed against London Plan Policy SI 2. This is an increase in the number of applications compared to 2023, where there were only 93 applications with an energy element.

Table 1 presents the type and quantity of developments that gained approval, including the number of dwellings and non-residential floor area. The mix of development type varies year-on-year and can have a significant impact on the results observed in some areas; for example approaches to cooling and PV differ between commercial and domestic uses.

Table 1: Total number and type of referable developments approved by the Mayor in 2024

Developments approved by the Mayor in 2024				
Type	Number	Dwellings	Non-residential floor area (thousand m ²)	Estimated residential floor area (thousand m ²)
Mixed-use	74	25,752	749	1,803*
Residential	8	1,450	N/A	102*
Non-residential	43	N/A	1,193	N/A
Total²	125	27,202	1,942	1,904*

*Floor areas are not collected for residential developments, so an area of **70 m² per dwelling** has been assumed to provide the estimated values for scale and comparison.

¹ A planning application is referable to the Mayor if it meets the criteria set out in the Mayor of London Order (2008). The criteria include: Residential development of 150 units or more; Non-residential development of more than 100,000 m² (in the City of London), more than 20,000 m² (in Central London excluding City of London), more than 15,000 m² (outside Central London); any development over 30 metres in height (outside the City of London) or on Green Belt or on Metropolitan Open Land. See the Order for the full criteria.

² In 2024, the total floor area for referable development increased for non-residential (1,177 thousand m² in 2023) and decreased for residential (2,146 thousand m² in 2023).



Key findings

London still leading the way

London's target is to achieve net zero carbon emissions by 2030. Through the London Plan, the Mayor is ensuring that new buildings are playing their part in reaching this target, exceeding national Building Standards and showing carbon savings which are predicted to be achieved through higher levels of ambition and innovation.



56.2 per cent CO₂ savings compared to meeting minimum standards of national Building Regulations (Part L 2013 and Part L 2021)



33,105 total tCO₂ saved, equivalent to **28,000 return flight seats from London to New York***



Energy efficiency measures saved 9,961 tCO₂, equivalent to adding **loft insulation to over 16,000 homes****



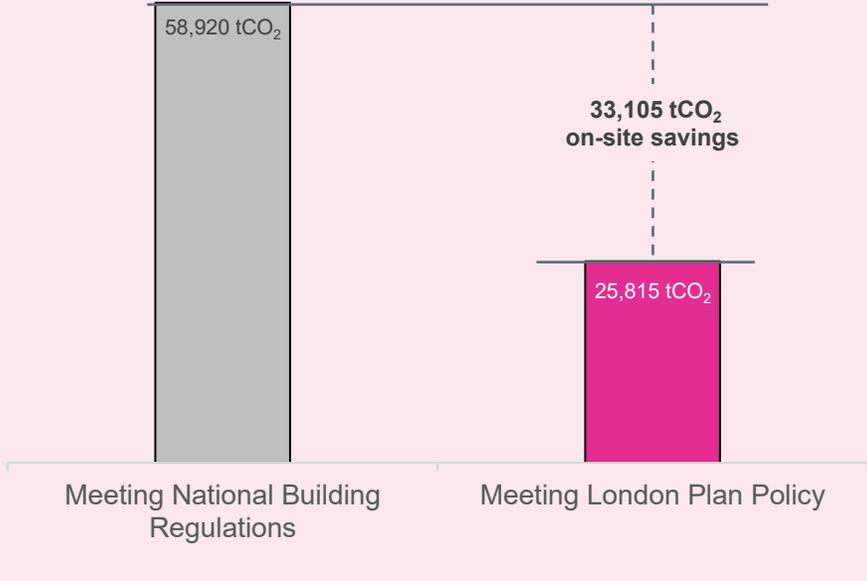
Solar PV proposed could cover 12 Wembley football pitches***

*TravelNav.com

**Energy Saving Trust

***Football Pitch Dimensions, based on a typical array being applied across an equivalent roof area.

On-site CO₂ emissions savings achieved through the London Plan



London Plan policy is pushing London forward in pursuit of its net zero carbon 2030 target

2024 key findings

London continues to exceed national standards

The 125 developments approved in 2024 achieved an **overall on-site carbon reduction of over 56 per cent** beyond Building Regulations, a slight decrease on 2023 (58 per cent). The change is driven mostly by the more challenging baseline set by the Part L 2021 standard, particularly for non-residential development. This shows London’s construction sector continues to exceed the Mayor’s 35 per cent improvement target beyond Building Regulations, delivering carbon savings far above national standards.

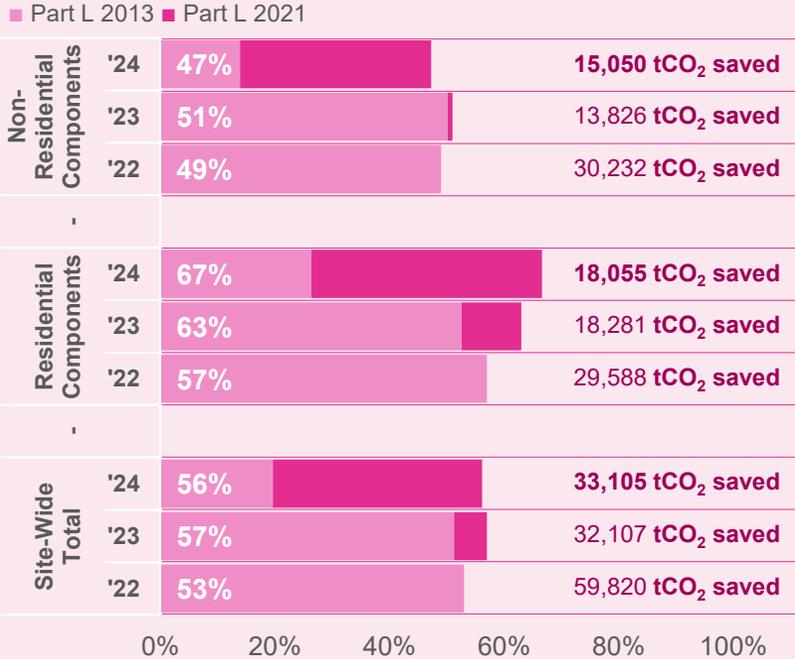
Residential: Developments achieved an average of **67 per cent CO₂ reduction on Building Regulations**, an increase on 2023 (64 per cent).

Non-residential: Developments reached an **average carbon saving of 47 per cent**, a decrease from 2023 (52 per cent).

On-site net zero carbon: **Five developments achieved net zero carbon through on-site measures alone**, the same number as in 2023. The majority were non-residential industrial sites that maximised renewable energy due to large available roof space and low heat demand.

Energy efficiency measures resulted in a **16.9 per cent carbon saving**, an increase from 2023 (15.2 per cent). **Residential developments** achieved an average per development saving of **18.4 per cent** and **non-residential developments** achieved an average of **15.1 per cent**, exceeding their London Plan targets of 10 and 15 per cent respectively.

CO₂ reduction over Building Regulations baseline



From 2022 to 2023, the size of developments seeking planning approval roughly halved in floor area. This has resulted in the dramatic decrease in carbon emissions over this period. From 2023 to 2024, the size of developments (and associated floor area) has increased, however, carbon emissions have remained steady. This is due to more developments using new Building Regulations which reflect reduced emissions factors owing to the decarbonisation of the electricity grid.

2024 key findings (2)

London is at the forefront of low carbon heat and renewables

Supporting heat networks and reducing gas-based heating solutions: London Plan policy prioritises DHN connection to promote an affordable, flexible low carbon energy system that is needed to reach net zero. Over **5,915 dwellings are expected to connect to existing DHNs**, while a further **17,404 dwellings utilise communal networks designed to connect with local DHNs** in the future when available. This means **83 per cent of referable residential development** approved in 2024 will be either connected or connection-ready, supporting London's progress on the Mayor's Accelerated Green Pathway to net zero by 2030 where an indicative scale of 460,000 connections is set out as well as government's target of meeting 20 per cent of UK heat demand from heat networks by 2050.

Driving more heat pump installations: **90 per cent of developments in 2024 proposed the installation of heat pumps**, a total of 113 developments. In total, **over 20,700 dwellings propose to connect to a heat pump-led heating system**, and up to 1,756,045 m² of the non-residential floor area proposed to be served by a heat pump-led system. **58 per cent of these proposed installations using a heat pump are large centralised networks** supplying communal and site-wide heat networks.

New solar PV capacity: The average installation size has decreased compared to 2023 (16.5 m² PV/1000 m² floor area in 2024 versus 22 m² PV/1000 m² in 2023). This is equivalent to an **installation of 10.7 MWp, a decrease from 13.8 MWp in 2023**, and an area of approximately **59,450 m² of solar PV** (equivalent 2023 figure was approximately 70,000 m²) leading to approximately **£16.1 million in new investment**. The reduction in PV may be due to competing roof space use for other services, and reduction in roof space by floor space, however affected year on year by the design of the building. While overall PV per floor area has reduced, **94 per cent of developments included solar PV**, an increase from 2023 (92 per cent).

23,319 dwellings to connect to communal heat networks or DHNs

£56m investment in heat network infrastructure

113 developments with heat pumps

10.7 MWp of solar PV proposed

2024 key findings (3)

Managing London's heat risk and cooling demand

Overheating: 98 out of 125 developments (78 per cent) undertook a dynamic thermal modelling **overheating assessment**, this compares to 76 per cent in 2023. This helps in designing buildings better adapted to the changing climate.

Cooling: The cooling hierarchy encourages the use of passive and low-energy strategies to minimise the risk of internal overheating and reduce dependence on active cooling systems, such as air conditioning. Active cooling should only be proposed after the use of passive solutions, when deemed necessary and/or where there are site constraints (e.g. air quality and noise). Of the 125 developments reviewed, 106 (85 per cent) included some form of active cooling. Total cooling consumption (30.1 GWh/yr) has increased significantly compared to 2023 (7.1 GWh/yr), this is largely due to specific non-domestic developments which require cooling. However, when focusing on developments with a residential component, active cooling was proposed in only 8 out of 82 cases — meaning 90 per cent of residential developments did not require cooling.

Increase in dynamic overheating assessments showing better design for rising temperatures

90 per cent of residential development avoids use of active cooling

2024 key findings (4)

Offsetting and Whole Life-Cycle Carbon

Carbon offset payments: An estimated **£75.7 million** was potentially available for collection by LPAs from referable development proposals in 2024, up from £71.9 million in 2023, but a lower offset contribution per development. Further details on the sums being collected and how they are being spent can be found in the annual [Carbon Offset Funds Report](#).

Whole Life-Cycle Carbon (WLC): In 2024, **110 applications** conducted WLCA. In general, the development performance improved compared to the benchmarks; performance against aspirational benchmarks also improved but are still proving more challenging to meet.

The reduced carbon intensity of the grid is leading to a lower average offset required per development

110 developments reported whole life-cycle carbon emissions



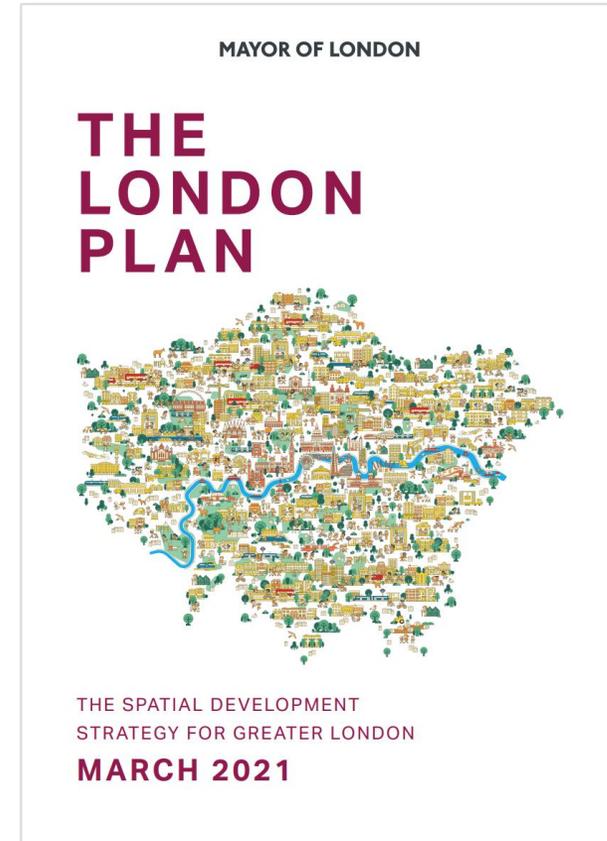
Overview

The role of the planning system in the climate emergency

A London Plan 2021

The London Plan is the strategic framework that guides and shapes our city's development in the years ahead. The current London Plan sets out the spatial development strategy to support sustainable, inclusive growth for the city. It ensures that new developments are responding to the climate emergency by minimising carbon emissions and implementing climate adaptation measures. This ensures developments are resilient to climate change and reaching net zero by 2030.

