



 The TfL Property Company

# Net Zero Carbon Roadmap

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December 2023

Net Zero Carbon Roadmap

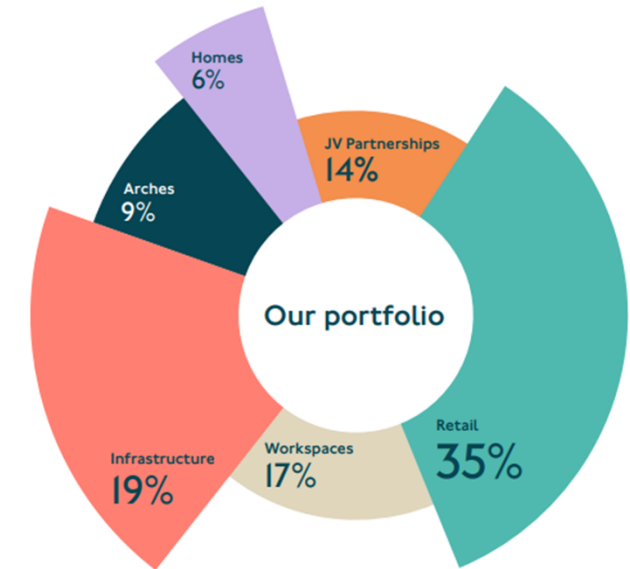


# Introducing Places for London

For 160 years, Transport for London has kept London moving. It has been one of the city's biggest innovators; an inventive creator and creative designer.

Places for London, TfL's new and financially independent property company, is its latest innovation. We are here to unlock more of the potential of TfL land, creating a greener, kinder and more connected London for everyone.

With 5,500+ acres, stretching across almost every borough, TfL is already one of London's largest landowners. At Places for London, we're on a mission to help it become one of the most impactful too.







## Net Zero Carbon Roadmap

Places for London is proud to present this major update to our Roadmap.

We have spent considerable time establishing our first ever carbon emissions baseline, enabling us to start testing potential targets that can benefit our customers, London and the wider UK.

Like many of our peers, we are starting to understand the enormity of the data-gathering needed for such an important task. We have arrived at our baseline using a combination of measured data for Scope 1 & 2, and estimation for Scope 3 (which makes up around 95% of our total emissions). Our Scope 3 is 98% customer utility emissions, with this based on a combination of the Energy Performance Certificates of our estate that were available in 2021, and best practices in estimation by our consultant teams.

Of c.3000 properties within Greater London, Places have c.800 railway arches and c.700 tenancies in an underground station – many of which are Listed and/or have direct interfaces with the operational railway. This gives a somewhat unique asset base, which makes direct comparison with our peers and other building types not straightforward, and we are aware of the shortfalls in the quality of our data and estimations.

One of our key actions from the Roadmap is to obtain better data from our customers and use this information to improve our baseline, and therefore iteratively update our Commitments.

December 2023

## Places for London Definitions of Net Zero

The term Net Zero is often used in the built environment industry, but there is little clarity in what this practically means. This document clarifies what the term Net Zero Carbon means for Places for London.

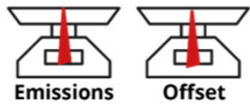
Buildings can't be 'absolute zero carbon' as they require the use of materials and energy to build, use and maintain them.

Buildings are 'carbon neutral' if you carry on without any changes, and then compensate for the emissions through offsets. However, to limit global warming to a temperature rise of no more than 1.5°C, emissions must be reduced. There is a finite amount of offsets, so a different approach is needed. This approach focuses on the physical attributes of the property.

A '1.5°C aligned' asset is one which meets Energy Use Intensity (EUI)\* limits and embodied carbon limits, so that the carbon emissions of the building are aligned with a target of not more than a 1.5°C temperature rise. The EUI limits are set based on carbon budgets for the property sector as a whole, and an updated set of these limits are currently being developed by the UK Net Zero Carbon Buildings Standard.

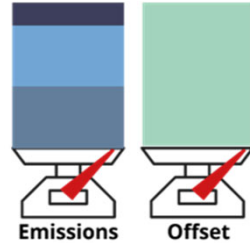
A 'Net Zero (whole life) Carbon' property is one that's energy intensity is aligned with the limits associated with an overall 1.5 degree temperature rise, and offsets the remaining carbon emissions.

