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**Greater London Authority
December 2017**

Published by
Greater London Authority
City Hall, The Queen's Walk
More London
London SE1 2AA

www.london.gov.uk
Enquiries 020 7983 4100
Minicom 020 7983 4458

ISBN 978-1-84781-675-7

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ACKNOWLEDGEMENTS

**The LSDC would like to thank the following
individuals for their help in compiling
this report.**

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We are also grateful for the contribution
and input from staff at the GLA, Transport
for London, the Environment Agency and
Greenspace Information for Greater London.

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BACKGROUND

LONDON SUSTAINABLE DEVELOPMENT COMMISSION

The London Sustainable Development Commission (LSDC) was established in 2002 to provide independent advice to the Mayor of London on ways to make London a sustainable, world-class city. The Commission is an independent body, challenging policy-makers to promote a better quality of life for all Londoners, both now and in the future, whilst also considering London's wider global impacts. The Commission is made up of individual experts from the economic, social, environmental and London governance sectors. Commissioners give their time voluntarily, promoting sustainable development, embedding sustainability into London-wide strategies, and helping make sustainability a meaningful and understandable concept for all Londoners.

CAG CONSULTANTS

Founded in 1983, CAG Consultants are leaders in evidence-based research, advice and engagement for environmental, economic and social sustainability. Delivered by our nationwide team of independent experts for over 30 years, our work informs and supports positive change.

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1. INTRODUCTION

The London Sustainable Development Commission (LSDC) was established in 2002 to advise the Mayor of London on how best to make London a 'sustainable world city'. Sustainable development matters because it offers an integrated economic, social and environmental framework for creating a London that secures quality of life for its citizens and neighbours, both now and in the future.



1.1. PURPOSE

This report is designed to help answer the question, "how do we know if London is making progress towards becoming a sustainable world city?" Its purpose is to provide a snapshot of London's quality of life and to identify how sustainably London is developing. It provides baseline data that will inform the Commission's future work programme and the advice they provide to the Mayor. It also provides a benchmark for the new Mayor and a review of the issue of quality of life in the round.

The report is the fifth in a series of Quality of Life (QoL) Indicators Reports produced by the LSDC. The first report was published in 2004 and subsequent reports were produced in 2005, 2008-09 and 2012. These reports can be found at www.londonsdc.org.uk. Many of the indicators used in this report were used in these previous reports such as child poverty, household recycling and decent housing. This continuity has enabled the LSDC to track London's progress on key quality of life issues since the beginning of the Commission's existence.

The analysis of each indicator uses time series data, which varies by indicator, to understand indicator progress over the last five years for which data are available (i.e. progress compared to data used within the 2012 QoL report) and long-term progress. The report also compares the performance of each indicator with national performance.

The LSDC hopes that the QoL indicators provide a useful assessment tool that might be used by others across London. It should be noted that these indicators are the responsibility of a range of organisations and bodies across London including the Mayor, boroughs, business, central government and other stakeholders in the private and public sectors. All of these will need to put into practice a series of actions in collaboration with the Mayor in order to make progress on the key quality of life issues over the coming years.





1.2. ABOUT THIS REPORT

This Evidence Report presents detailed assessments of performance for each of the QoL indicators. It also highlights recommendations for future QoL indicator reports (see Annex A).

A separate Summary Report provides an overview of the findings from these assessments, including headline figures on the direction of travel for the QoL set overall, together with high-level analysis of QoL indicator performance in the commentary section and top-level findings for each of the individual indicators.

1.3. SUSTAINABLE DEVELOPMENT AND QUALITY OF LIFE

The most widely accepted definition of sustainable development comes from the 1987 report *Our Common Future*, also known as the Brundtland Report¹:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Sustainable cities are cities that operate in accordance with this principle. ICLEI Local Governments for Sustainability², for example, uses this definition:

“Sustainable cities work towards an environmentally, socially, and economically healthy and resilient habitat for existing populations, without compromising the ability of future generations to experience the same.”

What is the relationship between sustainable development and quality of life? A good starting point is the definition of sustainable development used in the UK’s 2005 sustainable development strategy³ which included quality of life within its definition:

“The goal of sustainable development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations.”

Quality of life definitions are manifold but the essence of the concept is that quality of life is about the general well-being of a person or society⁴. Sustainable development is related to quality of life in that it is concerned with whether the environmental, social and economic systems in a community are providing its citizens, both now and in the future, with the opportunity to lead a good quality life.

London’s quality of life changes over time and depends on many complex interdependencies that are not apparent when looking at individual aspects of quality of life in isolation. Whilst this report focuses on a specific set of QoL indicators, it also enables consideration of the many connections between them.

1.4. CONTEXT

London is a leading global city, demonstrating excellence in multiple areas including the arts, commerce, education, entertainment, research and development, fashion, finance, media, and tourism.

The city is also an economic powerhouse and has been ranked as having the fifth largest economy of any city in the world⁵. London accounts for 22.7% of the UK's economic output and a third of its growth. It contributes an estimated 21% of all UK tax, is home to a quarter of the UK's start-ups and employs more people than all three devolved nations combined⁶.

London is also a global cultural capital which has been ranked as the world's most-visited city⁷. It hosts arguably the world's leading financial services centre, Europe's fastest growing technology hub and several of the world's highest ranking universities⁸. It is inhabited by an incredibly diverse range of people and cultures. For example, London had the highest number, as well as proportion, of non-UK born residents out of all the regions of England and Wales in both 2001 and 2011. Furthermore, the main language spoken by 22% of London's population was not English⁹.

The 2011 Census found that the total population of London stood at just over 8 million, 37% of whom had been born outside of the UK¹⁰. According to the ONS¹¹, London's population has grown every year since 1988 and is expected to continue to grow. In the London Plan (2016) the Greater London Authority (GLA) predicted that by 2036 the population will have grown to over 10 million¹².

The GLA also projects that London's population will change in composition in future years. It will continue to be younger than elsewhere in England and Wales but, at the same time, the number of people over 64 is projected to increase by over 60% to reach nearly 1.5 million by 2036. London's population will also continue to diversify. Black, Asian and other minority ethnic communities are expected to grow strongly as a result of natural population growth and continued migration from overseas. By 2036, an additional twelve London boroughs are likely to have a majority of their population from these groups, joining Brent and Newham which have had such majorities since 2001.



London since the last QoL report in 2012

Like any global city, London continues to evolve at a fast pace, and much has changed in the city since the last report in 2012. The trends in the indicators reflect aspects of these changes but there are also a number of local, national and global developments that provide a useful context when considering London's progress to improving quality of life up to 2017.

On a global scale, perhaps the most significant issue since 2012 has been the continuing worldwide economic downturn with variable recovery across the globe. As a global city, the impacts of the financial crisis and the subsequent varied recovery across different sectors has been wide-ranging, particularly given London's position as a financial centre for the world.

Globally, there have been two major agreements on advancing sustainable development. In 2015, countries adopted the UN Sustainable Development Goals, a set of 17 goals to end poverty, protect the planet and ensure prosperity for all. Each goal has specific targets to be achieved over the next 15 years¹³. In 2016, the Paris Agreement was signed by 195 countries, an historic decision by world leaders to create a legally binding framework for mitigating climate change¹⁴.

However, in 2017, the Committee on Climate Change concluded that since 2012, progress on greenhouse gas emissions reduction in the UK has stalled¹⁵. It reported that greenhouse gas emissions reductions have been largely confined to the power sector, whilst emissions from transport and the UK's building stock are rising. It also argued that the overall state of our natural environment is worsening, reducing its resilience to climate change. It called upon the UK Government to urgently

deliver a plan to continue reducing emissions across the economy and to strengthen the UK's National Adaptation Programme in the first half of 2018.

The last QoL report was published shortly after the London 2012 Olympics. The legacy of the Games has resulted in continued regeneration in Stratford and the surrounding areas. Elsewhere in London large infrastructure projects in transport (Crossrail) and water (Thames Tideway Tunnel) are intended to build capacity and resilience for London's growing population.

London's resilience has also been tested. In 2017, a series of tragic events have hit the capital. These included four terrorist attacks and in June, a fire engulfed Grenfell Tower, causing an estimated 71 deaths¹⁶. Grenfell in particular highlighted the polarisation of communities often in very close proximity. Londoners demonstrated their ability to cope in these extreme circumstances but the situations have demonstrated the need to build more resilience into social, economic and institutional bodies and communities to cope with adverse situations in the future.

Politically there have been changes too. In 2016 a new Mayor was elected for London on a manifesto which included a proposal "to restore opportunity, and in doing so to protect and advance London's competitiveness and its status as a world-leading city for business, creativity, and fairness¹⁷."

In June 2016, shortly after the Mayor's election, the UK voted to leave the EU. The full impact of the Brexit vote remains to be seen but, according to the Mayor of London and others, it has created uncertainty in the capital, particularly for London's financial centre, as well as for its many residents from EU countries¹⁸.