This document sets out a review of how referable developments, approved for planning in 2024, perform against the London Plan 2021 requirements. This includes performance for both operational and embodied carbon use, and design for overheating. It also sets out the developments which are going above and beyond to deliver low carbon, innovative, inclusive and climate resilient buildings for the next generation.



Meeting the net zero carbon target

The London Plan requires all major developments* to achieve net zero carbon. There is a **minimum requirement for a 35 per cent on-site carbon improvement** on national Building Regulations, and since 2022 all new applications must report against Part L 2021.

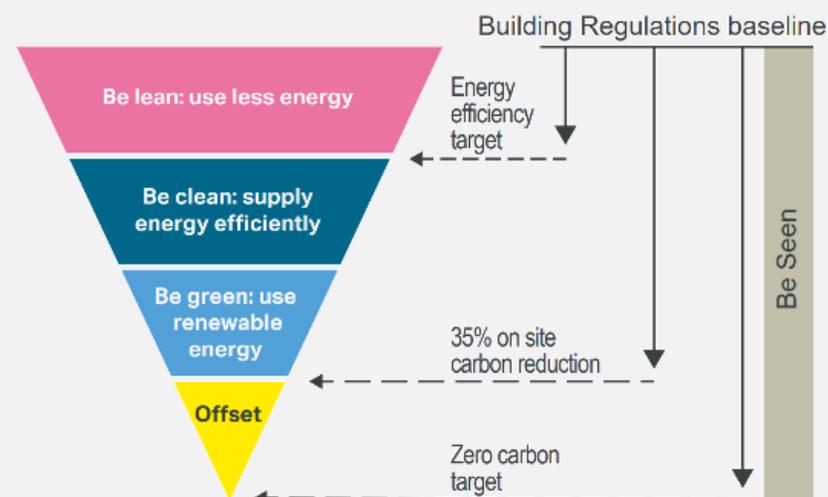
Beyond this, and once on-site carbon reductions have been maximised, the shortfall to zero carbon is offset by making a cash-in-lieu contribution into the relevant Local Planning Authorities (LPA) carbon offset fund.

To meet the target, planning applicants are expected to follow the energy hierarchy:

- **'Be Lean'** – use less energy
- **'Be Clean'** – supply energy efficiently and cleanly
- **'Be Green'** – maximise renewable energy
- **'Be Seen'** – monitor, verify and report energy performance

Planning applicants are expected to maximise savings on-site before paying to offset their residual carbon emissions

The Energy Hierarchy

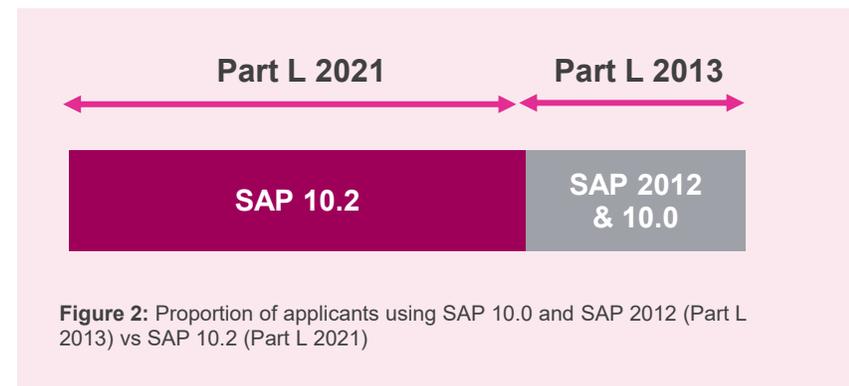
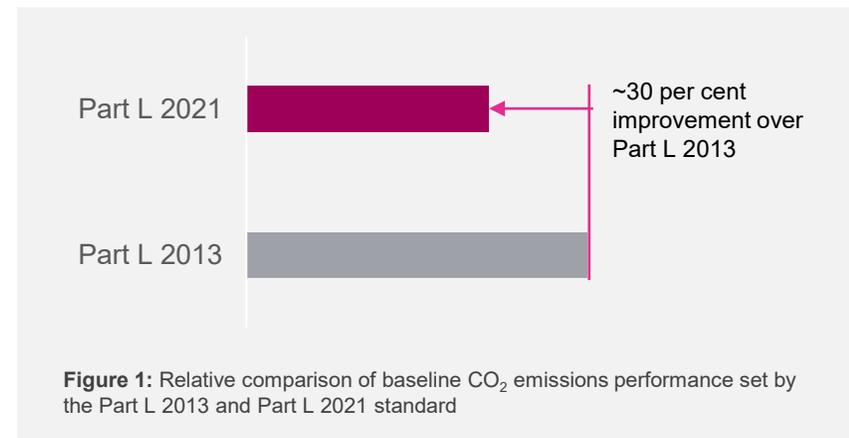


*Those with 10 or more units and those with >1,000 m² of floorspace, not just those referred to the Mayor

London's approach to Part L 2021

Applications approved in 2024 included a mixture of developments assessed under Part L 2013 and Part L 2021, depending on whether they were submitted before or after the 2022 guidance update. Two thirds of the applications approved in 2024 were assessed under Part L 2021. This is a significant change from 2023 where more than three quarters of applicants were still using Part L 2013. One application approved in 2024 reported carbon emissions with application of SAP 2012 factors, where this proposes to connect to an existing DHN with a decarbonisation plan in place. All other applications reported carbon emissions using SAP 10 and SAP 10.2 factors*.

Government consultations on Part L 2021 indicated **improvements on the Part L 2013 standard of 31 per cent and 29 per cent for non-residential and residential developments**, respectively. The Part L 2021 standard sets a more challenging baseline through various improvements to the notional building, including additional PV and/or heat pumps in certain circumstances. Despite this, the performance reported by applicants illustrates a similar overall margin as previously reported with respect to Part L 2013. This demonstrates how applicants are effectively using the GLA's heating hierarchy to prioritise low-carbon and renewable heat sources, exceeding national Building Regulations and aligning with GLA's ambitious targets.



*See appendix for full breakdown of CO₂ emission performance per Part L version

Energy Use Intensity and Space Heat Demand

The GLA Energy Assessment Guidance 2022 introduced the requirement for applicants to report the **Energy Use Intensity** (EUI) and **space heating demand** of the development.

Space heating demand is a measure of the total demand on the building heating systems(s) which is required to maintain a comfortable internal temperature. The space heat demand considers input required from the heating systems to maintain this temperature in response to heat losses through the building fabric and heat gains. Heat gains include solar and internal gains (from occupants and appliances).

Energy Use Intensity (kWh/m²/yr) represents the total energy consumption rate of a development, including both regulated and unregulated uses. It is a measure of how efficiently buildings consume energy and is influenced by both the performance of the building fabric and the efficiency of any systems installed.

Applicants should report Energy Use Intensity and space heating demand of the development to assist in demonstrating that energy efficiency measures have been maximised. This is supported by the accompanying GLA carbon reporting spreadsheet which includes a reporting tab for applicants to complete and compares development performance against the values set out in the GLA Energy Assessment Guidance for their respective typology. Table 2 sets out the energy performance values applicants should be working toward, based on typology.

	Space Heat Demand (kWh/m ² /yr)	Energy Use Intensity (kWh/m ² /yr)
Residential	15	35
School	15	65
Office	15	55
Hotel	15	55
All other non-residential	15	55

Table 2: Energy Assessment Guidance values for Space Heat Demand and Energy Use Intensity by typology

Whole life-cycle carbon emissions reporting

Since September 2020, the Mayor has encouraged applicants submitting referable planning applications to calculate and then work to reduce the whole life-cycle carbon (WLC) emissions of their proposals. This requirement was **formally brought into effect in March 2021** through Policy SI 2 when the London Plan 2021 was published.

A WLC approach takes account of a development's total carbon impact i.e. its **embodied carbon emissions** as well as its operational emissions. **London is the first city in the UK to require WLC assessments from all new development proposals referred to the Mayor.**

The 2021 Energy Monitoring Report was the first monitoring report to include the WLC emissions reported by referable developments in London. In 2024, **88 per cent of developments approved by the Mayor reported WLC emissions**, across a total of 110 developments. This is an increase from 77 per cent of developments approved by the Mayor reporting WLC emissions in 2023.

As the first UK city to require WLC assessments for all new development proposals referred to the Mayor, London is again leading the way in tackling the climate emergency

WLC assessments calculate and reduce emissions across a development's lifetime using the following life-cycle modules:



Module A (Product sourcing and construction stage)
Including materials extraction and transportation



Module B (Use stage)
Including maintenance/repair and replacement, and in-use energy and water usage



Module C (End of life stage)
Including demolition and disposal



Module D (Benefits and loads beyond system boundary)
Including reuse and recycling potential

“Be Seen”

The London Plan 2021 introduced updates to Policy SI 2 upon its publication in March 2021. This included the introduction of a fourth stage to the energy hierarchy. **‘Be Seen’ requires monitoring, verification and reporting of the actual energy performance of major developments for at least five years.**

Through the introduction of the ‘Be Seen’ energy monitoring requirement, the **GLA seeks to gather data to better understand actual operational energy performance** and work towards **bridging the ‘performance gap’** between design theory and actual energy use, working towards the delivery of truly net zero carbon buildings. The ‘Be Seen’ element of the energy hierarchy **takes account of both regulated and unregulated energy use**, i.e. energy use excluded and included within national Building Regulations.

Up to the end of the 2024 calendar year, a total of **260 planning stage submissions have been received**. 20 as-built submissions have been received via the webform, with annual in-use reporting to follow.

‘Be Seen’ supports London’s targets to achieve truly net-zero carbon buildings and work towards closing the performance gap

The ‘Be Seen’ energy monitoring guidance was published in September 2021. There is a supporting reporting template and webform which should be completed by applicants at three key stages throughout the development programme:



Planning Stage (RIBA Stage 2/3) – *planning stage estimates to be provided and confirmation of metering plans.*



As-built (RIBA Stage 6) – *update energy performance predictions and confirm metering installation.*



In-use (RIBA Stage 7) – *submit measured annual energy performance data, for at least five years.*



Overall results

Total on-site carbon savings

An overall carbon reduction of **56.2 per cent** (1.2 per cent decrease from 2023) on the Building Regulations baseline was secured for the 125 developments approved in 2024.



33,105 tonnes of CO₂ saved in total (equating to a 56.2 per cent saving, a slight decrease from 57.4 per cent in 2023)



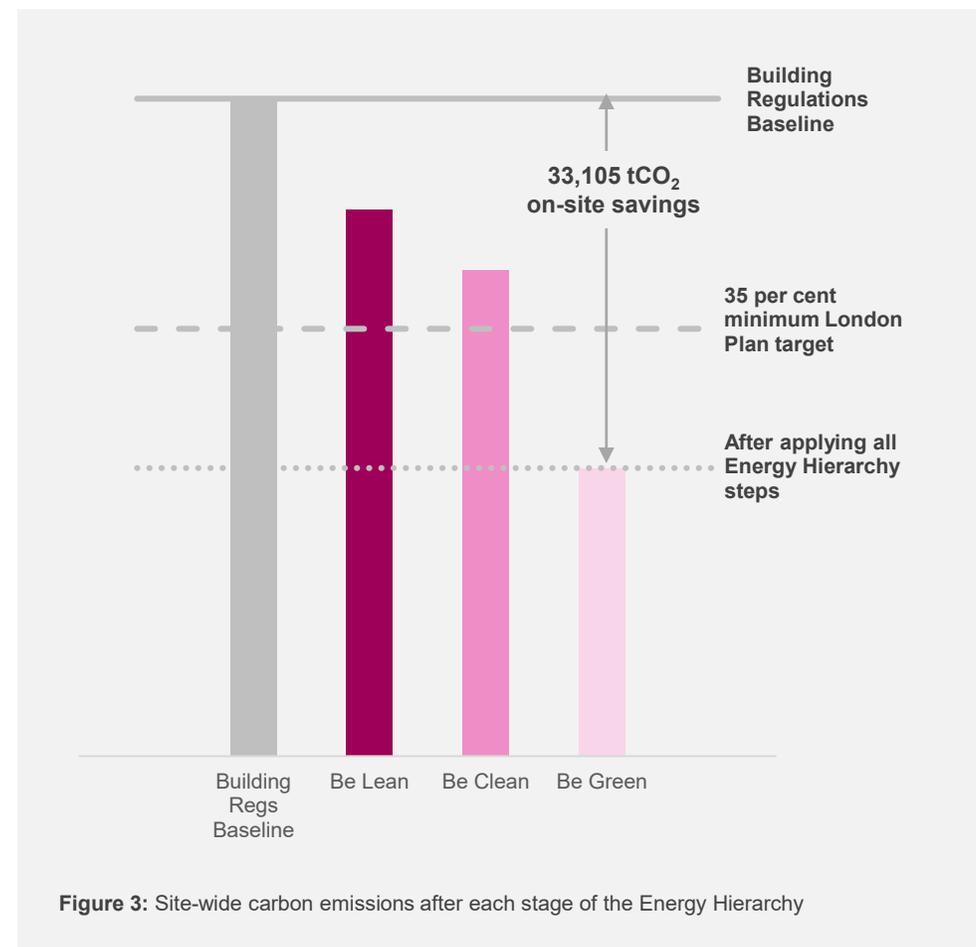
18,055 tonnes of CO₂ from residential developments (equating to a 66.6 per cent saving, an increase from 63.4 per cent in 2023)



15,050 tonnes of CO₂ from non-residential developments (equating to 47.3 per cent, a decrease from 51.8 per cent in 2023)

Applications in 2024 saw a significant increase in applications reporting against Part L 2021, which has incentivised heat pumps for developments with high heat demand due to the reduced carbon intensity of the grid, driving further residential savings. For non-domestic, particularly those with low heat demand, improvements over Part L 2021 are more challenging due to improvements in energy efficiency.