# Places for London Definitions of Net Zero



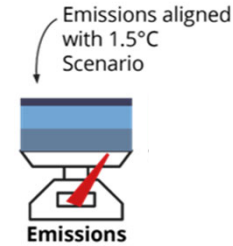
Absolute Zero Carbon

Eliminating all carbon emissions without the use of offsets



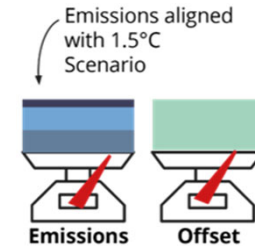
Carbon Neutral

All carbon emissions are balanced with offsets based on carbon removals



1.5°C Aligned

A 1.5°C aligned asset is one which meets EUI\* limits and embodied carbon limits, such that the carbon emissions are aligned with a climate target of not more than 1.5°C temperature rise.

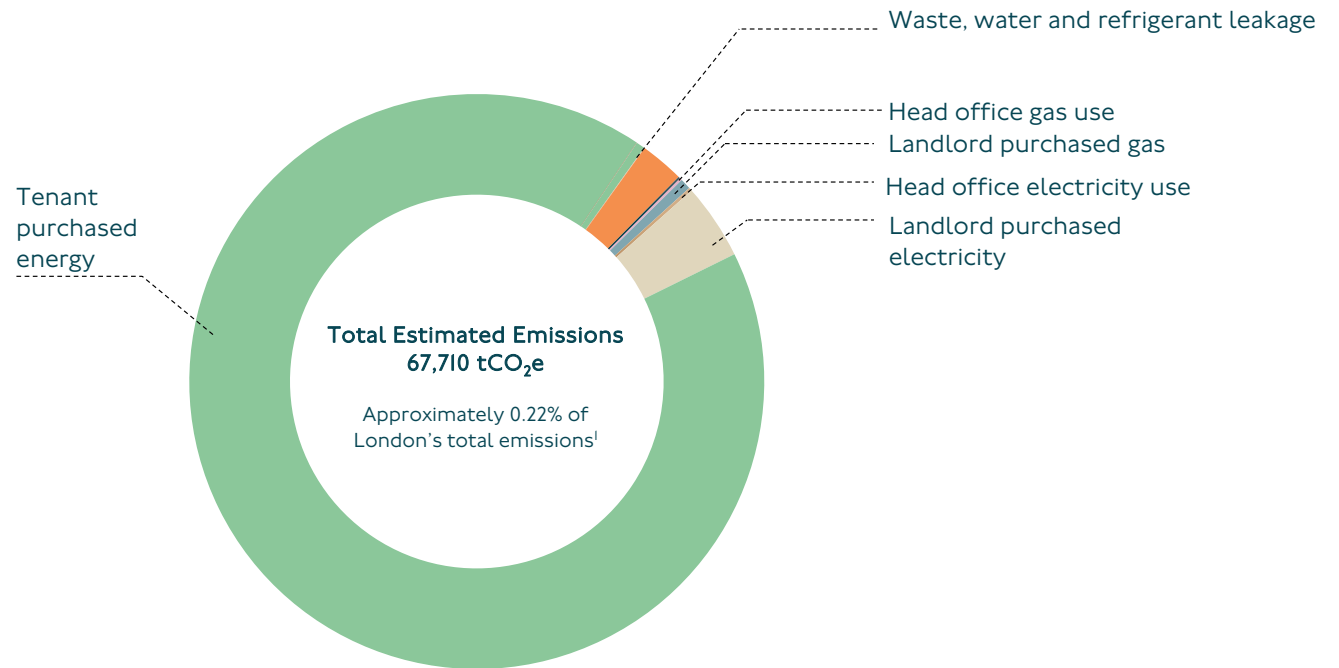
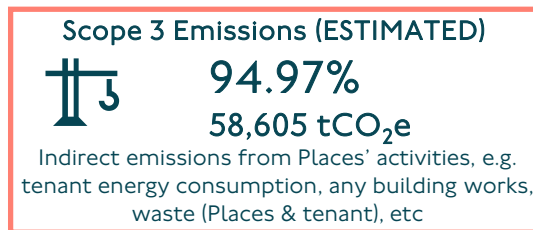
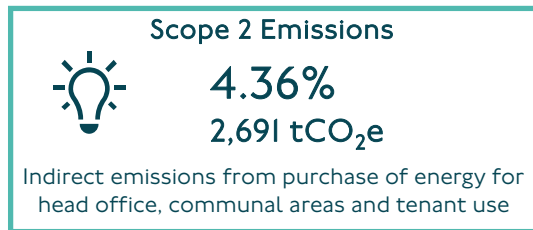
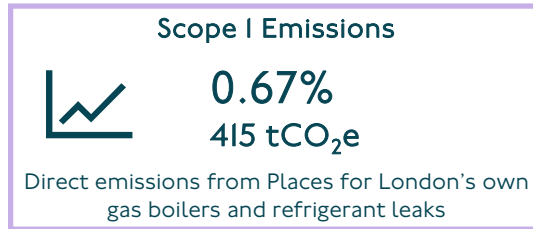