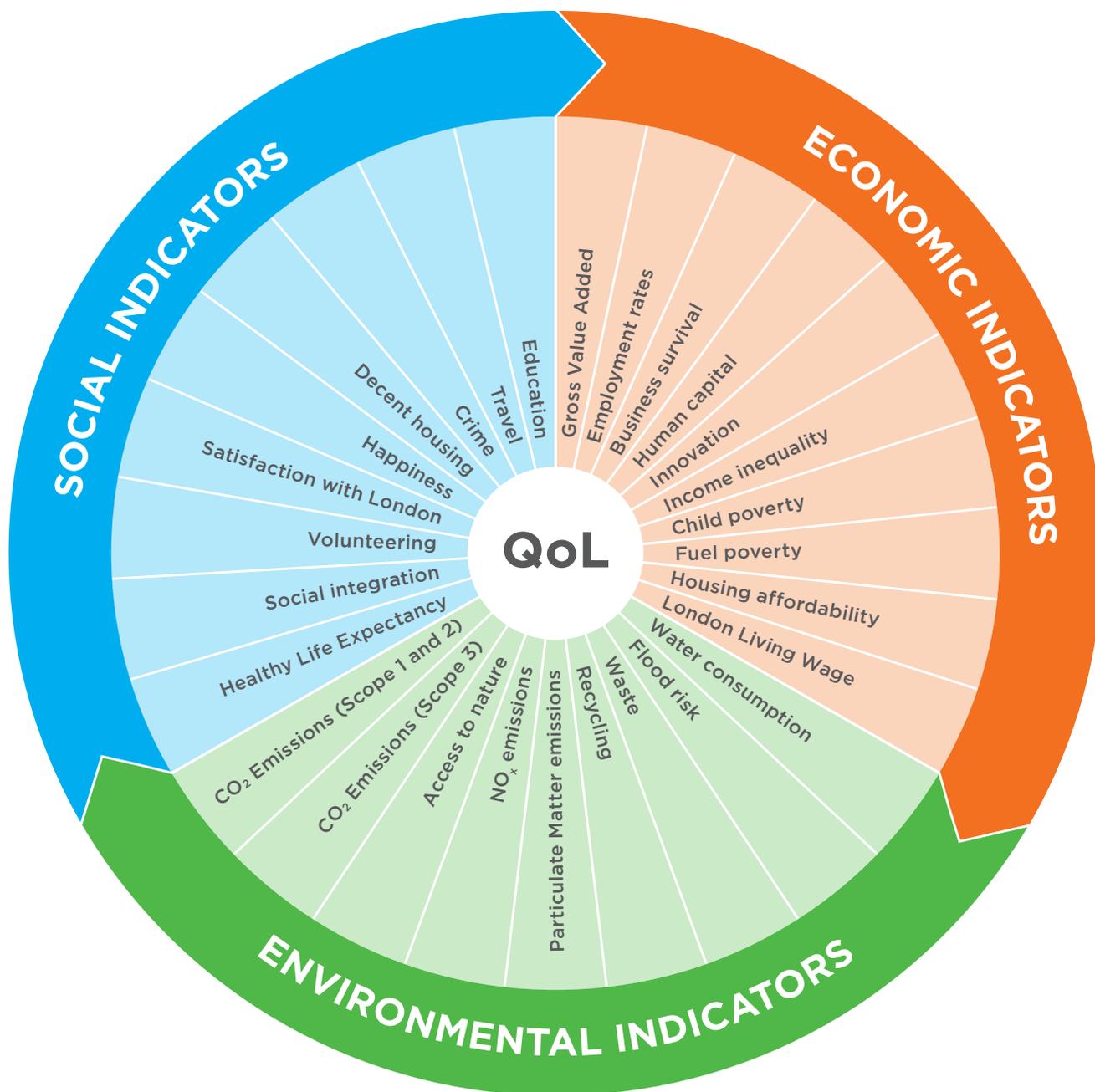
2. 2017 INDICATOR SET

The LSDC's QoL indicator set is designed to gauge how London is performing against a number of criteria that are considered to be key measures of a sustainable city that supports and enhances quality of life, both now and in the future. It is also designed to be used by policy-makers to monitor trends and to inform future policy-making.

The 2017 QoL indicator set encompasses 28 headline indicators across the environmental, social and economic dimensions of sustainable development. In total, there are 32 indicators as three headline indicators have two separate measures each (see Table 1).

Table 1: The 2017 QoL indicator set

Environmental	Social	Economic
1 CO ₂ emissions (scope 1 & 2)	10a Healthy Life Expectancy (men)	19 Gross Value Added
2 CO ₂ emissions (scope 3)	10b Healthy Life Expectancy (women)	20 Employment
3 Access to nature	11 Education	21 Business survival
4 NO _x emissions	12 Travel	22 Human capital
5a Air quality PM emissions (PM _{2.5})	13 Crime	23a Innovation (products)
5b Air quality PM emissions (PM ₁₀)	14 Decent housing	23b Innovation (processes)
6 Household recycling	15 Happiness	24 Income inequality
7 Waste	16 Satisfaction with London	25 Child poverty
8a Flood risk (tidal and fluvial)	17 Volunteering	26 Fuel poverty
8b Flood risk (surface water)	18 Social integration	27 Housing affordability
9 Water consumption		28 London Living Wage



Annex A of the evidence report sets out in more detail how the indicators evolved from the 2012 QoL set and the rationale for the inclusion and exclusion of indicators in the 2017 report.



3. HOW THE ASSESSMENT IS MADE

3.1. SUMMARY OF CHANGES: A GUIDE

For each indicator, we have produced a high-level ‘summary of change’. Its purpose is to provide the reader with a snapshot of the key findings for each indicator. The guide below explains what each section of these summaries means. Further explanation is provided in the sections below.

INDICATOR OVERVIEW

Measure	Total scope 1 and 2 CO ₂ emissions in London
Source	GLA (2016), Interim London Energy and Greenhouse Gas Inventory (LEGGI) 2014
Link	https://data.london.gov.uk/dataset/interim-london-energy-and-greenhouse-gas-inventory--leggi--2014
Year of data used for 2017 report	2014

The official source of the data used for the headline measure.

Weblink for the headline data.

The latest year for which data were available for this measure at the time of research.

SUMMARY ASSESSMENT

- CO₂ emissions in London in 2014 were an estimated 38 MtCO₂.
- Between 2000 and 2014 London’s total CO₂ emissions have dropped by 25%.
- Between 2009 and 2014 London’s total CO₂ emissions dropped by 11%.
- Per capita CO₂ emissions were lower in London than for the rest of the UK in 2014 (4.4 tonnes in 2014 compared to 6.2 for the UK as a whole).
- London has higher levels of solid walled properties and less roof space for solar compared to the rest of the country.

Key findings summary.

Most relevant London policy, goal or target for the measure.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
“London will be a zero carbon city by 2050” (draft LES) ²³ Climate Change Act 2008 commits UK to reducing emissions by 80% by 2050 ²⁴	Emissions will need to drop significantly further if London is to meet the Mayor’s aim of London being zero carbon by 2050.	✓ (United Kingdom)
	Long-term trend 2000-2014	Long-term Progress since 2000
Change	✓	✓
		Five-year Progress since 2009
		✓

LSDC notes of caution explore nuances and complexities that cannot be conveyed by a simple traffic light rating.

Traffic light indicates if London is performing better, worse or about the same as the national average for this measure.

The cells in this table show change over time for the indicator.

Shows a ‘sparkline’ graph of the headline trend data for the measure, for all years that the data are available.

Traffic light indicates whether there has been positive, negative or little progress in the long-term.

Traffic light indicates whether there has been positive, negative or little progress for the measure in the last five years that data available.

3.2. MORE ABOUT THE ASSESSMENTS

The data in this report come from a variety of sources. In several cases some data sets are unavoidably a few years old, but they nonetheless still provide both a general indication of recent performance and a comparison with previous years. By identifying data gaps and the data collection challenges faced, we also hope to encourage others to make information more readily available for future reports.

Due to the differences in baseline data, for each indicator assessment we have noted the year of the data used in each report. For the London Living Wage indicator, for example, the five-year comparison (data used for the 2012 report) is 2010 to 2015, and the long term comparison uses data from 2005 to 2015.

Traffic light assessments

Progress over time

To provide the reader with an ‘at-a-glance’ understanding of the trends for each indicator, we have used a set of traffic lights to illustrate where there has been clear improvement or deterioration since the last assessment.

The traffic lights are determined by comparing the value of the measure in the base year with the value in the end year. Where the data allow, two assessment periods have been used:

- Long term: an assessment of change since the earliest date for which data sets are available. If the earliest data available are for, or after, 2008 no long term assessment is made.
- Five year: an assessment of change during the latest five year period for which data are available i.e. the data used for the 2012 QoL report published¹⁹.



The traffic lights only reflect the difference between the start and finish points of the measurement period and do not reflect fluctuations during the intervening years. The traffic light assessments are as follows:

Long term and five year assessments	Definition
✓	Clear improvement
≈	Little or no change
✗	Clear deterioration
●	Insufficient or no comparable data



For most indicators it is clear whether there has been an improvement or a deterioration and therefore whether a green or red traffic light is warranted. However, where identified changes are small, it can be difficult to make an assessment. Therefore, as a general rule, we have said that where the indicator measure has changed by less than 3% since the last report, the traffic light has been set to amber, indicating little or no change. This is an arbitrary threshold, based on the approach used for measuring progress on sustainable development indicators nationally²⁰. There are some exceptions to this rule however. For example, where the indicator measure has been stable historically small changes may be considered as indicating an improvement or deterioration (and have therefore been awarded a red or green traffic light).



Comparisons with the national average

Where possible QoL assessments for London have been compared with national averages. When making such comparisons a similar process has been followed for undertaking the assessments of change or difference. The traffic light assessments are as follows:

	Clearly better
	Little or no difference
	Clearly worse
	Insufficient or no comparable data

As for the London progress assessments, we have used a general rule that where there is less than 3% difference between London's performance and national performance, the traffic light has been set to amber, indicating little or no difference. Again, we have made exceptions where the differences in regional and national performance has been small historically.

LSDC notes of caution

The traffic light system used in this report makes clear where there has been a positive trend in performance. But for some indicators, the bigger picture is still one of concern as to the absolute level of performance or the prospects for performance to continue to improve, at a sufficient rate.

The LSDC notes of caution highlight where the Commission believes an indicator's performance, despite being green or amber, provides a need to closely monitor future performance. These are based on the LSDC's independent knowledge and assessment of the data. For example, the NO_x emissions indicator shows emissions are declining so the traffic lights are green. However, NO₂ concentrations still regularly breach legal limits and so is an area of concern.