The Mayor's policies demonstrate the important role that raising national building standards can play in tackling the climate emergency

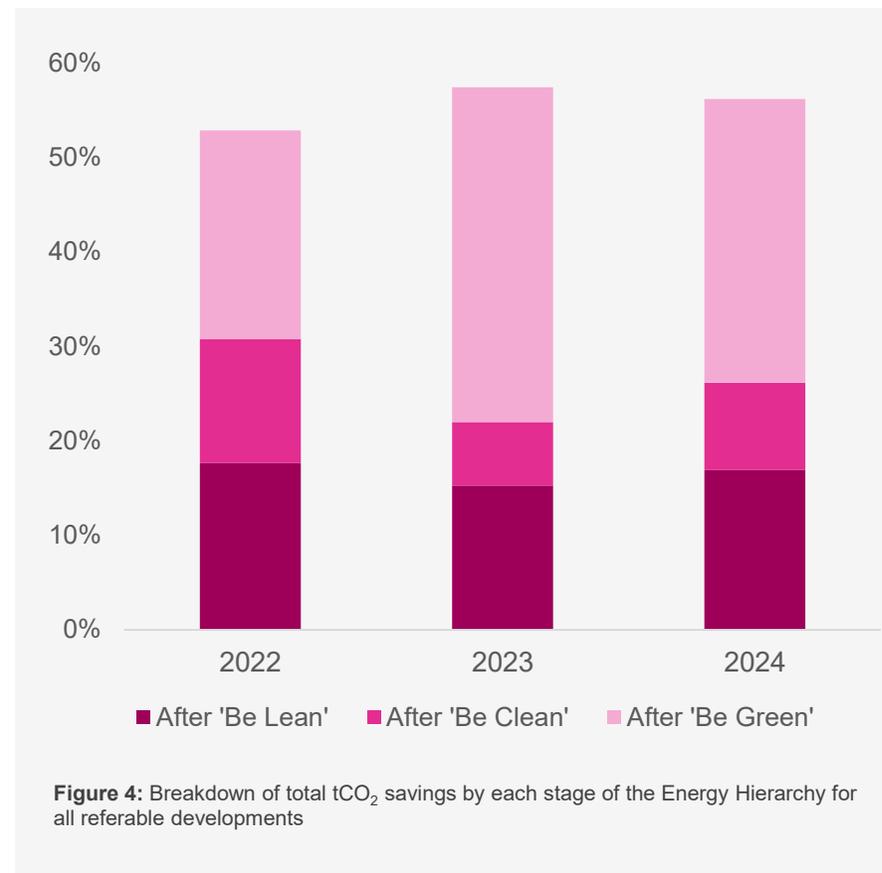


Carbon savings breakdown

Be Lean: 16.9 per cent CO₂ reduction, an increase from last year (15.3 per cent in 2023). Average 'Be Lean' savings illustrate that development can meet or exceed the London Plan energy efficiency targets for their respective development types by reducing energy demand and improving fabric performance. See the 'Be Lean' section for further analysis.

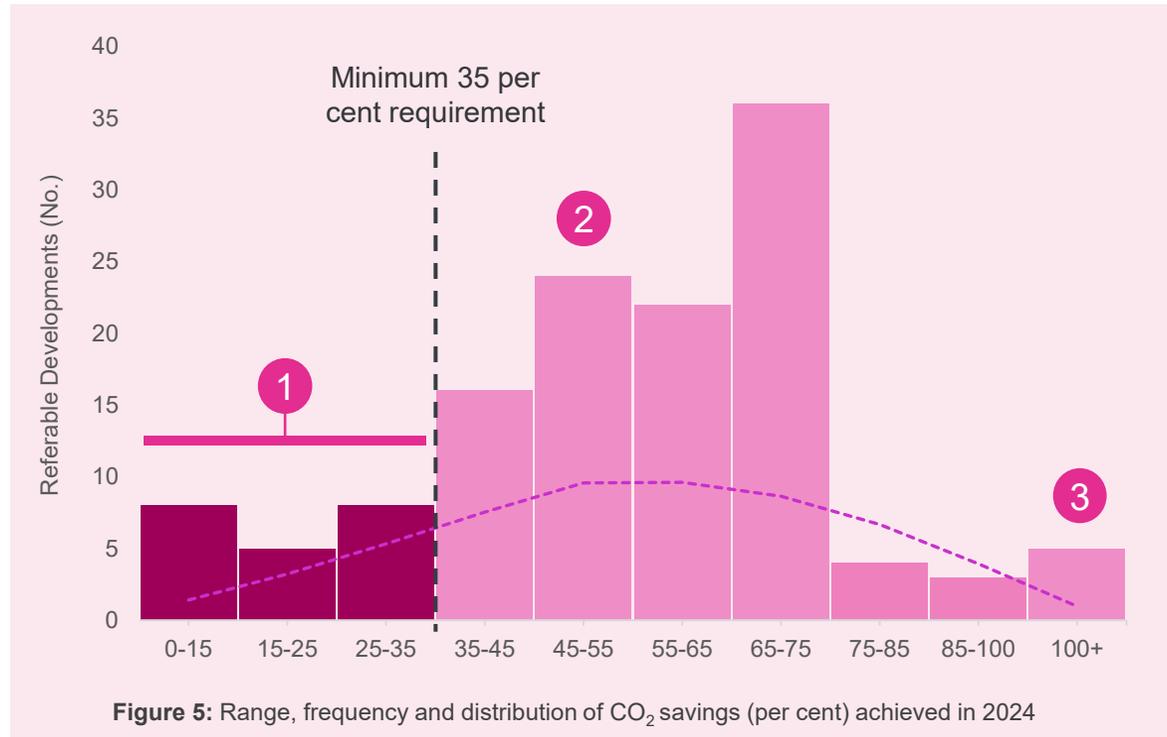
Be Clean: 9.3 per cent CO₂ reduction (6.7 per cent in 2023) resulting from an estimated £56m investment in heat network infrastructure. For the past five years this hierarchy stage has shrunk significantly, largely due to gas-engine CHP being discouraged except where it can stimulate area wide DHNs. As in 2023, no new CHP capacity was proposed in 2024. See the 'Be Clean' section for further analysis.

Be Green: 30 per cent CO₂ reduction (35.4 per cent in 2023), largely from 113 developments with heat pumps, (compared to 78 in 2023). As in 2023, 'Be Green' continues to make up the largest proportion of CO₂ savings. There are also 117 developments installing 10.7 MWp of solar PV (3.1 MWp less than the 13.8 MWp in 2023) with an estimated area of 59,448 m² and new investment of around £16m. See the 'Be Green' section for further analysis.



*Appendix 1 sets out the total carbon emissions and savings achieved against each stage of the energy hierarchy

Distribution of carbon savings



83 per cent of developments met or exceeded the minimum on-site target, an eight per cent decrease from 2023. Just under two-thirds of all developments reported a saving of 50 per cent or more over the relevant Building Regulations baseline.

- 1 21 developments missed the 35 per cent target, compared to 8 in 2023. These were mostly non-domestic schemes. In all cases where the on-site saving was not achieved, applicants were reporting against Part L 2021. This reflects the increased stringency of the Building Regulations update, making it more challenging for some non-residential developments to achieve London Plan policy targets.
- 2 The Energy Assessment Guidance 2022 defined a benchmark improvement over Part L 2021 of 50 per cent which residential developments should be aiming to achieve. 87 per cent of residential development elements were able to achieve an on-site saving of 50 per cent or more over the relevant Building Regulations baseline, compared to 80 per cent in 2023.
- 3 5 developments achieved more than 100 per cent savings. This means that the developments' CO₂ emissions are calculated to be below zero according to the Part L methodology. This is mainly possible through the adoption of 'Be Green' measures, such as when a building generates more energy than it consumes.

Carbon offsetting

Carbon offsetting is a last resort measure in meeting the London Plan's net zero requirement, but it does provide flexibility where on-site savings have been maximised. Carbon offset funds are funding carbon reduction projects, including retrofit and renewable energy projects, across London in support of London's net zero target.

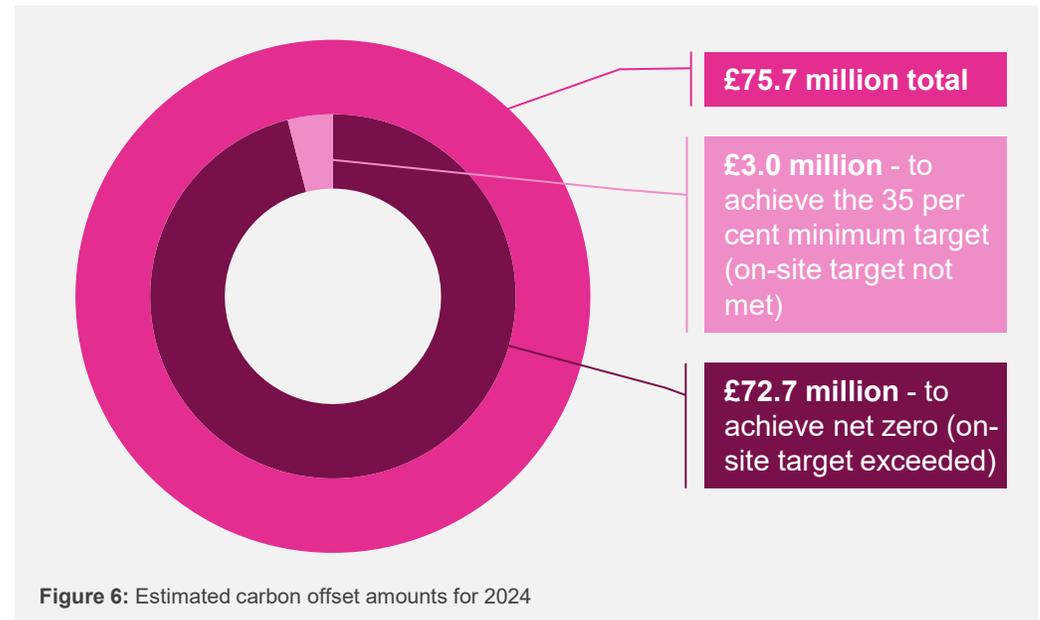
The Mayor's **recommended carbon offset price is £95/tonne**. Alternatively, Local Planning Authorities can apply their own locally-set price.



It is estimated that up to £75.7 million could ultimately be collected by Local Planning Authorities from referable developments that have gone through planning between January and December 2024.

The figures above and in the chart are estimates only. **Local Planning Authorities are responsible for calculating and collecting offset payments.** The Mayor monitors implementation of the carbon offset policy. These reports are published separately and are available on the [GLA website](#).

The overall offset contribution available has increased in 2024, compared to 2023, due to an increase in the number of developments approved. From the corresponding increase in carbon savings achieved by developments in 2024, the average estimated offset payment per development has decreased from £760,000 in 2023 to £558,600 in 2024.