Net Zero (Whole Life) Carbon

A 'Net Zero (whole life) Carbon' Asset is one where the sum total of all carbon emissions, both operational and embodied, over an asset's life cycle are minimised to meet EUI limits and embodied carbon limits, and with residual 'offset', thereby equalling zero

*\*Energy Use Intensity (EUI) = The energy use in a building per m2 over a year, including regulated (i.e. domestic hot water, heating & cooling, lighting, and ventilation) and unregulated loads (e.g. lifts, fridges, computers). It is a measure of the building's performance and therefore includes all energy supplied to the building, whether from the grid or on-site systems.*

# Places for London Carbon Footprint 2021



<sup>1</sup> Source: GLA data for 2019 as 2021 not available at time of publication. <https://data.london.gov.uk/dataset/leggi>

## **An Explanation of the above Figures.....**

As highlighted earlier, our emissions baseline has been produced by estimating energy consumption for our existing property estate, by extrapolation of EPC data as at the end of 2021. This has given us a starting point to build from. For our Property Development programme, no assets had been completed by 2021, so this is not part of the 2021 carbon footprint.

For our current Corporate Head Office, emissions are based on actual utility and waste data, and an estimate of refrigerant leakage based on best practice guidelines.

Over the coming years, the baseline will be refined as more accurate property information is gathered and confirmed, and metered energy data is received. This will replace the estimated data in the baseline modelling to inform and refine the Energy Use Intensity (EUI) values which have been extrapolated across the estate.

## **An Explanation of the below Figures.....**

The following page demonstrates potential targets that we will test in order to stretch aspirational yet achievable commitments. With the above baseline being so heavily estimated, we are working to understand how attainable these targets are. In tandem with improving our data and baseline, we will also carry out some Net Zero Carbon retrofit demonstrator projects to understand what is possible technically, and economically, for Places for London.





# Our emerging commitments

By **2030** achieving Net Zero Carbon for scope 1 & 2 emissions in line with TfL and GLA goals

By **2050** achieving Net Zero Carbon across the whole portfolio in line with national targets

Below and right are potential Net Zero commitments which will enable us to achieve our overall targets. We will test the feasibility of these. These cover all scopes of emissions; Property Development, Tenanted Estate and Corporate emissions.

### Corporate Emissions (Head Office)

-  Determining a retrofit Plan in 2024
-  Net Zero Corporate Head Office emissions by 2030 (scopes 1 and 2)







### Property Development

-  No Fossil fuels burnt onsite for buildings currently being planned
-  70 kWh/m<sup>2</sup>/yr
-  110 kWh/m<sup>2</sup>/yr
-  35 kWh/m<sup>2</sup>/yr
-  55 kWh/m<sup>2</sup>/yr
-  650 kgCO<sub>2</sub>/m<sup>2</sup>
-  750 kgCO<sub>2</sub>/m<sup>2</sup>
-  300 kgCO<sub>2</sub>/m<sup>2</sup>
-  350 kgCO<sub>2</sub>/m<sup>2</sup>

Good Practice and Leading Practice Residential and commercial energy limit for buildings with PC from 2030

Good Practice and Leading Practice upfront embodied carbon limit for buildings getting PC from 2030

### Tenanted Estate

-  50% Minimum reduction of carbon emissions by 2030
-  Retrofit of minimum 20 assets in a demonstrator programme by 2025
-  25% Minimum energy consumption reduction by 2030
-  100% of energy metering of LU supplied Tenanted Estate by 2025, with data sharing for remaining assets by 2027
-  Every suitable property coming back from a lease with a gas supply will have it stripped out
-  Lowest EUI for each Sector ~ EPC A+



## Target 1.5°C Aligned Net Zero Limits – anticipated targets

EUI limits and embodied carbon limits for new and existing buildings are being developed in 2023 by the UK Net Zero Carbon Buildings Standard.