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ENVIRONMENTAL INDICATOR ASSESSMENTS

Table 2: 2017 QoL environment indicators

	Indicator	Measure
1	CO ₂ emissions (scope 1 & 2)	Total Scope 1 and Scope 2 CO ₂ emissions in London
2	CO ₂ emissions (scope 3)	Total Scope 3 CO ₂ emissions for London
3	Access to nature	Proportion of Greater London in Areas of Deficiency in access to Sites of Importance to Nature Conservation (SINCs)
4	NO _x emissions	Tonnes of NO _x emitted in London
5	Particulate Matter emissions	a. Tonnes of PM _{2.5} emitted in London b. Tonnes of PM ₁₀ emitted in London
6	Recycling	Percentage of household waste recycled or composted in London
7	Waste	London's performance against the greenhouse gas emissions performance standard (EPS)
8	Flooding	a. Properties at risk of tidal and fluvial flooding b. Properties at risk of surface water flooding
9	Water consumption	Per capita consumption per household (Thames Water region), annual

1. CO₂ EMISSIONS (SCOPE 1 AND 2)

INDICATOR OVERVIEW

Measure	Total scope 1 and 2 CO ₂ emissions in London
Source	GLA (2016), Interim London Energy and Greenhouse Gas Inventory (LEGGI) 2014
Link	https://data.london.gov.uk/dataset/interim-london-energy-and-greenhouse-gas-inventory--leggi--2014
Year of data used for 2017 report	2014

SUMMARY ASSESSMENT

- CO₂ emissions in London in 2014 were an estimated 38 MtCO₂.
- Between 2000 and 2014 London's total CO₂ emissions have dropped by 25%.
- Between 2009 and 2014 London's total CO₂ emissions dropped by 11%.
- Per capita CO₂ emissions were lower in London than for the rest of the UK in 2014 (4.4 tonnes in 2014 compared to 6.2 for the UK as a whole).
- London has higher levels of solid walled properties and less roof space for solar compared to the rest of the country.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
<p>"London will be a zero carbon city by 2050" (draft LES)²³</p> <p>Climate Change Act 2008 commits UK to reducing emissions by 80% by 2050²⁴</p>	Emissions will need to drop significantly further if London is to meet the Mayor's aim of London being zero carbon by 2050.	 (United Kingdom)

	Long-term trend 2000-2014	Long-term Progress since 2000	Five-year Progress since 2009
Change			

Why is this issue important to London’s quality of life?

Climate change represents arguably the greatest challenge facing humanity this century. If the world continues emitting greenhouse gases (GHGs) at today’s levels, average global temperatures could rise by up to five degrees Celsius by the end of this century²⁵. London’s climate is already changing, with an increase in extreme weather events such as heavy rainfall and heatwaves, and such changes will have significant consequences for Londoners’ quality of life. Initiatives to decarbonise London can lead to quality of life improvements such as reduced fuel poverty (through more energy efficient homes) and improved air quality (through reduced use of diesel and petrol powered vehicles).

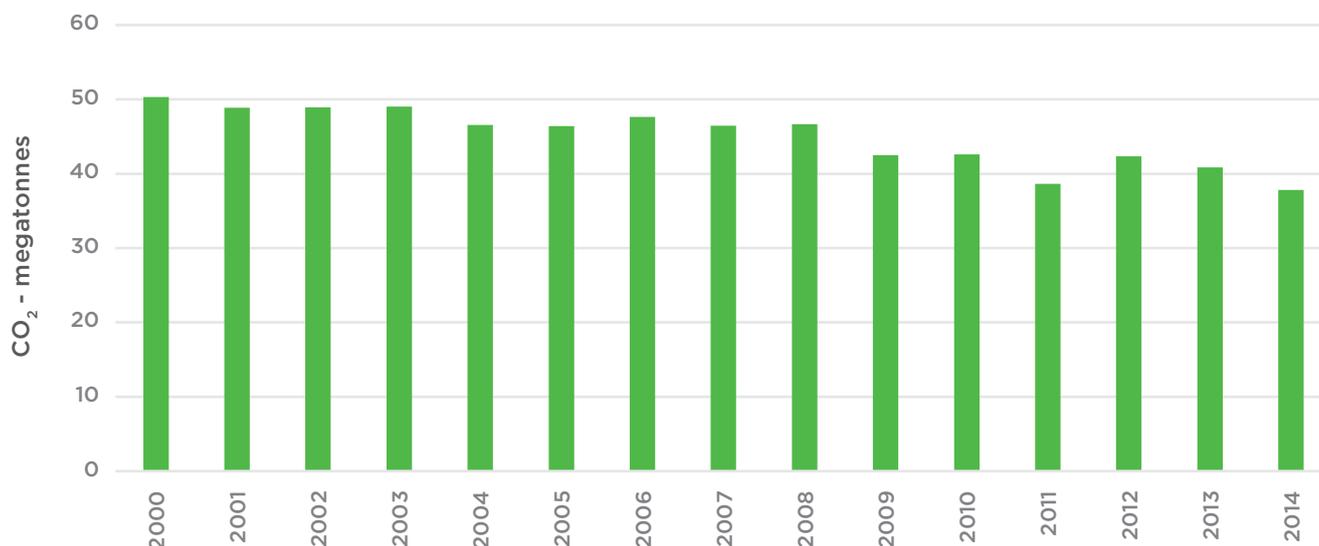
HEADLINES

Figure 1 shows the overall trend in London’s CO₂ emissions from 2000 to 2014. Over this period, emissions have fallen by 25%.

The London Energy and Greenhouse Gas Inventory (LEGGI) estimates carbon dioxide

emissions up to 2009 and carbon dioxide equivalent (CO₂e) from 2010. CO₂e includes methane and nitrous oxide but since carbon dioxide is by far the dominant greenhouse gas in London, CO₂ and CO₂e are effectively comparable.

Figure 1: London’s scope 1 and 2 CO₂ emissions



Source: GLA (2016), Interim London Energy and Greenhouse Gas Inventory (LEGGI) 2014

Since the last QoL report, London’s total CO₂ emissions fell between 2009 (the year reported in the last report) and 2014 – from 42.5 MtCO₂ to 37.8 MtCO₂ – a reduction of 11%. There have been year on year decreases since 2008 except for a small increase between 2011 and 2012. This reduction is broadly in line with the UK as a whole, where emissions have fallen from 454.8 MtCO₂ in 2009 to 402.5 MtCO₂ in 2015 – a reduction of 11.5%.

It is worth noting that London’s Gross Value Added (GVA)²⁶ per head has risen considerably over the same period – by 17.7% (see indicator 19) – this provides some evidence that economic growth and carbon emissions can be decoupled, at least to some extent, although there are multiple factors behind the fall in CO₂ emissions.

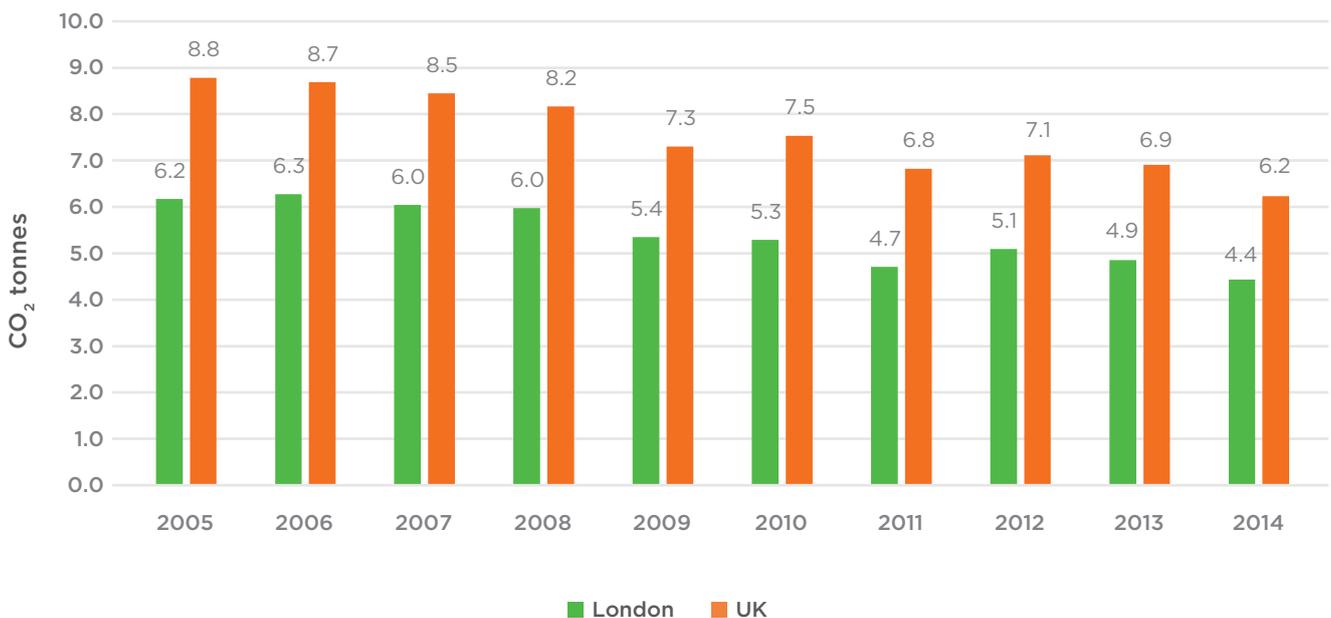
BENEATH THE HEADLINES

Within London, emissions vary widely between boroughs – from 8.8 tonnes of CO₂ per capita in Westminster down to 2.2 tonnes per capita in Waltham Forest²⁷. An outlier is the City of London, which has per capita emissions of 98.2 tonnes – far in excess of all the other boroughs – due to the high levels of commercial activity and very low resident population²⁸.

WIDER EVIDENCE

Per capita emissions in London have fallen by 17.2% since 2009 (see Figure 2). This is likely to be the result of greater efficiency of energy use (amongst other factors) and is higher (in relative terms) than the reduction in the capital’s absolute CO₂ emissions, reflecting the rise in population in that period. UK per capita emissions have fallen by a smaller amount (14.7%) during the same period.

Figure 2: Per capita CO₂ emissions in London and the UK, 2005-2014



Source: London - GLA (2016), Interim London Energy and Greenhouse Gas Inventory (LEGGI) 2014 – CO₂ figures to 2009 and CO_{2e} from 2009. UK - BEIS, 2017, UK local authority and regional carbon dioxide emissions national statistics: 2005-2015: CO₂

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The European Union (on behalf of its Member States) is a signatory of the Paris Agreement³⁰. The Agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C. The EU's 2030 climate and energy framework sets three key targets, to which the UK contributes, for the year 2030:

- At least 40% cuts in greenhouse gas emissions (from 1990 levels).
- At least 27% share for renewable energy.
- At least 27% improvement in energy efficiency.

Nationally, the Climate Change Act 2008³¹ commits the UK Government to reduce emissions by at least 80% from 1990 levels by 2050. To meet this target the government has set 5 yearly carbon budgets that restrict the amount of carbon emissions that can be legally emitted within a five-year period. The UK is currently in the second carbon budget period (2013-2017).