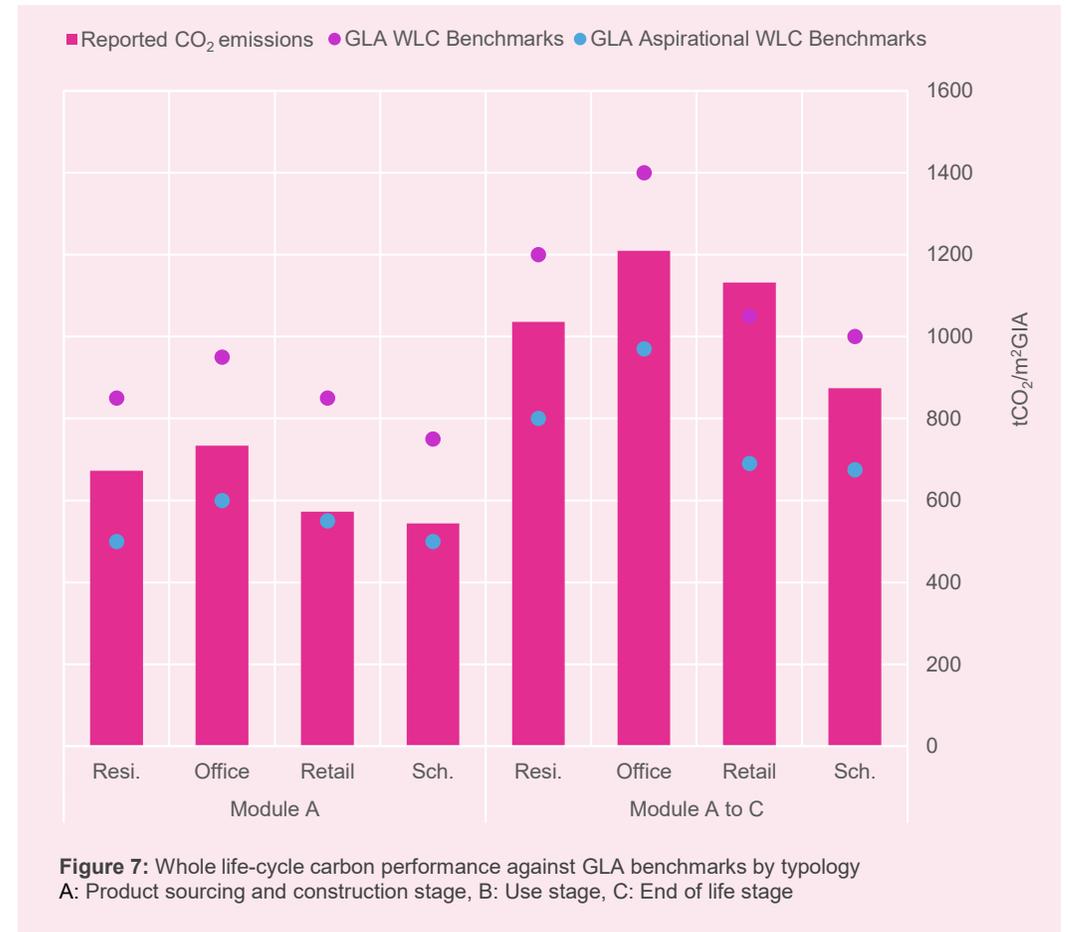
Whole life-cycle carbon emissions

The WLC benchmarks set out in the London Plan Guidance are based on previous project assessments carried out by Cundall and Targeting Zero. The benchmarks vary by development typology and the chart to the right compares the reported performance from applications approved in 2024 against these benchmarks. The 2024 data shows that applicants are consistently demonstrating improvement compared to the Module A benchmark for all typologies. Modules A-C are within the benchmarks for all categories except Retail which generally expends more carbon in use (Module B-C emissions).

It is important to note that the benchmarks were created 5 years ago and the knowledge within the industry has grown significantly, as have the carbon databases to draw information from. As such, assessments have become more robust and complete, leading to regular benchmark exceedance, particularly for Modules B-C.

It should also be noted that results are not validated by the GLA and the data presented is as reported by applicants at planning stage. However, the London Plan Guidance does state that “*applicants and developers should adopt third-party quality assurance mechanisms to assure accuracy in their submissions.*”

See appendix for the full tables reporting average performance against the benchmarks for each of the typologies in support of Figure 7.



Whole life-cycle carbon emissions (2)

The total Module A-C WLC emissions reported in 2024 was **1,075 kgCO₂e/m² Gross Internal Area (GIA)** which demonstrates an improvement over the standard WLC benchmarks for Residential (1,200 kgCO₂e/m²) and Offices (1,400 kgCO₂e/m²). This also represents a 15 per cent increase over 2023 and an increase of 5 per cent over 2021, when WLC emissions were first reported. This increase is likely due to the level of knowledge increasing within the industry, coupled with an expanding and refined carbon database to draw from. This area continues to develop within industry reporting processes which more robustly account for embodied carbon emissions.

Applicants are required to outline the key actions to reduce the WLC emissions and estimate the reductions expected. **Following the implementation of these key actions, the average emissions reduction reported within the WLC assessments was 77 kgCO₂e/m² GIA.** Applicants must also estimate potential savings from the reuse or recycling of components at the end of a buildings' useful life. In 2024, applicants on average reported further potential savings of **83 kgCO₂e/m² GIA.** These savings are based on planning stage estimates. Applicants are expected to provide a post-completion assessment prior to occupation to report on the actual WLC emissions of the as-built development.

	Module A (kgCO ₂ e/m ² GIA)	Modules B1-B5 & C (kgCO ₂ e/m ² GIA)	Modules A-C (kgCO ₂ e/m ² GIA)
2022 Reported CO ₂ emissions	582	326	908
2023 Reported CO ₂ emissions	598	337	934
2024 Reported CO ₂ emissions	683	411	1,075

Table 3: WLC emissions reported from 2022 onwards.
A: Product sourcing and construction stage, B: Use stage, C: End of life stage

NB: the figures above do not include the impact of grid decarbonisation. Also, while most applications were mixed-use schemes, applicants are required to report performance against the benchmarks for the dominant use which is why the table above shows comparison against the residential benchmarks only. Actual comparison may therefore be slightly different in practice.

The Mayor's industry-leading WLC policy is driving change in the sector. The benchmarks are pushing applicants to make design choices that are much more sustainable across the lifecycle of a building.

Whole life-cycle carbon emissions (3)

Since the publication of the London Plan in 2021 and the introduction of the requirement for applicants to report on WLC emissions, several new industry standards have put forward targets and benchmarks for whole life-cycle carbon.

LETI’s Embodied Carbon Target Alignment proposes a letter banded system (ranging from A++ to G) for Module A and Modules A to C. The targets have been calibrated to Grade C for LETI 2020 design target, Grade B for RIBA 2030 built target and Grade A for LETI 2030 design target. The LETI targets use the same breakdown of typologies as the GLA’s benchmarks in the LPG, with the Grade C threshold equivalent to the GLA aspirational benchmark.

The UK Net Zero Carbon Buildings Standard (UK NZCBS) sets limits by year which illustrate incremental improvement in performance from 2025 to 2050. The limits include Module A only and include additional resolution with respect to typology, for example separate targets for sport and leisure and healthcare uses.

Figure 8 to the right shows how developments approved in 2024 perform in the wider industry context.

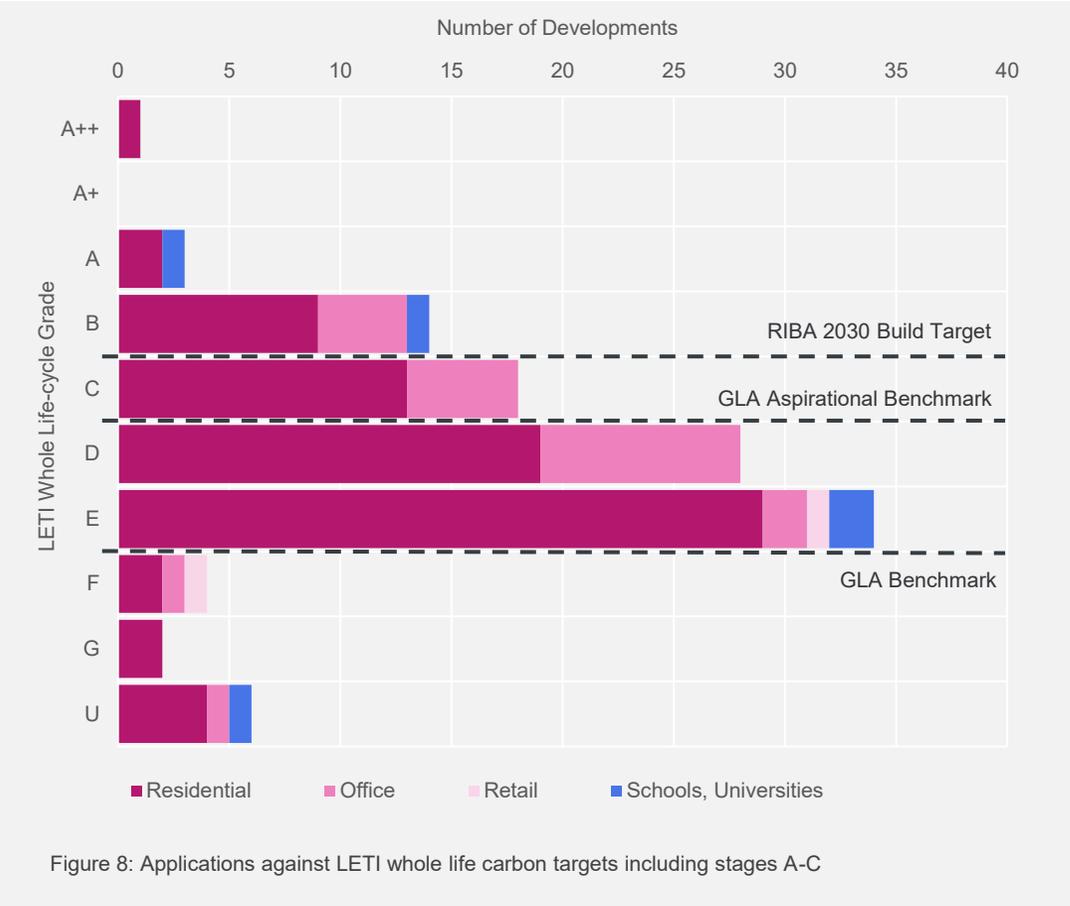


Figure 8: Applications against LETI whole life carbon targets including stages A-C

Energy Use Intensity and Space Heat Demand

There were 103 applications approved in 2024 which reported on Space Heat Demand. 83 per cent of the reporting was based on Part L results, with the remainder using PHPP or other calculation methods. The reported space heat demand for residential development shows an improvement against the GLA benchmark of 15 kWh/m²/year

There were 104 applications approved in 2024 which reported on Energy Use Intensity. 84 per cent of the reporting was based on Part L results; 66 per cent of this was supplemented with a separate operational energy use assessment, such as CIBSE TM54. The separate operational energy use assessment can be used for the planning stage estimate for the 'Be Seen' submission. Where the result of this assessment seeks to address the performance gap, this results in a much higher estimate of energy use and EUI. The calculation of EUI should include unregulated energy, which can have a significant impact on performance, particularly for use types such as restaurants/cafes, gyms, and leisure centres which will have a high associated equipment load. 81 per cent of the reporting included both regulated and unregulated energy.

This is still in the early stages of reporting and implementation; the results reported are based on data provided by applicants at planning stage and these figures have not been validated which could impact results.

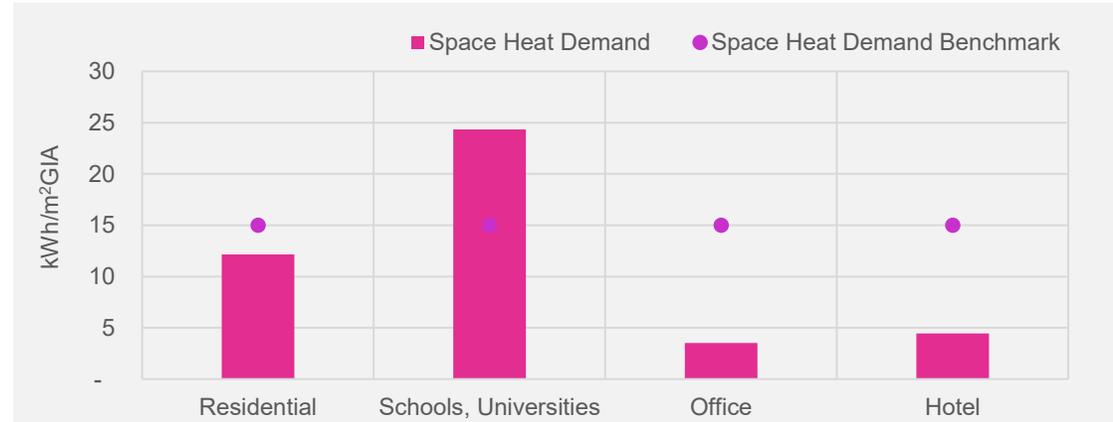


Figure 9: 2024 Space Heating Demand performance by typology

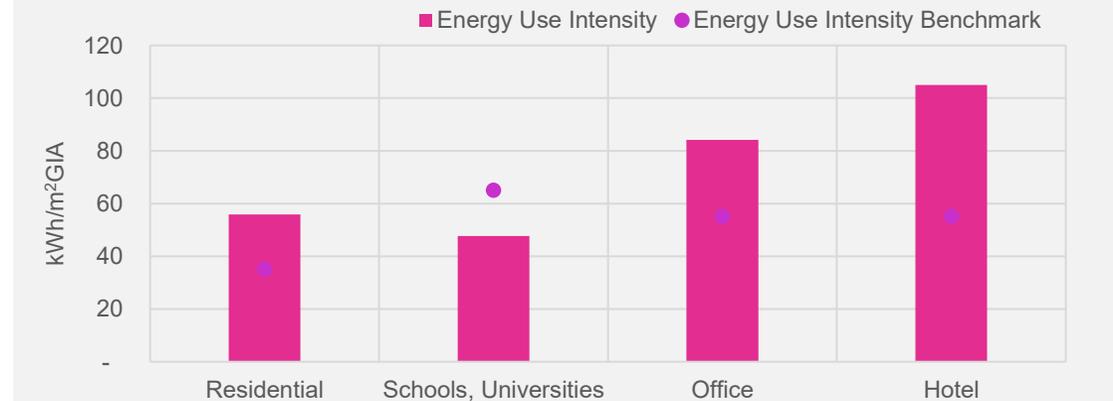


Figure 10: 2024 Energy Use Intensity performance by typology

Local highlights

Opportunities for carbon savings vary between Local Planning Authorities, depending on their density, availability of District Heat Network (DHN) connections and waste heat sources as well as how the LPA is using the planning system to respond to the climate emergency.