Places for London intends to implement these limits within our NZC definitions as they become more defined. While these official limits don't yet exist, temporary limits in line with the anticipated UKGBC Standard have been developed as a guide.

Existing Buildings	Energy Use Intensity kWh/m <sup>2</sup> /yr		
	Current (Estimated)		Post Deep Retrofit (No gas)
	Electricity	Gas	
Industrial arch	360	0	101
Out of station retail – 100% electric	838	0	401
Out of station retail – electric & gas	606	301	390
In station retail	854	0	404
Office – 100% electric	399	0	91
Office – electric & gas	267	165	88

### Places for London commit to achieving Net Zero Carbon by 2030 for scope 1 & 2 emissions by:

- Corporate head office building to have a deep retrofit by 2026
- An audit of landlord purchased energy to be carried out that includes:
  - A survey of assets to understand the areas served by landlord energy
  - Metering and monitoring of landlord energy use
  - Retrofit of landlord systems so that they are optimised
  - Eliminating landlord gas usage
- Increasing procurement of renewable electricity.
- Assessing the best fit offsetting strategy to provide additionality
- Increasing Places staff training and awareness of Carbon Literacy

New buildings	Interim - Energy Use Intensity kWh/m <sup>2</sup> /yr
Residential	70 (SDF Good Practice)
Office	110 (SDF Good Practice)

New buildings	Ambition - Energy Use Intensity kWh/m <sup>2</sup> /yr
Residential	35 (SDF Leading Practice)
Office	55 (SDF Leading Practice)

New buildings	Upfront Embodied Carbon limits kgCO <sub>2</sub> /m <sup>2</sup>		
	2023-2028 LETI Band C	2028-2033 LETI Band B	Post 2033 LETI Band A
Residential	500	400	300 (SDF LP)
Office	600	476	350 (SDF LP)

New buildings	Lifecycle Embodied Carbon limits kgCO <sub>2</sub> /m <sup>2</sup> (over 60 years)		
	2023-2028 LETI Band C	2028-2033 LETI Band B	Post 2033 LETI Band A
Residential	800	625	450
Office	970	800	675

# Net Zero Carbon portfolio – Stepping Stones



## 1. Measure



## 2. Eliminate fossil fuels



## 3. Reduce energy consumption



## 4. Onsite renewable and renewable procurement

1.5°C aligned



## 5. Offsets

Net Zero Carbon

- Measure the energy consumption of the existing estate, and ensure new builds are fully metered.
- Understand who pays for which part of the estate, including proportion of energy supplied by 100% Rego (Renewable Energy Guarantees of Origin) backed renewable tariffs.
- Determine the landlord / tenant split
- Establish when we could implement green leases
- Determine the maintenance upgrade schedule
- Switch heating sources from gas to electricity.
- Low carbon alternatives that are now available include heat pumps and direct electric heating.
- Continue to implement the High Performance Buildings metric of the SDF
- Pilot projects that enabled achievement of NZC commitments and targets.
- Test, determine and implement a retrofit programme for the existing estate, aligned with planned maintenance programme and projects.
- Incorporate low embodied carbon retrofit solutions.
- A review of available roof space and the deployment of onsite renewables
- Consideration of PPA and Commitment to Rego backed renewable procured electricity
- All new developments to incorporate onsite renewable energy in accordance with planning permissions
- Offsetting of embodied carbon, which includes
  - Upfront embodied carbon of property development
  - Retrofit to tenanted estate
  - In-use embodied carbon
- Offsetting carbon emissions associated with refrigerant leakage, waste and water