To help meet national targets, London's emissions will have to fall significantly in the coming years. Indeed, London may have to go beyond national greenhouse gas emission reduction targets to compensate for sectors outside of London that may be hard to decarbonise, such as agriculture and heavy industry.

The Mayor's draft London Environment Strategy³² (LES) includes the aim that "London will be a zero carbon city by 2050". This includes using cleaner, local renewable energy to heat, cool and power buildings, and replacing petrol and diesel vehicles with zero emission ones. All new developments will be zero carbon from 2019 (the zero carbon homes target went live in October 2016) and there will be new

programmes to improve the energy efficiency of public buildings and homes³³. Some of the latter are referenced in the draft London Fuel Poverty Action Plan, which proposes that the Mayor's retrofitting programmes prioritise the fuel poor³⁴.

The draft strategy recognises that existing UK and Mayoral policies alone will not be enough to meet the scale of decarbonising London requires. Therefore, it proposed a series of specific actions that government, businesses and Londoners will need to put into practice to achieve that goal. These include, for example, reducing emissions of London's homes and workplaces; transforming the energy system; and having a zero emission transport network.

In the past ten years, London's CO₂ emissions have dropped, on average, by almost 1 MtCO₂ per annum; this rate of reduction will need to continue in order to meet the 2050 zero carbon target.

Relevant Sustainable Development Goals

Sustainable Development Goal (SDG) 13 (climate action) urges countries to take urgent action to tackle climate change and its impacts. This goal sets a series of targets and metrics to, for example, foster low GHG emission development.

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, reduce the adverse per capita environmental impact of cities.

SDG 7 (affordable and clean energy) urges countries to ensure access to affordable, reliable, sustainable and modern energy for all. This goal sets targets and metrics to, for example, substantially increase the share of renewable energy in the global energy mix.

2. CO₂ EMISSIONS (SCOPE 3)

INDICATOR OVERVIEW

Measure	Total scope 3 CO ₂ emissions for London (consumption-based methodology)
Source	Data provided by GLA in an email 25/09/2017
Link	https://data.london.gov.uk/dataset/application-pas-2070-london-case-study
Year of data used for 2017 report	2013

SUMMARY ASSESSMENT

- This indicator considers the carbon emissions of goods and services consumed by Londoners inside the capital, including those produced outside the capital.
- Scope 3 (consumption-based) emissions, at 84.95 MtCO₂ in 2013, were more than double scope 1 and 2 CO₂ emissions for London.
- Since 2010, London's scope 3 CO₂ emissions have been broadly stable.
- In 2013, London's consumption-based emissions per capita were estimated to be around 7% lower than the UK average.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
There are currently no targets relating specifically to scope 3 emissions.	Although there are no targets relating to scope 3 emissions, these emissions are significant and should be addressed in parallel with scope 1 and 2 if London is to become a truly zero carbon city. Scope 3 emissions appear to be broadly stable so action will be needed to ensure they start to drop.	 (United Kingdom)

	Long-term trend	Long-term	Five-year ³⁵
Change	n/a		

Why is this issue important to London's quality of life?

As noted in indicator 1, climate change represents arguably the greatest challenge facing humanity. If the world continues emitting greenhouse gases (GHGs) at today's levels, average global temperatures could rise by up to five degrees Celsius by the end of this century³⁷. London's climate is already changing and this will have significant consequences for Londoner's quality of life.

It is important to ensure that actions to reduce emissions from scope 1 and 2 do not result in increased emissions elsewhere (for example due to outsourcing). Scope 3 emissions can represent the largest source of emissions for companies, and with it many opportunities arise to influence overall GHG reductions.

HEADLINES

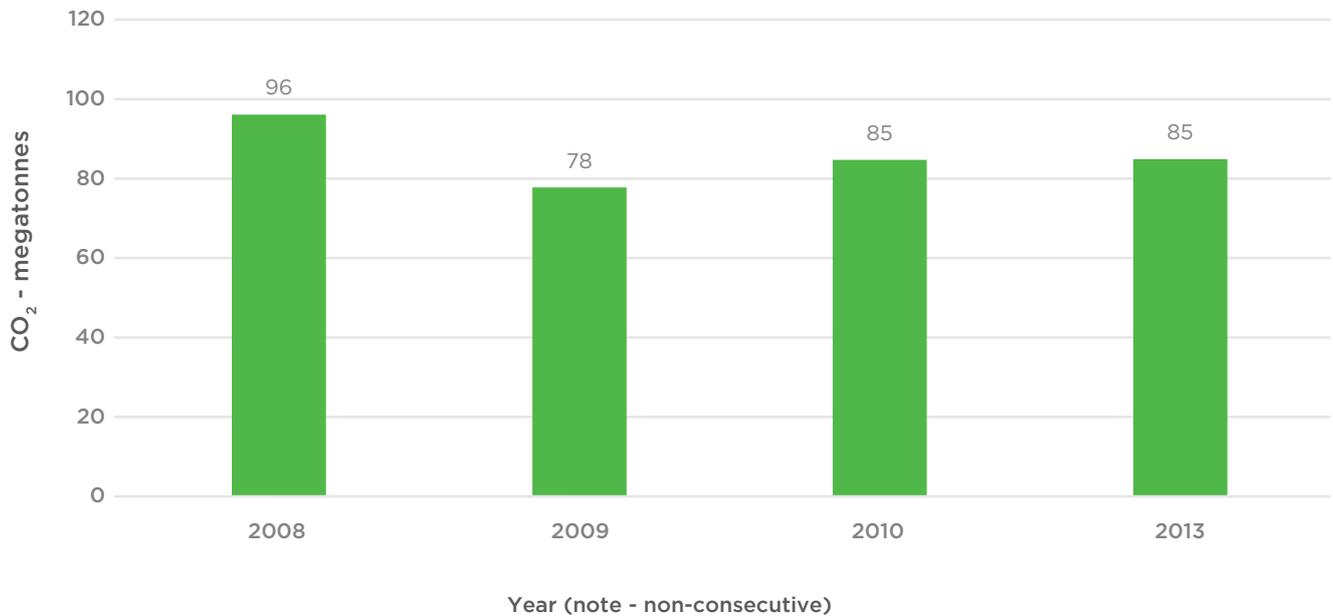
Scope 3 CO₂ emissions include all other indirect emissions not covered by scope 1 and 2 (see previous indicator), such as those linked with London's consumption of goods and services (including emissions arising from the energy consumed by the processes associated with these; from the mining and processing of natural resources to manufacturing, transport and product delivery). The consumption based methodology for measuring scope 3 emissions includes the majority of scope 1 and 2 emissions.

For this report, we have used a methodology that includes emissions from the products and services that London consumes (but does not produce)³⁸. This includes most, but not all, scope 3 emissions, as illustrated in Figure 4 below³⁹.

Figure 3 shows that, since 2010, London's scope 3 CO₂ emissions have been broadly stable. Whilst there has been a reduction in emissions from 2008 to 2013, the datasets are relatively new and the 2008 data may not be directly comparable; it is therefore not possible to draw definite conclusions from this. A more recent update would help to clarify trends. Furthermore, reductions from 2008 onwards may be associated with the economic recession.

London's consumption-based emissions per capita (11.2 tonnes CO₂) are estimated to be around 7% lower than the UK average (12.2 tonnes CO₂).

Figure 3: Scope 3 (consumption based methodology) CO₂ estimated emissions for London



Source: Data provided by GLA, 11 August 2017

BENEATH THE HEADLINES

Scope 3 (consumption-based) emissions, at 85 MtCO₂ in 2013, were more than double scope 1 and 2 for London. (This method of measuring scope 3 emissions includes the majority of scope 1 and 2 emissions; see Figure 4.) Figure 3 shows that scope 3 emissions have remained broadly static in recent years, whereas scope 1 and 2 emissions are decreasing (as shown in indicator 1).

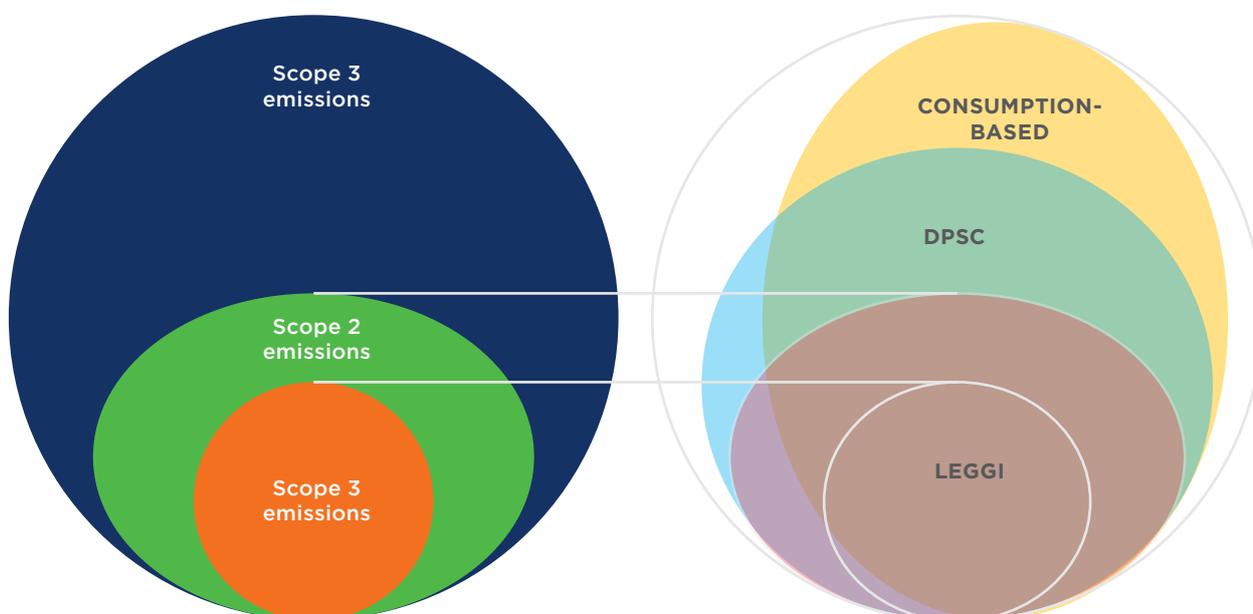
The GLA is considering policies that could reduce scope 3 emissions. Many of the policies to reduce scope 1 and 2 emissions might in some cases also reduce scope 3 emissions. For example, in the draft London Environment Strategy (LES) proposal 6.1.4c

encourages the reduction of whole lifecycle building emissions (including embodied carbon), which would reduce scope 3 emissions from construction. The draft LES also suggests how more significant reductions might be achieved through encouraging a move towards a more circular economy (thereby reducing consumption of material resource and the associated ‘embedded’ CO₂ emissions).