Hillingdon achieved a **23 per cent CO₂ reduction** across five referable developments from **fabric first measures** through 'Be Lean'. This is achieved by a mixture of residential (including hotel) and industrial use types.

All seven referable developments approved within **LLDC** proposed a confirmed or potential **connection to the Queen Elizabeth Olympic Park Heat Network**, which is a DHN with a decarbonisation plan in place.

Havering achieved a **153 per cent 'Be Green'** CO₂ reduction from a single industrial development proposing air source heat pumps and 3,520 m² solar PV array. The 'Be Green' saving achieved by this development led to Havering seeing the greatest savings **across the whole energy hierarchy**.

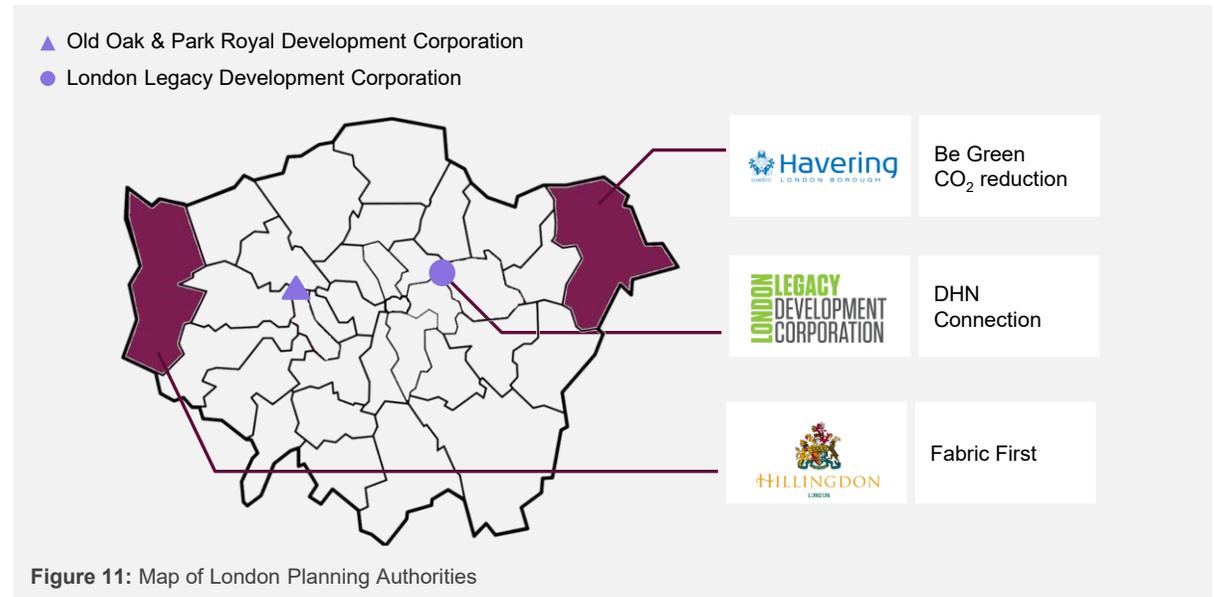


Table 4: Number of referable applications by LPA area

Number of referable developments that gained planning approval from the Mayor in the calendar year 2024 (per Local Planning Authority)									
Barking and Dagenham	3	Croydon	4	Harrow	2	Lambeth	5	Richmond upon Thames	1
Barnet	4	Ealing	11	Havering	1	Lewisham	5	Southwark	12
Bexley	1	Enfield	2	Hillingdon	5	LLDC	7	Sutton	1
Brent	9	Greenwich	3	Hounslow	4	Merton	3	Tower Hamlets	7
Bromley	3	Hackney	3	Islington	0	Newham	4	Waltham Forest	1
Camden	3	Hammersmith and Fulham	1	Kensington and Chelsea	3	OPDC	4	Wandsworth	2
City of London	1	Haringey	5	Kingston upon Thames	0	Redbridge	1	City of Westminster	4



‘Be Lean’

'Be Lean': Residential

Planning applications for residential developments in 2024:



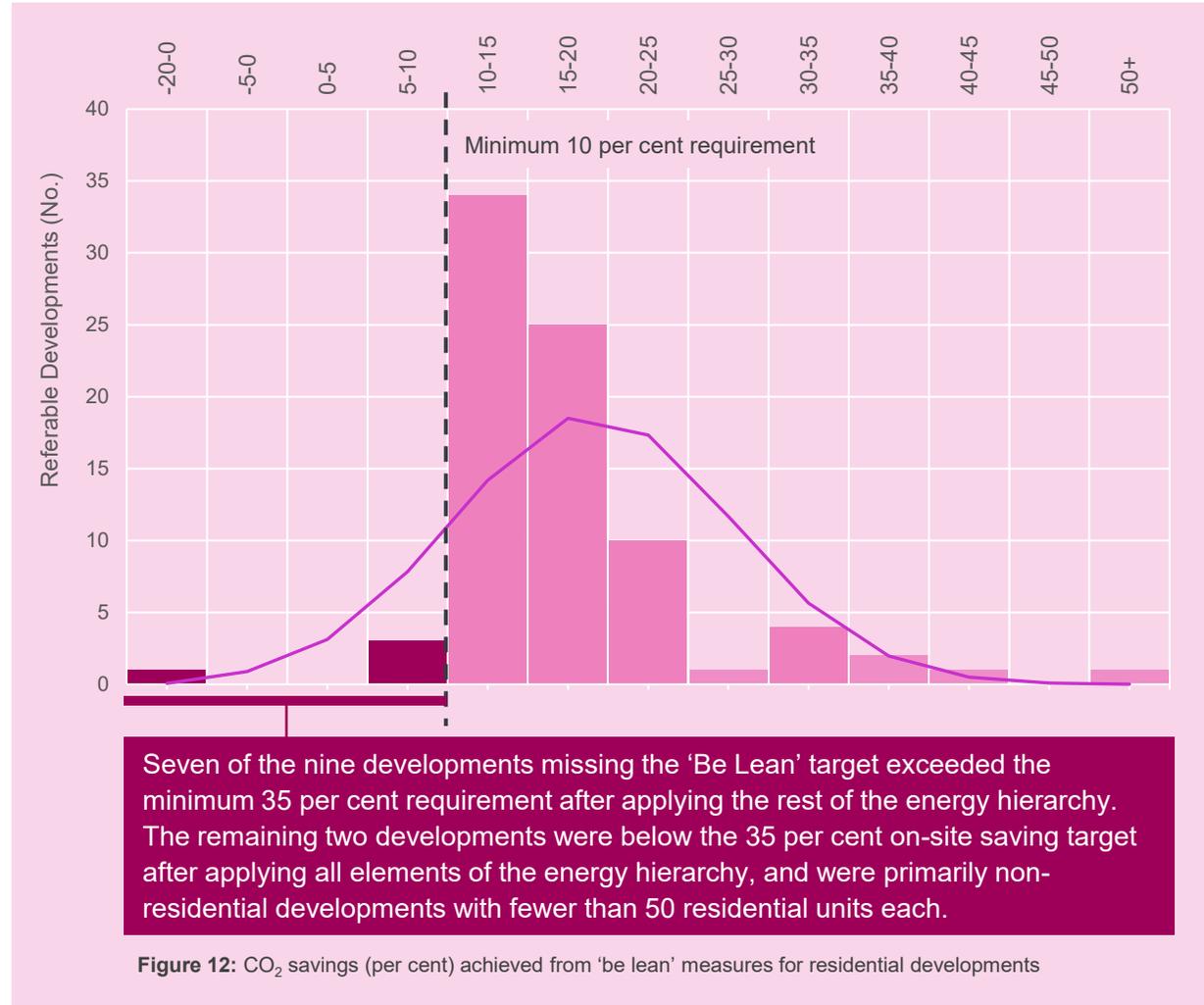
On average, applicants reported a **16.5 per cent*** reduction in CO₂ emissions from energy efficiency measures alone, exceeding the 10 per cent energy efficiency target.



Have maintained a **year-on-year increase in energy efficiency savings over more than five years.**

95 per cent of residential developments were able to meet or exceed the 10 per cent minimum energy efficiency target.

The Mayor's ambitious energy efficiency target influences applicants' design decisions, reducing energy demand, CO₂ emissions and energy bills



*average of the percentage improvements reported across developments and is not weighted by development size.

'Be Lean': Non-residential

Planning applications for non-residential developments in 2024:

 Secured on average a **15.8 per cent*** carbon reduction from energy efficiency measures alone, a decrease from 16.0 per cent in 2023.

Energy efficiency savings achieved have been impacted by the adoption of Part L 2021. It's noted that developments find it harder to meet this target due to the considerable improvement of the notional baseline building with ASHP and better lighting performance.

63.2 per cent of non-residential developments met or surpassed the energy efficiency target, a 6.2 per cent decrease from 2023

There were five cases where the non-residential element did not reach the Building Regulations baseline through 'Be Lean' measures alone. All of these were able to achieve the 35 per cent on-site saving after 'Be Clean' and 'Be Green' savings were applied.

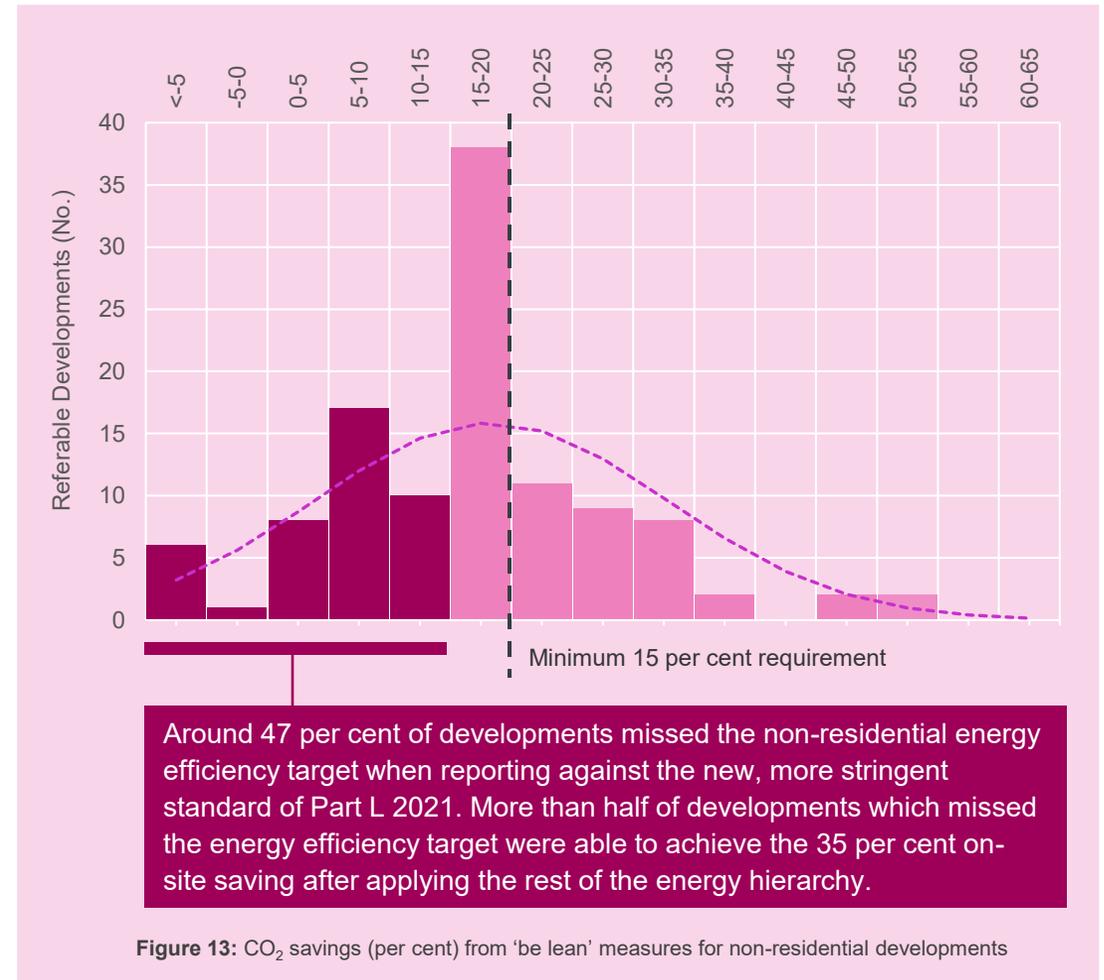


Figure 13: CO₂ savings (per cent) from 'be lean' measures for non-residential developments

*average of the percentage improvements reported across developments and is not weighted by development size.