## Roadmap Delivery Strategy – Property Development portfolio

Topic	Outcomes / Aims	Delivery / Management Strategy	Reporting Metrics
Upfront Embodied Carbon Measurement & Assessment	<ul style="list-style-type: none"> <li>● Reduce embodied carbon and target Sustainable Development Framework Leading Practice</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to undertake embodied carbon assessments on Property Development projects, pushing towards Leading Practice for existing Sustainable Development Framework (SDF) KPIs for Upfront Embodied Carbon Intensity and Reused and Recycled materials.</li> <li>• Continue to set contractually binding maximum upfront embodied carbon targets, including live material trackers to monitor actual material consumption, recycled content and EPDs on materials supplied to site.</li> <li>• Analyse external projects meeting very low embodied carbon targets to inform potential future strategies to reduce upfront embodied carbon e.g. use of mass timber where possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Embodied Carbon Intensity – kgCO<sub>2</sub>e/m<sup>2</sup></li> </ul>
Operational Carbon reductions (energy, water & waste)	<ul style="list-style-type: none"> <li>● Reduce operational carbon and target Sustainable Development Framework Leading Practice</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to target low EUI, pushing towards Leading Practice for the SDF KPIs on Operational Energy Use as per existing SDF KPIs</li> <li>• Continue to set contractually binding maximum EUI targets.</li> <li>• EUI calculation of assessment of EUI on projects which predate the SDF.</li> <li>• Consider requirement for Passivhaus certification on new projects which would align to SDF leading practice.</li> </ul>	<ul style="list-style-type: none"> <li>• EUI – kWh/m<sup>2</sup>/year</li> </ul>
	<ul style="list-style-type: none"> <li>● Energy Monitoring In-Use</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to adhere to the GLA Be Seen London Plan policy as per existing SDF KPI Be Seen</li> <li>• Continue to set targets for NABERS UK on all commercial projects as per existing SDF KPI Be Seen</li> </ul>	<ul style="list-style-type: none"> <li>• Mandatory commitment made</li> </ul>
Renewable Procurement	<ul style="list-style-type: none"> <li>● Incorporate 100% renewable procurement in future leases.</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to require all communal / landlord energy supply to be through a green tariff or Power Purchase Agreement (PPA) as per SDF KPI Green Energy</li> <li>• Continue to target SDF KPI Green Energy leading practice for all commercial tenanted space to be supplied through a green tariff or Power Purchase Agreement (PPA)</li> <li>• Continue to install bio-solar PV arrays to all usable roof space as per SDF KPI Bio-Solar Roof Area</li> </ul>	<ul style="list-style-type: none"> <li>• Renewable electricity procured: kWh/year.</li> <li>• % of renewable electricity procured</li> </ul>

# Roadmap Delivery Strategy – Tenanted Estate

Topic	Outcomes / Aims	Delivery / Management Strategy	Reporting Metrics
Improvement to measurement and baselining of carbon emissions	<ul style="list-style-type: none"> <li>Comprehensive survey of the estate</li> </ul>	<p>Comprehensive survey of estate that describes what all the properties are, area and volume, their energy consumption, if metered, what they are being used for and what condition they are in. This should include a focus on understanding the energy consumption of Landlord areas, as they form part of scope 2 emissions.</p>	<ul style="list-style-type: none"> <li>% of estate surveyed</li> </ul>
	<ul style="list-style-type: none"> <li>Developing a more comprehensive baseline</li> </ul>	<p>The priority is to improve the quality of the baseline, to achieve this it is proposed the following approach be adopted:</p> <ul style="list-style-type: none"> <li>Identify 5 occupied properties from each Sector that are representative of each archetype (1 large / 3 medium / 1 small)</li> <li>Obtain meter readings for each of these property types</li> <li>For the specific properties use the measured figures</li> <li>From the data, generate a m<sup>2</sup> average across the metered properties.</li> <li>Compare metered average against previous figure generated from EPCs</li> <li>Create a weighted average for each typology – recommended weighting metered data 80% and EPC data 20%</li> <li>Apply new weighted average cross each typology to generate new baseline</li> <li>As more metered data becomes available, feed this into the calculated average and update across typology</li> <li>Once a typology reaches 50% of buildings with measured data, remove the EPC input and only use an average generated from measure data</li> </ul> <p><u>Monitoring refrigerant leakage:</u> Add this to the tenant compliance programme to ensure types of refrigerant and leakage rates are recorded</p> <p><u>Monitoring water and waste:</u> the properties identified above should disclose their water meter readings and produce waste transfer notes for different waste streams.</p>	<ul style="list-style-type: none"> <li>Updating the baseline according to more detailed and robust data</li> </ul>
	<ul style="list-style-type: none"> <li>Data monitoring</li> </ul>	<ul style="list-style-type: none"> <li>A programme of rolling out sub-metering of all tenants using station supplies, and sharing data with tenants to assist them to reduce emissions</li> <li>Engaging with tenants to encourage requests for smart meters from energy suppliers and novate Places as the 3<sup>rd</sup> party to receive the data</li> </ul>	<ul style="list-style-type: none"> <li>Robust monitoring data received</li> </ul>