Figure 4 illustrates the two different scopes in methodologies assessing London’s indirect carbon emissions in comparison to the London Energy and Greenhouse Gas Inventory (LEGGI), which just covers scopes 1 and 2:

- The Direct Plus Supply Chain (DPSC) methodology includes all greenhouse gas emissions that occur within a city's geographic boundary, as well as the supply chains associated with the city's major products and services.
- The Consumption-Based methodology (used for this indicator) measures the CO₂ emissions from the products and services that London consumes. Therefore, CO₂ emitted as a result of products and services that are produced in London, but not consumed in London, are not included.

Figure 4: Comparison of measurement scopes



Source: GLA, 2015, *Assessing London's Indirect Carbon Emissions* <https://www.london.gov.uk/what-we-do/environment/assessing-londons-indirect-carbon-emissions>

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's draft London Environment Strategy (LES)⁴⁰ includes the goal that "London will be a zero carbon city by 2050", but this target does not include scope 3 emissions.

Nationally, the Climate Change Act 2008⁴¹ sets the UK's CO₂ emission reduction targets. These legally binding targets aim to achieve emission reductions of least 80% by 2050 (against the 1990 baseline). London scope 3 emissions – associated with the production and transportation of goods and materials within the UK - will therefore have an impact on this target.

Relevant Sustainable Development Goals

SDG 13 (climate action) urges countries to take urgent action to tackle climate change and its impacts. This goal sets a series of targets and metrics to, for example, foster low greenhouse gas emissions development.

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, reduce the adverse per capita environmental impact of cities.

SDG 7 (affordable and clean energy) urges countries to ensure access to affordable, reliable, sustainable and modern energy for all. This goal sets targets and metrics to, for example, substantially increase the share of renewable energy in the global energy mix.



3. ACCESS TO NATURE

INDICATOR OVERVIEW

Measure	Proportion of Greater London in Areas of Deficiency (AoD) in access to nature
Source	Greenspace Information for Greater London (GiGL)
Link	Data provided via email; for more about the measure: http://www.gigl.org.uk/designated-sites/areas-of-deficiency-in-access-to-nature/
Year of data used for 2017 report	2017

SUMMARY ASSESSMENT

- 21% of Greater London is within an AoD in access to nature in 2017.
- The proportion of Greater London identified within an AoD in access to nature in 2017 was largely unchanged from 2013 levels.
- Roughly 47% of Greater London is green. 33% of London is vegetated green space according to surveyed habitat information, excluding an additional 14%, which is estimated to be vegetated domestic garden.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
“More than half of London’s area to be green and for tree canopy cover to increase by ten per cent by 2050” (draft LES) ⁴²		

	Long-term trend	Long-term	Five-year Progress since 2013
Change	n/a		

Why is this issue important to London's quality of life?

Access to good quality green space and nature is widely recognised as a significant contributory factor for quality of life. Many parts of London have good green and blue (e.g. canals, waterways and wetlands) spaces where people can experience wildlife in open areas. Access to these spaces helps improve understanding of London's unique urban biodiversity and encourages greater social interaction, health and wellbeing through leisure activities. A systematic method has been developed for identifying those parts of London where people do not enjoy good access to green spaces with significant wildlife value. These areas are called areas of deficiency (AoD) in access to nature.

HEADLINES

Many parts of London are blessed with high quality green spaces, which support a wealth of wildlife. However, this is by no means the case across the whole of the capital.

AoDs in access to nature are defined as localities where people live more than 1km walking distance from a green space that is designated as a Site of Importance for Nature Conservation (SINC) at borough level or higher.

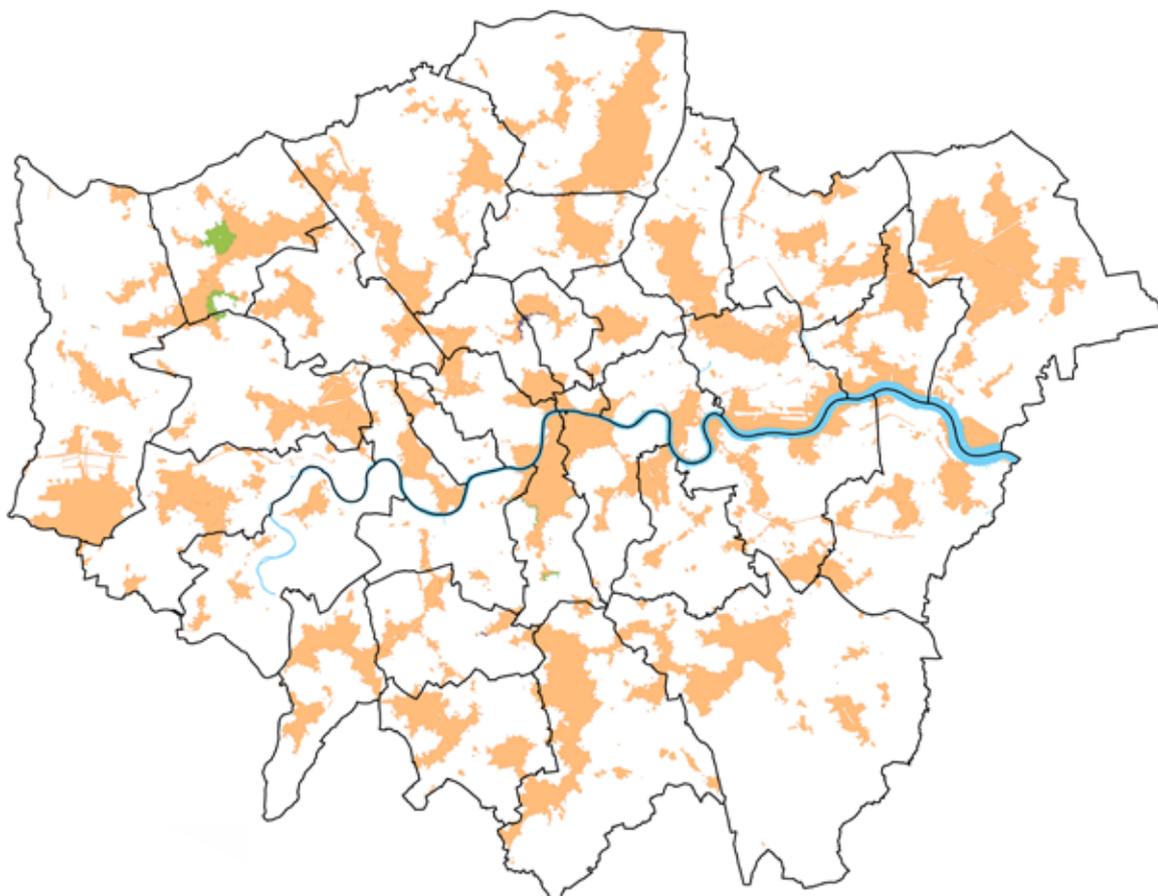
Greenspace Information for Greater London estimates that 21% of Greater London is within an AoD in access to nature in 2017. This is broadly the same as in 2013. Because of the way the data is collected for this measure, figures were not available for other years⁴³.

Some locally significant changes have occurred, however. In particular, a decrease in AoDs occurred in Harrow. This was due to an increase in area of some publicly accessible SINCs, as designated in Harrow's Local Development Framework in July 2013.

Figure 5 compares the most up to date (2017) GiGL map of AoDs in access to nature with the version produced by GiGL in 2013 using the same methods. The map highlights areas that are no longer AoD in the 2017 data compared to the 2013 data (green) and areas that have become AoD in the 2017 data compared to the 2013 data (purple).



Figure 5: Areas of Deficiency in access to nature, 2013 vs 2017



Source: GiGL, via email 8 September 2017

WIDER EVIDENCE

GiGL provides further contextual information about London's green spaces on its website⁴⁴. This includes:

- Roughly 47% of Greater London is green. 33% of London is vegetated green space according to surveyed habitat information, excluding an additional 14% which is estimated to be vegetated domestic garden.
- 2.5% of Greater London's area is blue space, such as rivers, canals and reservoirs.
- 24% of Greater London is domestic garden, 14% is estimated to be vegetated garden.
- Over 22,500 hectares of woodland and orchard habitat were recorded in London in the last uniform method survey for all London (carried out between 1983-2009).

- Roughly 60% of Greater London is open (i.e. undeveloped) land. 39% of this is land that has an amenity value or potential amenity value. The rest of the open land is domestic gardens.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s draft London Environment Strategy (LES)⁴⁵ includes the following aim - “more than half of London’s area to be green and for tree canopy cover to increase by ten per cent by 2050”. To achieve that, the Mayor is proposing a series of specific actions, including increasing and protecting green and blue infrastructure, and conserving and enhancing wildlife and natural habitats. The draft LES recognises the importance of green spaces and proposes specific actions with the goal of increasing and improving access to green space and nature for all Londoners, especially children.

It is difficult to assess London’s progress towards meeting this goal using this current indicator. It will therefore be important for future QoL indicator sets to include complementary measures to help monitor progress towards this goal and to assess London’s biodiversity more broadly (see ‘recommendations for future QoL indicator sets section).

Relevant Sustainable Development Goals

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.

SDG 15 (life on land) urges countries to sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss. This goal sets targets and metrics to, for example, mobilise and significantly increase funding from all sources to conserve and sustainably use biodiversity and ecosystems.