Overheating

The Mayor's cooling hierarchy ([London Plan](#) Policy SI 4) requires applicants to mitigate overheating risks using passive measures. **External shading, such as shutters or blinds, is strongly encouraged**, as is solar control glazing, which can significantly reduce solar heat gains while maintaining natural light.

Active cooling, such as air conditioning, is discouraged in residential developments. Applicants must follow the cooling hierarchy and prioritise passive design solutions, such as external shading.

G-values

A g-value is a measure of solar heat gain through a window. For residential developments approved in 2024, **an average g-value of 0.42 was proposed**, a third lower than the Part L notional value of 0.63, demonstrating a good improvement on national regulations when specifically considering overheating risk.

G-values often vary with orientation. For non-residential developments, cooling demands should be reduced below the figure calculated for the Part L notional building. Where reported, **79 of the 106 applications with a non-residential element managed to reduce their actual active cooling demand** below that of the notional building.

Tools for assessing overheating risk

To demonstrate the mitigation of overheating risk, applicants are required to undertake a **CIBSE Technical Memorandum TM59 compliant dynamic overheating assessment**. Non-residential developments with natural ventilation must use TM52.



98 (75 residential, 23 non-residential) submitted a TM59 or TM52 dynamic overheating assessment. This represents 78 per cent of applications in 2024 undertaking overheating assessments, a 2 per cent increase on 2023.



88 applications showed compliance (33 more than last year) with the TM49 Design Summer Year (DSY) 1 weather file - representing summer conditions occurring every other year.

Preparing for higher temperatures in the future

The GLA **Energy Assessment Guidance 2022 requires a more rigorous analysis**, to include modelling under 2020 DSY 1, DSY 2 and DSY 3 weather files, in response to rising temperatures as a result of climate change. 7 per cent of submitted overheating assessments illustrate compliance with DSY 2 and DSY 3. One third of developments demonstrating compliance with DSY 2 and DSY 3 are able to do so without the use of active cooling.

Cooling proposals

Residential: Only one residential development and seven mixed-use developments proposed active cooling. This represents 9.8 per cent of developments with a residential component, a decrease from 11.9 per cent in 2023. While active cooling is discouraged, it may be needed where site constraints prevent passive measures from reducing overheating risk sufficiently.

Non-residential: 41 non-residential developments and 63 mixed-use developments proposed active cooling (88.9 per cent of developments with a non-residential element, an increase from 80 per cent in 2023).

There are an increasing number of developments which are proposing use of peak lopping, MVHR tempering, trim boost to mitigate overheating, in lieu of separate active cooling systems. There were **42 developments approved in 2024 which proposed these alternative solutions.**

The **total proposed cooling** reported was **30.1 GWh/yr** - The total proposed cooling has increased significantly compared to 2023, however is still a decrease from 2022. There are four applications which have a cooling load in excess of 1,000 MWh/yr, which are all data centres. These represent 89 per cent of the total commercial cooling consumption.



Figure 14: Number of developments proposing cooling by development type

N.B: The results are from the analysis of the developments for which there is a confirmed cooling load. A further 13.4 per cent of residential developments and 6.8 per cent of non-residential developments, are expected to have active cooling installed, however, they do not have an associated load confirmed.

The cooling hierarchy prioritises passive design measures to minimise reliance on energy intensive active cooling measures. The proportion of overheating assessments increased in 2024. For developments that propose active cooling, the demand calculated using the National Calculation Methodology (NCM) should be lower than the notional estimate.

The total proposed cooling reported in 2024 (13.30 kWh/m²/yr) increased compared to 2023 (5.4 kWh/m²/yr), largely due to a significant increase for specific non-residential elements.

Case study 1: London Chest Hospital

Demolition of an existing buildings in the London Borough of Tower Hamlets, to redevelop the site and provide 274 residential dwellings (C3) and circa 125 m² worth of flexible commercial and community space (E(b)/F2(b)) within a converted and extended hospital building with 5 new buildings ranging from 5-9 storeys. The total proposed floorspace is 26,491 m².

Highlights include:



Energy efficiency: A low wall u-value of **0.15 W/m²K** for the new build element.



Refurbishment: The development will include refurbishing existing buildings with improved energy efficiency similar to new build standards.



Communal heat network: An ambient loop network **achieving low distribution losses** and delivering low carbon heating.



Photo credits: Allford Hall Monaghan Morris Ltd

Be Lean

The applicant is proposing enhanced u-values for the new build element. The refurbished element also achieves a good improvement over the GLA notional specification for existing buildings** with external wall achieving minimum new build standard. The proposed lighting is also high efficiency, with a proposed lighting efficacy of 110 lumens/circuit Watt.

Be Clean

The communal heating system will future-proof the development for connection to a district heat network.

Be Green

Air source heat pumps will provide space heating and hot water via the ambient loop network. A **124 kWp** PV array is proposed that is maximised across all roof spaces.

Hierarchy Stage	Emissions* (tCO ₂)	Saving
Baseline	280.4	-
'Be Lean'	210.9	25%
'Be Clean'	210.9	N/A
'Be Green'	53.6	81%

*Reported against Part L 2021 using SAP 10.2 emissions factors

** As outlined in Appendix 3 of the GLA's energy assessment guidance document

Case study 2: Former Gasworks Printworks

Planning permission has been sought for a project in the London borough of Newham seeking to re-develop land to deliver a 245 unit residential development (C3) with associated residents' facilities forming around c.150 m² worth of non-domestic space. Highlights include:

-  **Energy efficiency: Triple glazed windows** achieving a u-value of 0.85 W/m²K
-  **All-electric development:** A communal heat network supplied by air source heat pumps.
-  **Potential DH connection:** Planning condition to explore a **potential connection to the Queen Elizabeth Olympic Park Heat Network**



Photo credits: Jo Cowen Architects

Be Lean

The applicant is proposing a well-designed fabric with triple glazing in the residential elements achieving an excellent glazing u-value of 0.85 W/m²K. The g-value has also been optimised in the design with a g-value of 0.4 across the development and all south facing windows achieving a g-value of 0.35.

Be Clean

The communal heating system will future-proof the development for connection to a district heat network.

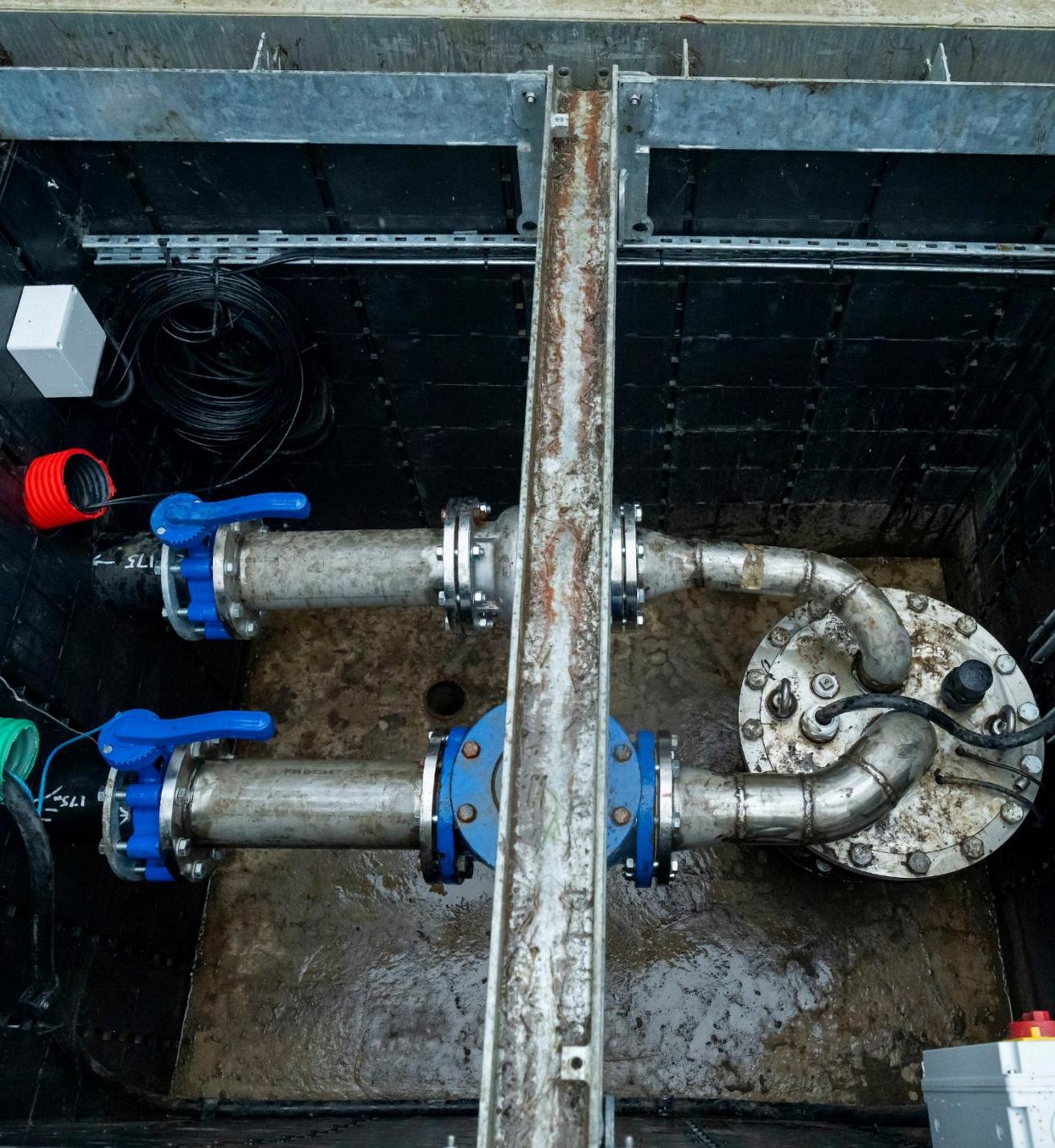
Be Green

Site-wide ASHP-led heat network proposed. PV maximised with a **109 kWp** array.

Hierarchy Stage	Emissions* (tCO ₂)	Saving
Baseline	208.1	-
'Be Lean'	179.3	14%
'Be Clean'	75.4	50%
'Be Green'	83.2	-4%**

*Reported against Part L 2021 using SAP 10.2 emissions factors

**On-site heat pump savings have been misallocated. Figures are reported as submitted by applicants.



‘Be clean’

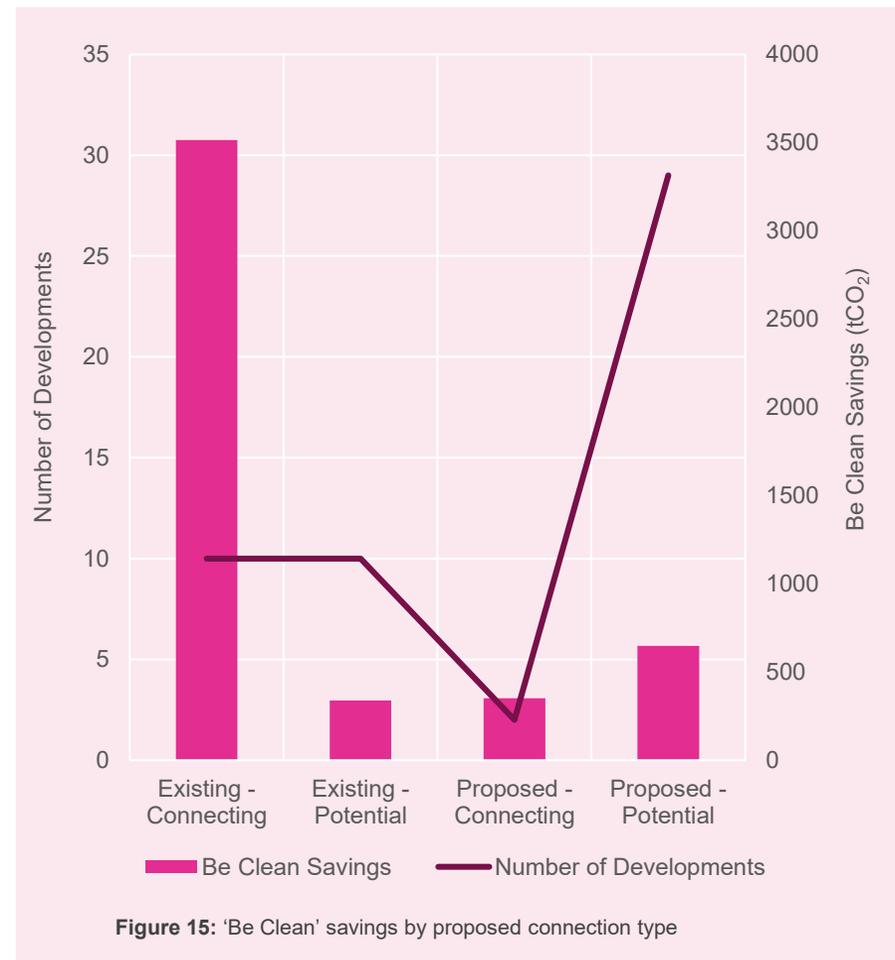
'Be Clean'

The 'Be Clean' element of the energy hierarchy requires that applicants exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly as part of a system level solution to energy supply.