- Immediate actions
- Mid-term Action 6-12m
- Long-term Action 12m +



# Roadmap Delivery Strategy – Tenanted Estate

Topic	Outcomes / Aims	Delivery / Management Strategy	Reporting Metrics
Operational Carbon reductions (energy, water & waste)	● Retrofit delivery mechanisms to be explored	Retrofit delivery mechanisms to be explored including a joint approach with Energy Performance Contracts (e.g. GLA Retrofit Accelerator or other framework).	• NA
	● Demonstrator Projects	Undertake demonstrator projects on a representative sample of properties, half that are taken to NZC retrofit in one step, and half that are first upgraded to EPC B and upgraded to NZC retrofit c.10 years later.	• % of pilot projects implemented
	● MEES compliance (EPC B) delivery plan	Development of a delivery plan on how to phase the estate to EPC B (plan on how to break up the estate into phases and what buildings are in the first 3 phases), and how a stepped retrofit can be integrated into a wider plan to get to NZC retrofit. A prioritised programme to be established.. Ensure prelims, set up, mobilisation, method statements, permits, etc. or the opportunity cost is factored in.	• Development of a delivery plan
	● Net Zero Retrofit	Phased roll-out of retrofit programme, aligned to planned maintenance regime and projects	• % of retrofit projects rolled out • % of retrofit projects meeting targets
Renewable Procurement	● Start discussions on PPAs with additionality	Start discussions on PPAs with additionality	• % agreed
Carbon associated with capital goods, services, and capital works	● Green lease clauses into all new tenancies & responsible procurement on new works and contracts	Development of green lease clauses into all new tenancies  Ensure responsible procurement practices are included in tenders and contracts for all goods and services	• % implemented

- Immediate actions
- Mid-term Action 6-12m
- Long-term Action 12m +

# Roadmap Delivery Strategy – Corporate Estate

Topic	Outcomes / Aims	Delivery / Management Strategy	Reporting Metrics
Operational Carbon reductions (energy, water & waste)	<ul style="list-style-type: none"> <li>Develop a plan for our Corporate Head Office building</li> </ul>	Assess and determine the feasibility of how to reduce carbon emissions of Places for London head office.	<ul style="list-style-type: none"> <li>Estimate kgCO2e/m<sup>2</sup> reduction</li> <li>Estimate kWh/m<sup>2</sup> reduction</li> </ul>
	<ul style="list-style-type: none"> <li>Implementing plan for our Corporate Head Office building</li> </ul>	Implementation of the above mentioned plan using a suitable delivery vehicle, in partnership with TfL.	<ul style="list-style-type: none"> <li>Measured kWh/m<sup>2</sup> reduction</li> </ul>
	<ul style="list-style-type: none"> <li>Carry out an audit of landlord purchased energy</li> </ul>	An audit of landlord purchased energy use to be carried out that includes: <ul style="list-style-type: none"> <li>A survey of assets to understand the areas of landlord purchased energy use</li> <li>Monitoring of landlord energy use</li> <li>Eliminating gas usage</li> </ul>	<ul style="list-style-type: none"> <li>Audit results</li> </ul>

## Roadmap Investment Boundary

Places for London has assets located across the Greater London area. Net Zero targets have been identified for all assets for which Places for London has or could have operational control over. These investment boundaries will be reviewed for the next update of the roadmap, in particular in relation to future assets delivered through Joint Ventures.