4. NO_x EMISSIONS

INDICATOR OVERVIEW

Measure	Tonnes of NO _x emitted in London
Source	London Atmospheric Emissions Inventory
Link	https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013
Year of data used for 2017 report	2013

SUMMARY ASSESSMENT

- NO_x emissions in London in 2013 were an estimated 60,116 tonnes.
- There was a 27% reduction in NO_x emissions between 2008 and 2013.
- At borough level in 2013, NO_x emissions were highest in Hillingdon and lowest in the City of London.
- Despite decreases in NO_x emissions levels, concentrations of NO₂ remain unacceptably high, with many parts of London exceeding legal limits and with some locations exceeding by up to three times the legal limits.
- In 2013, approximately 23% of Londoners were living in areas with average NO₂ concentrations above the EU limit value, the majority in inner London.
- Populations living in the most deprived areas are on average more likely to be suffer poor air quality than those in less deprived areas.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
<p>“40 per cent reduction in NO_x emissions by 2020 compared to the 2013 baseline” (draft LES)</p> <p>“London will have the best air quality of any major world city by 2050” (draft LES⁴⁶)</p>	<p>London is failing to meet the legal limit for NO₂ and more action needs to be done at the borough, City and UK Government levels in order to protect public health and raise awareness amongst Londoners.</p>	●

	Long-term trend 2008-2013	Long-term	Five-year Progress since 2008
Change		●	

Why is this issue important to London’s quality of life?

Air quality affects human health – particularly the very young, older people and those with existing heart and lung conditions. Thousands of Londoners are dying early every year as a result of toxic air⁴⁷. Air quality is especially poor in inner London. The main reason for poor air quality in London is pollution arising from fossil fuel powered vehicles (especially diesel vehicles), which generate almost half of air pollution.

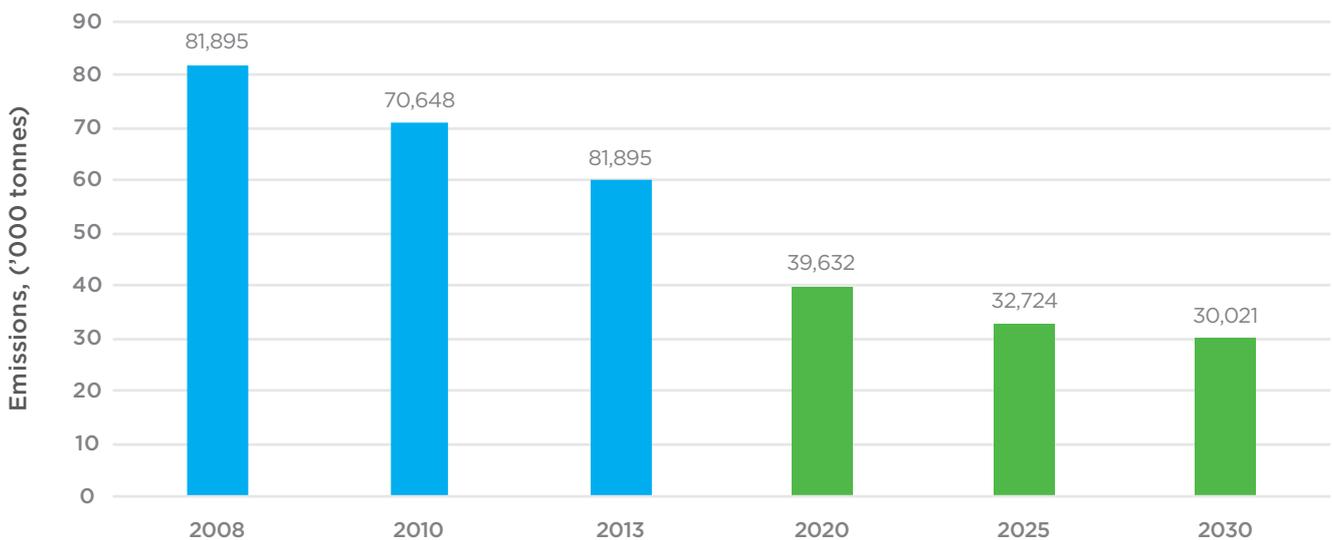
HEADLINES

The GLA regularly compile and release the London Atmospheric Emission Inventory (LAEI). The LAEI is a database of geographically referenced datasets of pollutant emissions sources and concentrations in Greater London. The base year for the current LAEI is 2013, with back projections to 2008 and 2010, and forward projections to 2020, 2025 and 2030. The LAEI

area covers the 32 London Boroughs and the City of London and up to the M25 motorway.

Figure 6 shows that NO_x emissions in London in 2013 were an estimated 60,116 tonnes. The LAEI estimates there was a 27% reduction in NO_x emissions in the five-year period between 2008 and 2013. The projections also estimate that NO_x emissions will continue to fall by over 50% between 2013 and 2030.

Figure 6: NO_x emissions in tonnes/year, LAEI area, 2008-2030

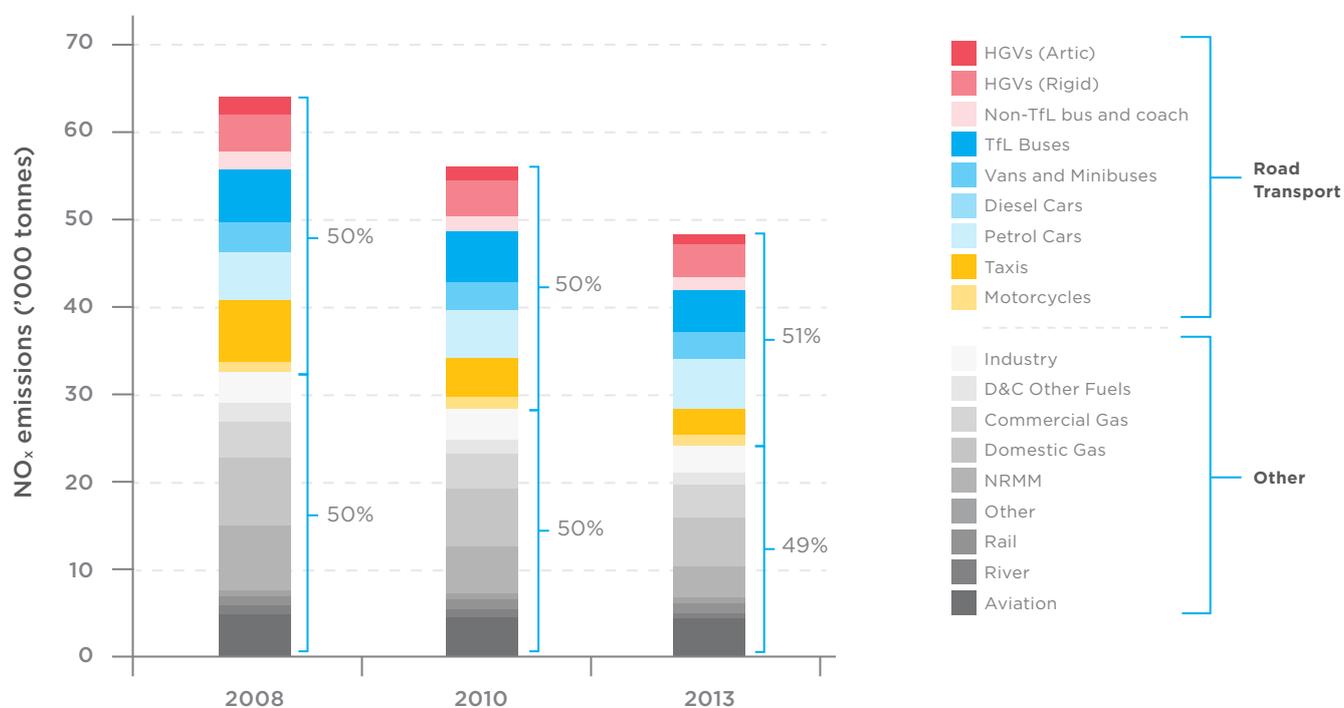


Source: LAEI 2013, GLA <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>

BENEATH THE HEADLINES

Figure 7 shows NO_x emissions trends by source type. It shows that road transport was responsible for around half of all NO_x emissions in 2013. Domestic and commercial gas was also a significant contributor of NO_x emissions.

Figure 7: Emissions trend and main source categories – NO_x 2008-2013



Source: Source: GLA (2016), London Atmospheric Emissions Inventory (LAEI) 2013. Accessed from: <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>

At borough level in 2013, NO_x emissions were highest in Hillingdon (5263.47 tonnes) – nearly half of which are derived from Heathrow Airport – and lowest in the City of London (453.1 tonnes). This is to be expected as the City of London is by far the smallest borough, population and area wise.

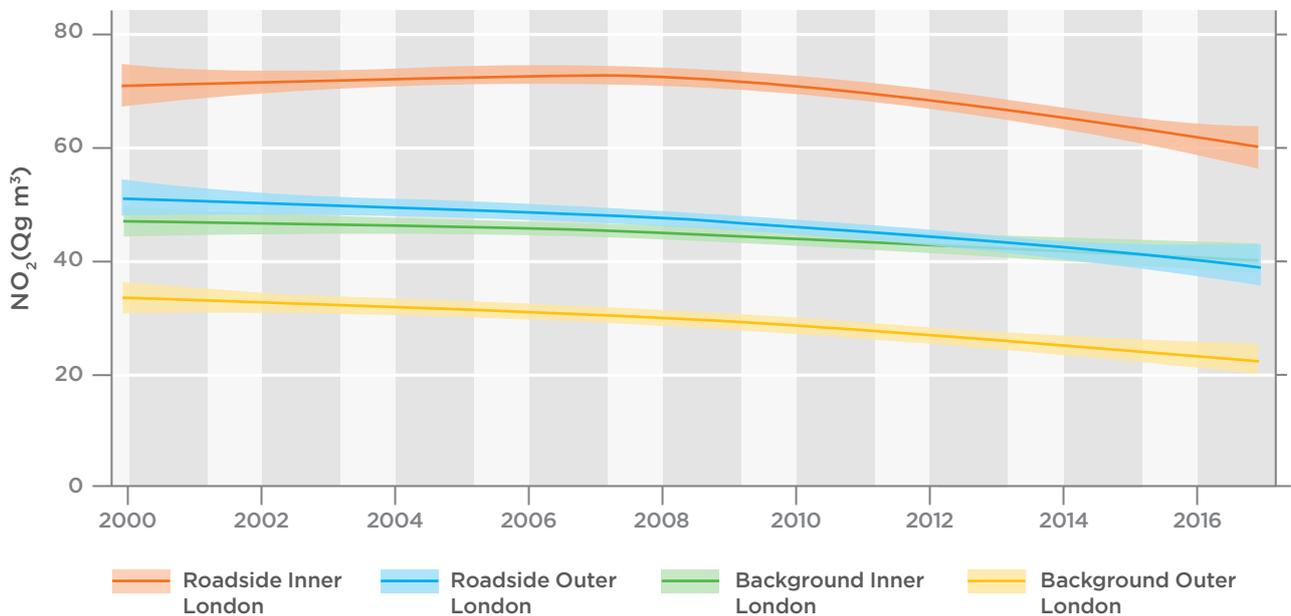
Figure 8 shows the general (average) trend over the last decade or so for NO₂ concentrations at sites that are part of the London Air Quality Network⁴⁸, grouped by site type. Roadside monitors (RS) are within five metres of roads, while ‘background sites’ (BG) are located away from major sources of pollution.