The proportion of developments connecting to existing district heat networks in 2024 was 8 per cent (ten developments), the same number of developments in 2023 (ten developments). Several developments identified area-wide **heat networks for potential connection** in the submitted energy strategies with corresponding 'Be Clean' savings. There were at least two developments which identified **a future planned network for which the development's connection is confirmed**.

Once again there was **no new on-site combined heat and power (CHP) capacity proposed in 2024**, as in both 2022 and 2023. This continues the trend which has seen the installation of on-site CHP installations decrease rapidly over recent years as low carbon heat sources have been proposed usually with accompanying heat pumps.

'Be Clean' represents 9.3 per cent of carbon emissions savings from developments approved in 2024, with 8 per cent of developments proposing connections to existing District Heat Networks (DHNs)



District heating network connections

District heat networks (DHNs) have an important role to play in London’s path to net zero. They offer **efficient, low carbon heating** in high density areas, can **make use of recoverable waste heat sources** and **provide resilience and flexibility** in the energy system. Applicants must refer to the [London Heat Map](#) and consult with heat network operators and/or the Local Planning Authority to identify if their site is near an existing or planned network. If they are, **the applicant is expected to prioritise connection** and connect either on completion or when the network arrives at the site boundary.

If the heat network is planned but not yet in existence, **applicants must design a communal on-site solution which is future-proofed for later connection**. In this way, heat networks can serve a growing number of buildings in an area with low or zero carbon heat and help manage demand to protect capacity on the local electricity network. The GLA also works with heat network operators to ensure that they are developing and implementing decarbonisation strategies for their existing DHNs.

5,915 dwellings across ten developments are expected to connect to existing DHNs, a decrease from 6,372 dwellings across ten developments in 2023. Connection numbers depend on the proximity of development to DHNs. For developments that are not within the vicinity of an existing DHN, 82.6 per cent will be supplied by communal networks, future-proofed for DHN connection when available.

Table 5: Number of developments and dwellings connecting to existing and proposed DHNs

Connection type	Developments	Dwellings	Name of District Heat Network
Existing DHN (immediate connection)	10	5,915	SELCHP, Queen Elizabeth Olympic Park Heat Network, Kidbrooke Sleaving, London Dock masterplan, SQP Masterplan, West Hendon Masterplan Network, Queen Elizabeth Olympic Park (Extension)
Existing DHN (later connection)	10	1,281	Whitehall, Citigen, SELCHP, Greenwich Peninsula District Heat Network, Queen Elizabeth Olympic Park Heat Network, Queen Elizabeth Olympic Park (Extension), Springfield Hospital Masterplan CHP, Metropolitan
Future connection to proposed DHN	31	6,819	Haringey, Woodberry Down Masterplan

Communal heat networks

A communal heat network connects individual dwellings in a building and buildings on a site to a centralised site-wide heating system, which is more efficient for managing heat demand. Developments in Heat Network Priority Areas are expected to have communal networks to enable their connection to a DHN in the future.

In 2024, a total of **22,538 dwellings** are expected to connect to a communal heat network or an area-wide DHN (**82.9 per cent of all dwellings**, a decrease from 91.3 per cent in 2023). Figure 16 shows the development of communal heat networks in London since 2011.

2024 saw a continued shift to a low carbon heat supply for new development across London, with **102 communal and site-wide heat networks supplied by heat pumps**. This is due to an increase in the number of developments delivering other solutions, including phase-by-phase networks or individual systems. See 'Be Green' section for further details about the number of heat pumps proposed.

The London Plan is driving the development of low carbon heat networks and the decarbonisation of existing networks, including those supplied by heat pumps utilising recoverable low carbon heat sources

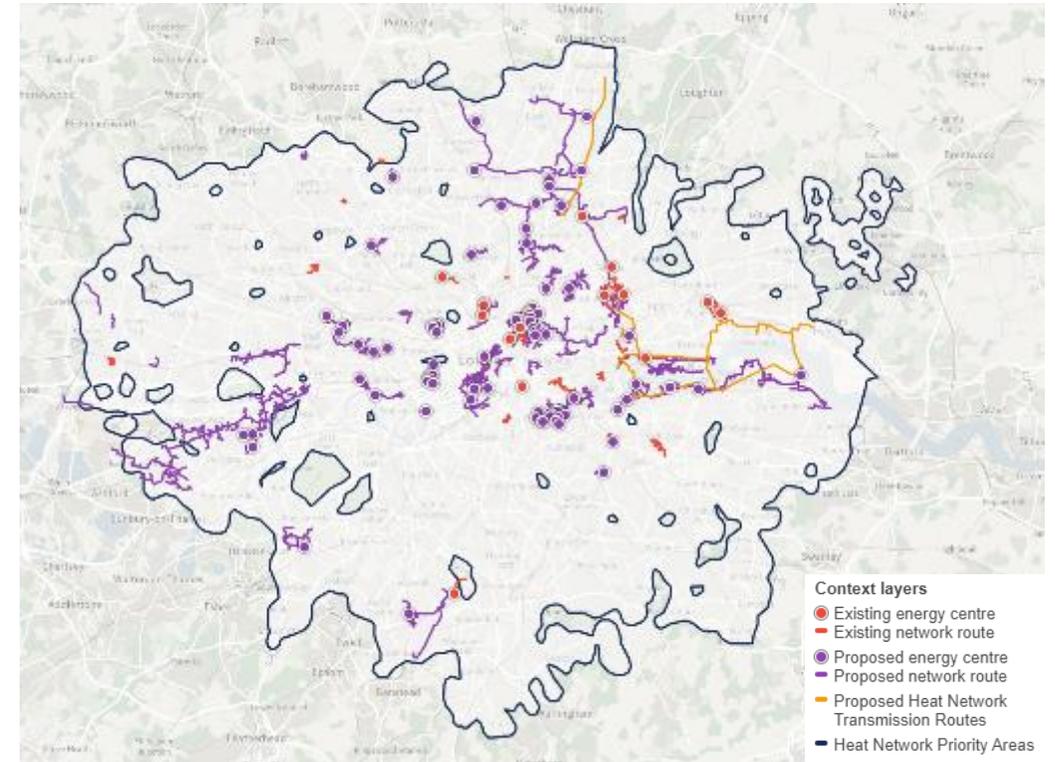


Figure 16: [London Heat Map](#) illustrating existing and proposed networks across London. The London Heat Map is a tool designed to help identify areas of high heat demand, opportunities for new and expanded district heat networks and to plot potential heat networks and assess their financial feasibility.



‘Be green’

Solar energy

In 2024, **94 per cent of developments (117 developments) proposed new solar PV capacity**, an increase from 92 per cent in 2023. There was a corresponding drop in PV capacity proposed in 2024 **amounting to 10.7 MWp** (a decrease from 13.8 MWp in 2023). This is estimated to **equate to an investment of £16.1 million**.

New installations represent an area of **59,448 m²** (a decrease from 70,008 m² in 2023), with an **average area of 508 m²**. Due to the type of applications approved in 2024, the new solar capacity proposed has also decreased. The average PV array area has also decreased, which could be impacted by a number of factors, for example, massing and density.

The **total area of solar PV relative to development area has decreased** from 2023, in line with policy which requires applicants to maximise PV provision (16.5 m² PV/1,000 m² compared with 22.0 m² PV/1,000 m²).

Outer London planning authorities continue to lead by total PV area proposed. Hounslow proposed the highest area of solar PV and Newham proposed the second highest area in 2024, with new arrays totaling nearly 10,000 m² expected to be installed between the two boroughs.

The area of solar PV panel proposed in 2024 would cover twelve Wembley football pitches

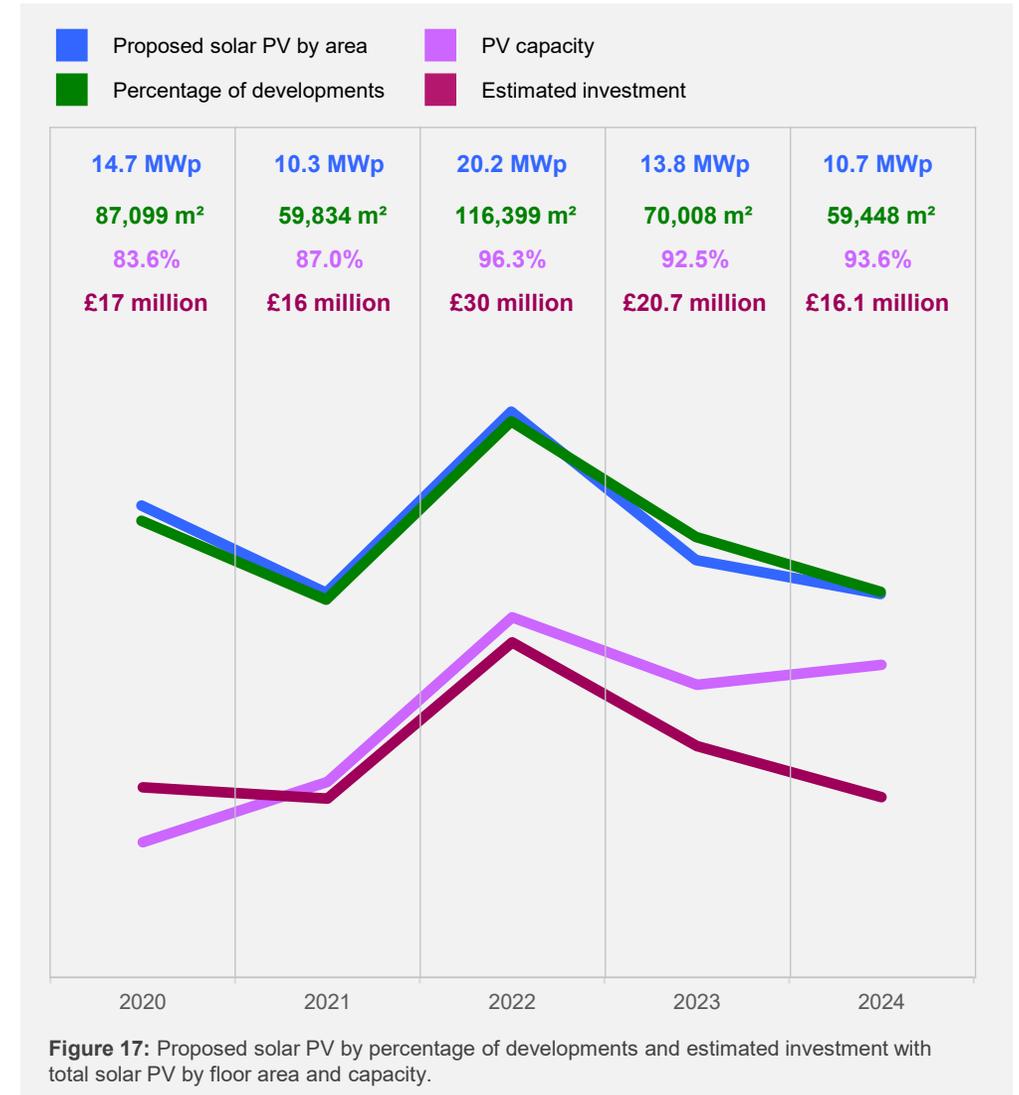


Figure 17: Proposed solar PV by percentage of developments and estimated investment with total solar PV by floor area and capacity.

Heat pumps

In 2024, 113 developments (90 per cent of all developments) committed to installing a heat pump, compared with 78 (84 per cent) in 2023. The increase in the proportion of developments proposing heat pumps can be attributed to an increase in proposing ambient loop systems.

For 106 developments, applicants proposed to install heat pumps (including those used for ambient loop heat networks). 4,248 dwellings (21 per cent of dwellings) are proposed to be serviced by a heat pump with an ambient loop heat network installation.

102 of the 113 installations proposed are large centralised heat pumps supplying communal and site-wide heat networks. Large scale heat pumps are well suited to serve mixed-use developments through a communal heat network from a centralised energy centre.

In total, 20,712 dwellings are proposed to be served by heat pumps (compared to 20,712 in 2023). Approximately 1,756,000 m² of non-residential floor area is proposed to be served by heat pumps (compared to approximately 1,000,000 m² in 2023).