Criteria	Inclusions	Exclusions	Explanation
Operational Control	<ul style="list-style-type: none"> <li>Tenanted Estate– existing stock of properties, including assets let to third parties – 470,300 m<sup>2</sup></li> <li>Property Development programme – new build residential or commercial stock, including Joint Ventures based on 49% ownership – 20,000 homes in addition to 41,000 m<sup>2</sup> of commercial space</li> <li>Places for London head offices.</li> </ul>		
Asset Classes	<ul style="list-style-type: none"> <li>Arches</li> <li>Retail</li> <li>Office</li> <li>Residential</li> <li>Industrial</li> </ul>	<ul style="list-style-type: none"> <li>Car parks</li> <li>Infrastructure</li> <li>Land</li> <li>Access</li> <li>Bus station</li> <li>Advertising space</li> </ul>	Not within the scope at this stage.
Property Development -Joint Ventures	<ul style="list-style-type: none"> <li>20,000 homes developed from 2022-2035</li> <li>41,000m<sup>2</sup> of commercial office space</li> <li>Assumption that Places owns 49%</li> <li>Including operational, lifecycle embodied carbon, and refrigerant leakage.</li> </ul>		A 49% equity has been confirmed for 3 residential sites. The same % has been applied for the other sites.
Landlord and Tenanted Spaces	<ul style="list-style-type: none"> <li>Landlord and tenant - operational carbon</li> <li>Landlord refrigerants and tenant refrigerants related to heating and cooling</li> <li>Embodied carbon of retrofit measures relating to fabric and systems.</li> </ul>	<ul style="list-style-type: none"> <li>Tenant refrigerant leakage – process loads</li> <li>Embodied carbon of appliance upgrades and maintenance that is not related to retrofit.</li> </ul>	Lack of information at this stage.
Physical boundary	<ul style="list-style-type: none"> <li>Gross internal areas</li> </ul>	<ul style="list-style-type: none"> <li>Outdoor spaces, such as car parks and gardens.</li> </ul>	

# Roadmap Carbon Scope Table & GHG Protocol Alignment

Business Area	Sub-area	GHG Protocol Reporting Category	Carbon Scope	BBP Framework	Places for London
Corporate	Head office energy use	Company facilities	1 & 2	✗	✓
	Company vehicles	Company vehicles	1	✗	✗
	Business travel (excluding commuting)	Business travel	3	✗	✗
	Purchased goods and services	Purchased goods & services	3	✗	✗
	Operational waste generated	Waste generated in operations	3	✗	✓
	Operational water use	Purchased goods & services	3	✗	✓
	Employee commuting	Employee commuting	3	✗	✗
	Head office refrigerant leakage	Company facilities	1	✗	✓
Direct Real Estate Holdings (including JVs with management control) - 'Tenanted estate'	Landlord purchased energy (electricity & fuels)	Purchased electricity, heat and steam	1 & 2	✓	✓
	Tenant purchased energy (electricity & fuels)	Downstream leased assets	3	✓	✓
	Landlord refrigerants	Purchased goods & services	1	✓	✓
	Tenant refrigerants	Tenant Scope 3	3	✗	✓*
	Landlord purchased water	Purchased goods & services	3	✓	✓
	Tenant purchased water	Tenant Scope 3	3	✗	✓
	Landlord managed operational waste	Waste generated in operations	3	✓	✓
	Tenant managed operational waste	Tenant Scope 3	3	✗	✓
	Tenant transport emissions	Tenant Scope 3	3	✗	✗
	Tenant supply chain emissions	Tenant Scope 3	3	✗	✗
Landlord purchased capital goods & Services (M&E property management services)	Purchased goods & services	3	✓	✓	

Business Area	Sub-area	GHG Protocol Reporting Category	Carbon Scope	BBP Framework	Places for London
Investments (Indirect Real Estate Holdings)	Landlord purchased energy (electricity & fuels)	Investments (proportional to the investment)	3	✓	NA
	Tenant purchased energy (electricity & fuels)	Investments (proportional to the investment)	3	✓	NA
	Landlord refrigerants	Investments (proportional to the investment)	3	✓	NA
	Tenant refrigerants	Tenant Scope 3	3	✗	NA
	Landlord purchased water	Investments (proportional to the investment)	3	✓	NA
	Tenant purchased water	Tenant Scope 3	3	✗	NA
	Landlord managed operational waste	Investments (proportional to the investment)	3	✓	NA
	Tenant managed operational waste	Tenant Scope 3	3	✗	NA
	Visitors transport emissions	Tenant Scope 3	3	✗	NA
	Tenant supply chain emissions	Tenant Scope 3	3	✗	NA
Landlord purchased capital goods & Services (M&E property management services)	Purchased goods & services	3	✓	NA	
Property Development	New development (including those where funding is being provided)	Purchased goods & services	3	✓	✓
	Refurbishments	Purchased goods & services	3	✓	✓
	Fit-out (landlord controlled)	Purchased goods & services	3	✓	✓
	Fit-out (tenant controlled)	Tenant Scope 3	3	✓	✓
	End of life	End of life treatment of sold products	3	✗	✗

December 2023





# Thank you

Contact information  
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Net Zero Carbon Roadmap