WIDER EVIDENCE

Concentrations

Pollutant (NO_x) concentrations in London are affected by emissions generated from within London, pollution from outside London and elsewhere in the UK, and other factors such as weather.

Figure 8: Trends in NO₂ concentrations in London - 2000 to 2016



Source: GLA (2016), London Atmospheric Emissions Inventory (LAEI) 2013. Accessed from: <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>

Overall, there has been a gradual reduction in NO₂ concentrations at background sites in inner and outer London and at outer London roadside sites. Inner London NO₂ roadside sites have shown a more variable trend but have seen a steeper decline from 2012. The higher uncertainty is represented by a wider shadow around the central trend lines.

These reductions are important as they show, overall, that air quality is improving in London. However, roads still exceed the NO₂ EU annual mean limit value of 40 Qg/m³ by a large margin.

In 2013, approximately 1.9 million people in London, equating to 23 per cent of the population of London, were living in areas with average NO₂ concentrations above the EU limit value, the majority in inner London⁴⁹.

Populations living in the most deprived areas are on average currently more exposed to poor air quality than those in less deprived areas. 51% of the LSOAs within the most deprived 10% of London have concentrations above the NO₂ EU limit value. This is in contrast to 1% above the NO₂ EU limit in the 10% least deprived areas⁵⁰.

In 2010, there were 1777 primary schools in London of which 433 (24%) were in locations where average concentrations exceed the NO₂ EU limit value⁵¹.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's draft London Environment Strategy (LES)⁵² includes the goal that "London will have the best air quality of any major world city by 2050". The draft LES acknowledges

that London is failing to meet the legal limit for NO₂ and that more action needs to be done at the borough, Mayoral, and UK Government levels in order to protect public health and raise awareness amongst Londoners.

Specific proposed actions include going beyond the legal requirements through the phasing out of fossil fuels powered vehicles, especially diesel, and encouraging the take up of zero emission vehicles. For NO_x in particular, compared to a 2013 baseline, the draft LES says that the measures in this strategy will result in a 40% reduction in emissions by 2020 compared to the 2013 baseline.

At the EU level, the 2008 ambient air quality directive (2008/50/EC) sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health, including nitrogen dioxide (NO₂). The WHO air quality guidelines (AQGs) set stricter standards for particulate matter.

Despite decreases in emissions levels, concentrations of air pollutants remain a major concern. London is still regularly exceeding the NO₂ EU Limit Value. Meeting EU limits, as well as the draft 2020 NO_x target, will require urgent and concerted action at all levels of government.

Relevant Sustainable Development Goals

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality.

5. PARTICULATE MATTER EMISSIONS

INDICATOR OVERVIEW

Measure	5a Tonnes of PM _{2.5} emitted in London 5b Tonnes of PM ₁₀ emitted in London
Source	London Atmospheric Emissions Inventory
Link	https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013
Year of data used for 2017 report	2013

SUMMARY ASSESSMENT

- Particulate Matter (PM) 2.5 emissions in London in 2013 were an estimated 2939 tonnes. There was a 26% reduction in PM_{2.5} emissions between 2008 and 2013.
- PM₁₀ emissions in London in 2013 were an estimated 5,908 tonnes. There was a 18% reduction in PM₁₀ emissions between 2008 and 2013.
- There are large geographic differences in particulate matter emissions in London. PM emissions were highest in Hillingdon and lowest in Islington and in the City of London.
- In 2013, 95% of Londoners lived in areas that exceeded the WHO guideline limit for PM_{2.5}.
- In Greater London, thousands of deaths each year are attributable to long-term exposure to small particulates.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
<p>“London aims to achieve the World Health Organisation (WHO) guidelines for PM_{2.5} by 2030”</p> <p>“London will have the best air quality of any major world city by 2050” (draft LES⁵³)</p>	95% of Londoners live in areas that exceed the WHO guideline limit for PM _{2.5} by at least 50%	

5a PM ₁₀	Long-term trend	Long-term	Five-year Progress since 2008
Change	n/a		
5b PM ₁₀	Long-term trend	Long-term	Five-year Progress since 2008
Change	n/a		

Why is this issue important to London's quality of life?

There is a close, quantitative relationship between exposure to high concentrations of small particulates (PM₁₀ and PM_{2.5}) and increased mortality or morbidity, both daily and over time⁵⁴. Moreover, black carbon, a significant component of PM_{2.5}, is a powerful climate change agent, but has a shorter atmospheric life than CO₂. Therefore, by reducing black carbon it is possible to deliver quick wins to improve both air quality and prevent climate change.

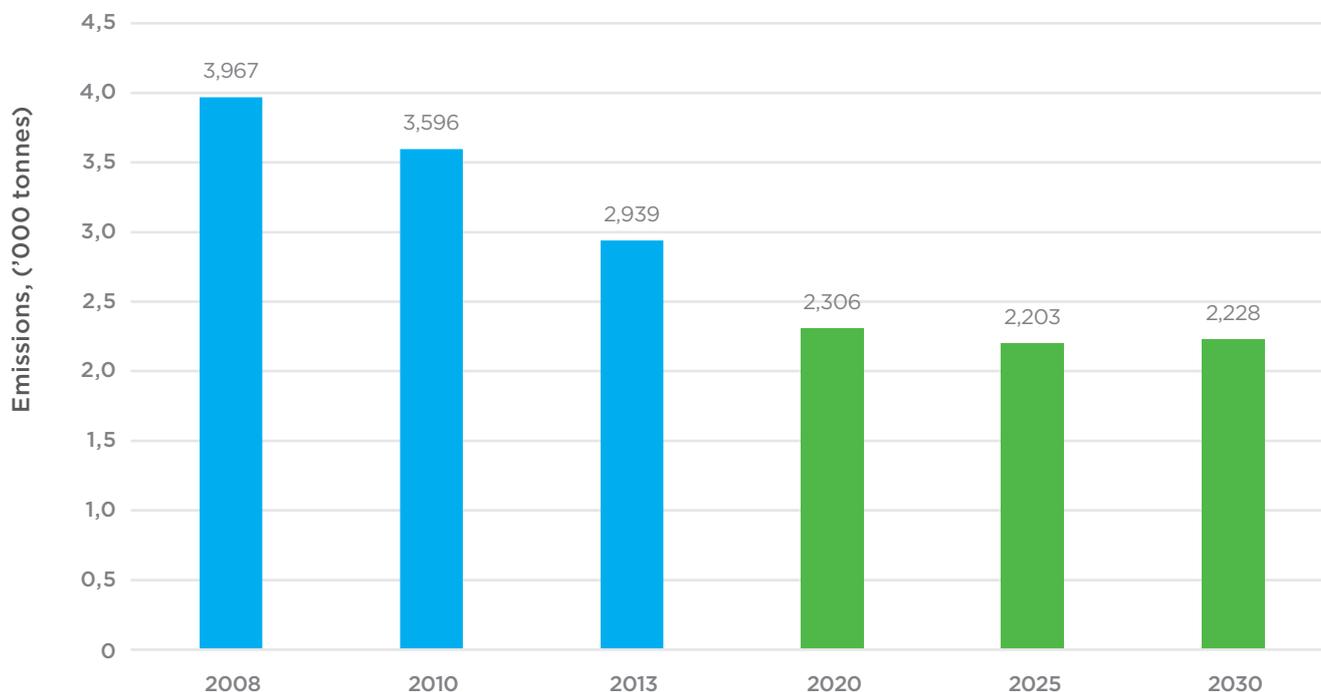
HEADLINES - 5a PM_{2.5} EMISSIONS

Figure 9 shows that PM_{2.5} emissions in London in 2013 were an estimated 2,938 tonnes.

The LAEI projections estimate that there has been a 26% reduction in PM_{2.5} emissions in

the five-year period between 2008 and 2013. PM_{2.5} emissions are projected to continue to fall by over 24% between 2013 and 2030.

Figure 9: PM_{2.5} emissions in tonnes/year, LAEI area, 2008-2030



Source: LAEI 2013, GLA <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>.