The London Plan is accelerating the transition from gas to heat pump-led heating solutions

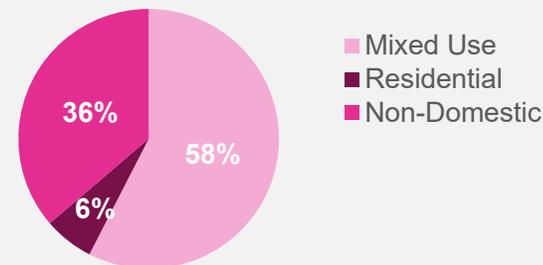


Figure 18: Proportion of heat pump installations by development type

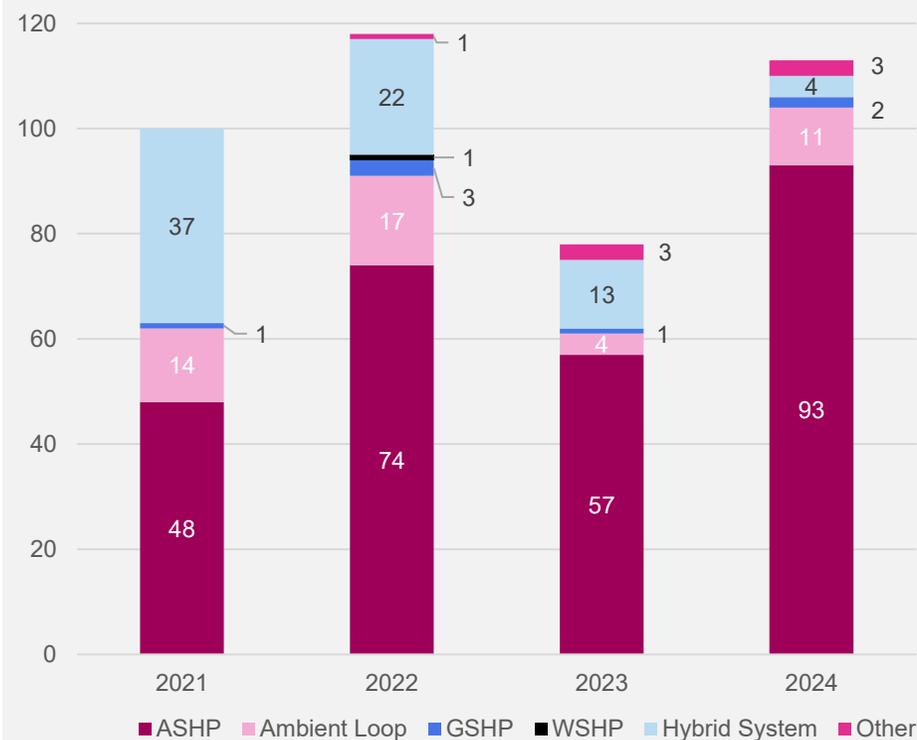


Figure 19: Number of developments proposing heat pumps by type

Case study 3: 17-19 Thames Road

This is a mixed-used development in Barking with 242 residential units (C3) of mixed sizes. It includes the redevelopment and delivery of circa 2,400 m² of industrial floorspace (B2, and/or B8). Highlights include:

-  **All-electric development:** A communal heat network supplied by **air source heat pumps (ASHP)**, which allows the development to connect to a district heat network in the future.
-  **PV Maximisation:** Photovoltaics maximised across all available roof space generating up to **81,000 kWh per year**.
-  **Water efficiency:** Be lean enhancement through **Waste-Water Heat Recovery (WWHR)** proposed in residential units.



Photo credits: Stephen Davy Peter Smith Architects

Be Lean

The development achieves be lean savings through fabric design with all proposed u-values aligned to LETI guidance. For example, the roof achieves a u-value of 0.1 W/m²K, and **triple glazing**, with a u-value of 1.0 W/m²K, used throughout. **Waste-Water Heat Recovery** has also been utilised to reduce domestic hot water loads.

Be Clean

The communal heating system will **future-proof** the development for connection to a district heat network.

Be Green

A communal **ASHP** system is proposed serving residential units. PV has been maximised across all roof spaces with an array of 84 kWp (348 m²)

Hierarchy Stage	Emissions* (tCO ₂)	Saving
Baseline	360.6	-
'Be Lean'	323.9	10%
'Be Clean'	323.9	N/A
'Be Green'	77.6	78%

*Reported against Part L 2021 using SAP 10.2 emissions factors

Case study 4: Hill Street

Located in the City of London and a GIA of 57,072 m², Hill House involves the partial demolition of existing building, retention of existing basement, piles/foundations and erection of a mixed-use office building comprising two basement levels, lower, upper and mezzanine ground floors, plus 18 upper storeys for office spaces, gym/auditorium, flexible office, café/retail, re-provision of existing library, flexible library/office and restaurant, improved public realm, hard and soft landscaping and associated enabling works. Highlights include:

-  58 per cent of the existing structure being retained, including all of the substructure.
-  The development performs favourably against the benchmarks for A1-A5 for a development of this nature.



Photo credits: APT

Module A

Summary of carbon reduction strategies implemented:

- Repurposed steel columns – a saving of 11 kgCO₂e/m² GIA
- Exposed ceilings – a saving of 21.5 kgCO₂e/m² GIA)
- Reuse of raised access floor – a saving of 4 kgCO₂e/m² GIA
- Existing façade reuse – a saving of 1 kgCO₂e/m² GIA

Summary of future reduction strategies being explored:

- Ultra low emissions raised access floors, including re-use of existing – a saving of 27 kgCO₂e/m² GIA
- Low embodied carbon rebar – a saving of 16 kgCO₂e/m² GIA

Module B6 & B7

- Operational energy use (B6) has been calculated based in Part L 2021* for both regulated and unregulated energy use
- Due to the retention and re-use strategy module B-C emissions slightly exceed the GLA benchmark.

Module B1-B5 & C

- Refrigerants with low GWP such as R32 used
- Replacement cycles in line with the RICS methodology

	Module A (kgCO ₂ e/ m ² GIA)	Modules B1-B5 & C (kgCO ₂ e/ m ² GIA)	Modules A-C (kgCO ₂ e/ m ² GIA)
Reported CO ₂ emissions	645	376	945
WLC benchmarks	<850	<350	<1,200
Aspirational benchmarks	<500	<300	<800

*Reported against Part L 2021 using SAP 10.2 emissions factors



Conclusions

2024 Conclusions

New developments in London are continuing to achieve far higher carbon savings than required by national policy. In 2024, approved developments achieved an overall 56.2 per cent carbon reduction improvement on respective National Building Regulations.

The Mayor's net zero carbon target is driving greater on-site reductions with 62 per cent of all developments reporting a saving of 50 per cent or more over the relevant Building Regulations baseline.

Carbon offsetting continues to play a role in achieving the London Plan net zero target, with an estimated £76 million potentially available for collection in 2024 by LPAs.

Energy efficiency improvements achieved an overall 16.9 per cent reduction saving 9,961 tCO₂, equivalent to adding loft insulation to over 16,000 homes. The average reduction from both residential and non-residential development exceeded their respective targets.

The London Plan is driving district heat network development and decarbonisation. 5,915 dwellings are expected to connect to existing networks with decarbonisation plans. 82.6 per cent of developments will be future-proofed to enable future connection to a DHN. **No new on-site CHP capacity was proposed in 2024.** for the third year in a row.

Solar PV continues to be prioritised in London, with capacity in 2024 totalling 10.7 MWp from 59,448 m² - equivalent to over 12 Wembley football pitches. 94 per cent of developments proposed PV, an increase from 2023, however total area of solar PV per 1,000 m² GIA decreased in 2024 from 22.0 vs 16.5 m² PV/1,000 m².

London Plan policies are promoting the uptake of heat pumps. 113 developments with up to 20,712 dwellings and 1,756,045 m² of non-residential floor area committed to being served by heat pumps, an increase from over 20,234 dwellings and 1,035,994 m² in 2023.

To demonstrate the mitigation of overheating risk, 78 per cent of developments submitted a dynamic overheating assessment, an increase from 2023. The majority of developments were able to meet requirements without the need for full active cooling.

Performance of developments is being reported with respect to targets for space heat demand and energy use intensity - 103 developments included reporting of space heat demand and 104 developments included reporting of energy use intensity.

On average, developments were able to improve their upfront carbon performance beyond the WLC benchmarks 88 per cent of developments reported WLC emissions.



Appendices

Appendix – Total Part L carbon savings secured

Cumulative total Part L carbon emissions and savings (number of applications 124)

Stages of the energy hierarchy	Regulated emissions	Regulated emissions reduction	Cumulative regulated emissions reductions relative to Part L of Building Regulations	
	(tCO ₂ per year)	(tCO ₂ per year)	(tCO ₂ per year)	(percentage improvement)
Building Regulations Baseline	58,921	-	-	-
After 'be lean' (energy efficiency)	48,959	9,961	9,961	16.9%
After 'be clean' (heat network connections)	43,508	5,451	15,412	26.2%
After 'be green' (renewable energy)	25,816	17,692	33,105	56.2%

Table 6: Total cumulative carbon emissions and savings after each stage of the energy hierarchy

Appendix – Part L 2013 Carbon savings secured

Cumulative Part L 2013 carbon emissions and savings (Number of applications 41)

Stages of the energy hierarchy	Regulated emissions	Regulated emissions reduction	Cumulative regulated emissions reductions relative to Part L of Building Regulations	
	(tCO ₂ per year)	(tCO ₂ per year)	(tCO ₂ per year)	(percentage improvement)
Building Regulations Baseline	18,754	-	-	-
After 'be lean' (energy efficiency)	15,553	3,200	3,200	17.1%
After 'be clean' (heat network connections)	12,217	3,337	6,537	34.9%
After 'be green' (renewable energy)	7,172	5,045	11,582	61.8%

Table 7: Part L 2013 cumulative carbon emissions and savings after each stage of the energy hierarchy

Appendix – Part L 2021 Carbon savings secured

Cumulative Part L 2021 carbon emissions and savings (Number of applications 83)

Stages of the energy hierarchy	Regulated emissions	Regulated emissions reduction	Cumulative regulated emissions reductions relative to Part L of Building Regulations	
	(tCO ₂ per year)	(tCO ₂ per year)	(tCO ₂ per year)	(percentage improvement)
Building Regulations Baseline	40,167	-	-	-
After 'be lean' (energy efficiency)	33,406	6,761	6,761	16.8%
After 'be clean' (heat network connections)	31,292	2,114	8,875	221.1%
After 'be green' (renewable energy)	18,644	12,648	21,523	53.6%

Table 8: Part L 2021 cumulative carbon emissions and savings after each stage of the energy hierarchy

Appendix – WLC Performance

Residential	Module A* (kgCO ₂ e/m ² GIA)	Modules B1-B5 & C (kgCO ₂ e/m ² GIA)	Modules A-C** (kgCO ₂ e/m ² GIA)
Reported CO ₂ emissions	673	385	1,036
WLC benchmarks	<850	<350	<1,200
Aspirational WLC benchmarks	<500	<300	<800

Table 9: Whole life-cycle carbon emissions and savings against GLA benchmarks by typology – Residential

Office	Module A* (kgCO ₂ e/m ² GIA)	Modules B1-B5 & C (kgCO ₂ e/m ² GIA)	Modules A-C** (kgCO ₂ e/m ² GIA)
Reported CO ₂ emissions	734	489	1,210
WLC benchmarks	<950	<450	<1,400
Aspirational WLC benchmarks	<600	<370	<970

Table 10: Whole life-cycle carbon emissions and savings against GLA benchmarks by typology – Office

Retail	Module A* (kgCO ₂ e/m ² GIA)	Modules B1-B5 & C (kgCO ₂ e/m ² GIA)	Modules A-C** (kgCO ₂ e/m ² GIA)
Reported CO ₂ emissions	573	561	1,132
WLC benchmarks	<850	<200	<1,050
Aspirational WLC benchmarks	<550	<140	<690

Table 11: Whole life-cycle carbon emissions and savings against GLA benchmarks by typology – Retail

Schools, Universities etc.	Module A* (kgCO ₂ e/m ² GIA)	Modules B1-B5 & C (kgCO ₂ e/m ² GIA)	Modules A-C** (kgCO ₂ e/m ² GIA)
Reported CO ₂ emissions	544	353	874
WLC benchmarks	<750	<250	<1,000
Aspirational WLC benchmarks	<500	<175	<675

Table 12: Whole life-cycle carbon emissions and savings against GLA benchmarks by typology – Schools, Universities etc.

Appendix – Results since 2016

Progress in the outcomes from London Plan energy policies since 2016									
Key outcome	2016	2017	2018	2019	2020	2021	2022	2023*	2024*
Number of applications with an energy element	142	129	130	108	140	138	134	93	125
Percentage improvement over Part L (%)	35.7	40.5	36.9	40.6	46.2	48.6	52.9	57.4	56.2
Savings from energy efficiency measures over Part L (%)	7.4	15.8	13.5	16.7	19.8	17.3	17.7	15.3	16.9
Number of developments proposing heat pumps	42	41	57	43	57	100	118	78	113
Proportion of developments proposing solar PV (%)	73.2	77.5	76.9	77.8	83.6	87.0	96.3	92	94
Estimated investment in solar PV (£m)	7.6	4	6.9	7.7	17	16	30	21	16.1
Proposed PV capacity (MWp)	6.0	3.5	5.5	6.7	14.7	10.3	20.2	13.8	10.7
Proposed PV area (m ²)	62,736	34,691	55,027	39,599	87,099	59,834	116,399	70,008	59,448

Table 13: Key outcomes from London Plan energy policies since 2016

* Following publication of Part L 2021 in June 2022, applications approved in 2023 onwards include both those reporting against Part L 2013 and Part L 2021.