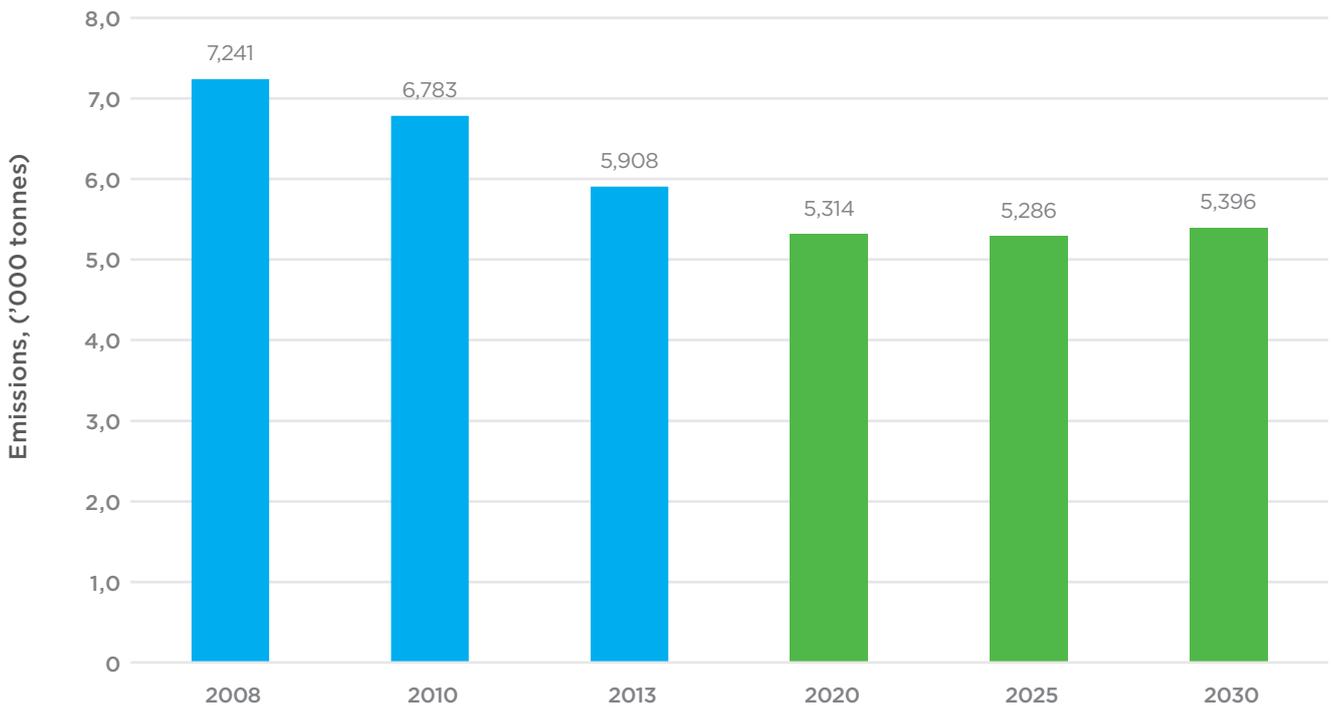
HEADLINES - 5b PM₁₀ EMISSIONS

Atmospheric particulate matter (PM) arises from numerous different sources and processes, and is a complex mixture of both organic and inorganic substances including carbon, sulphate, nitrate, ammonium, minerals and metals. They are generally classified on the basis of their size (aerodynamic particle diameter) with the most common being PM_{2.5}, PM₁₀, and ultrafine particles (UFP). Exhaust emissions from road transport are

the dominant source of both PM₁₀ and PM_{2.5} in urban areas. However, transboundary pollution and tyre and brake wear are also of key importance⁵⁵.

Figure 11 shows that estimated PM₁₀ emissions in London in 2013 were 5,908 tonnes. The LAEI projections estimate that there has been a 18% reduction in PM₁₀ emissions in the five-year period between 2008 and 2013. PM₁₀ emissions are projected to continue to fall by over 8.5% between 2013 and 2030.

Figure 10: PM₁₀ emissions in tonnes/year, LAEI area, 2008-2030



Source: LAEI 2013, GLA <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>.

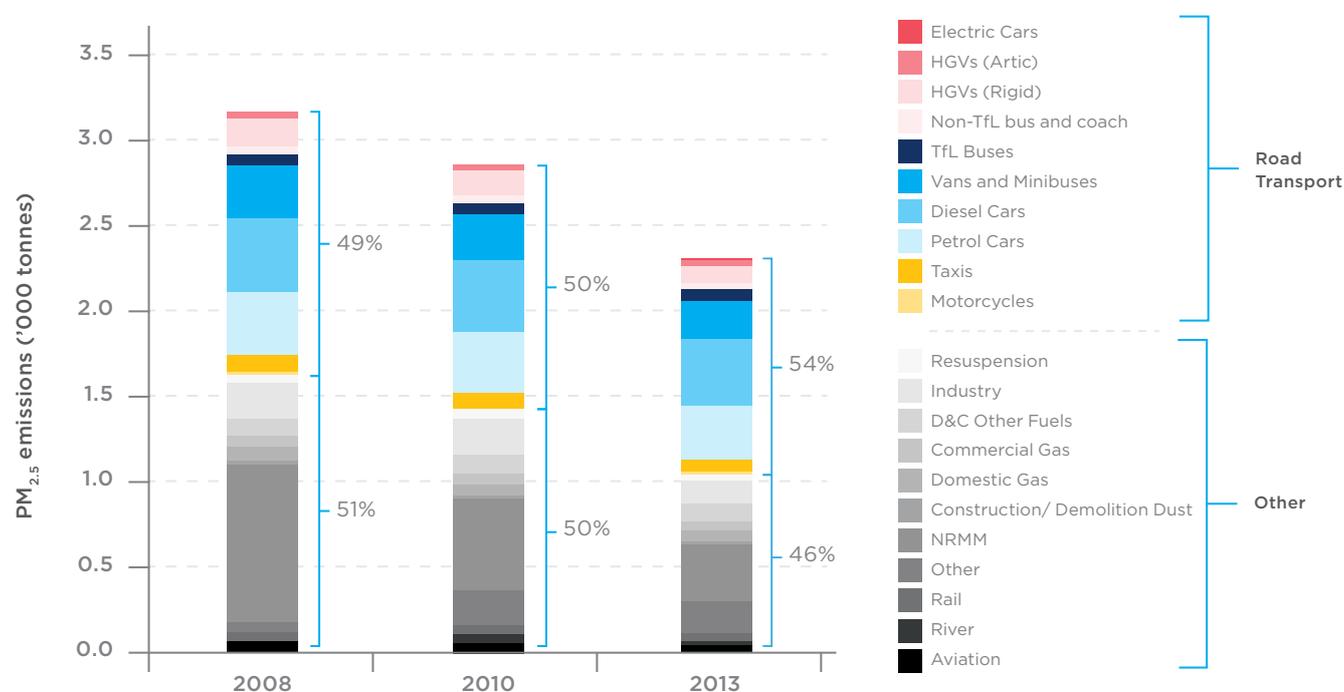
BENEATH THE HEADLINES

5a PM_{2.5}

Figure 11 shows PM_{2.5} emissions trends by source type. It shows that road transport was responsible for 54% of all PM_{2.5} emissions in 2013. As with PM₁₀ projections, improvements to vehicle exhaust emissions and policies have

reduced PM_{2.5} emissions from road transport, with exhaust emissions projected to reduce by about 90% between 2030 and 2008. Unlike PM₁₀, resuspension⁵⁶ is a relatively small source of PM_{2.5} and future emissions are expected to be dominated by tyre and brake wear⁵⁷.

Figure 11: Emissions trend and main source categories - PM_{2.5} 2008-2013



Source: LAEI 2013, GLA <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>

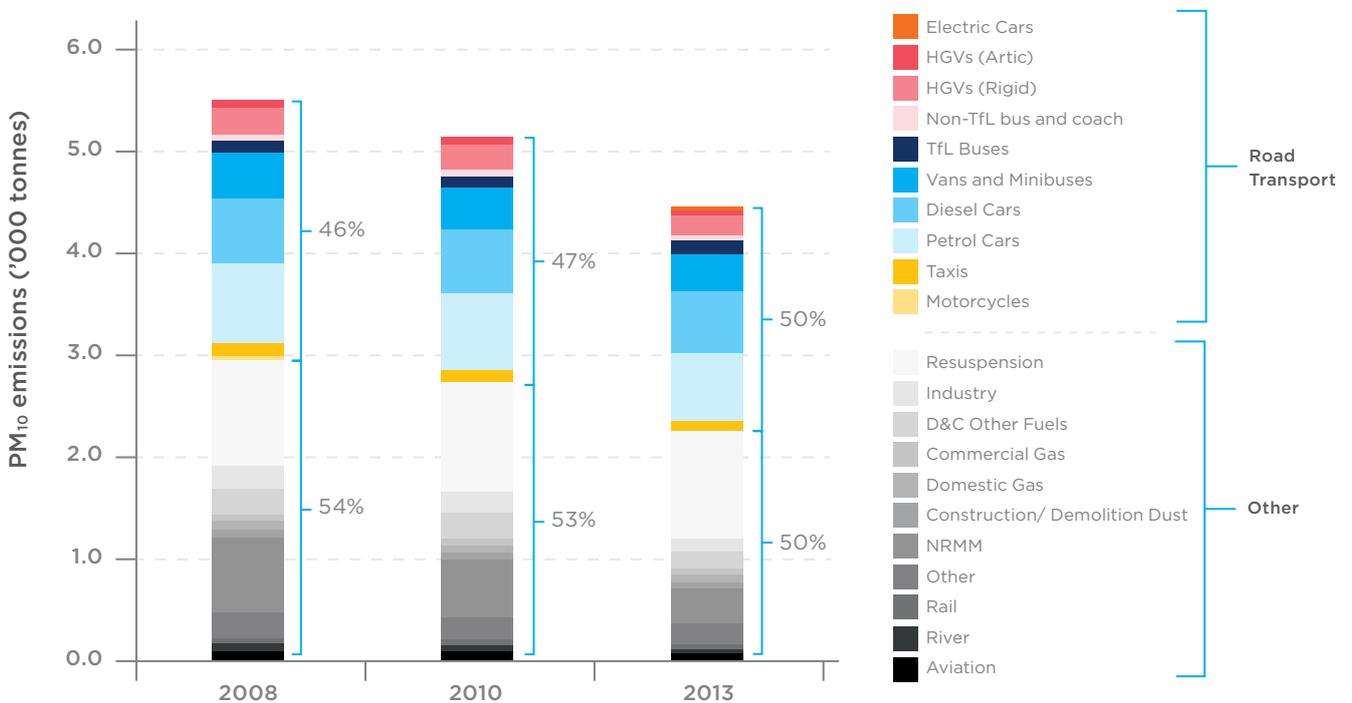
At borough level in 2013, total PM_{2.5} emissions were highest in Hillingdon (186 tonnes) and lowest in Islington (35.4 tonnes) and the City of London (15.7 tonnes). As with NO_x emissions by borough, this is to be expected as the City of London is significantly smaller than the rest of boroughs.

5b PM₁₀

Whilst PM₁₀ emissions from road transport have been reduced in recent years, the rate of reduction is less pronounced than for NO_x. Figure 11 shows PM₁₀ emissions trends

by source type. It shows that road transport was responsible for around half of all PM₁₀ emissions in 2013. Tyre and brake wear, as well as resuspension components of PM₁₀ remain significant contributors of PM₁₀ emissions⁵⁸.

Figure 12: Emissions trend and main source categories - PM₁₀ 2008-2013



Source: LAEI 2013, GLA <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>

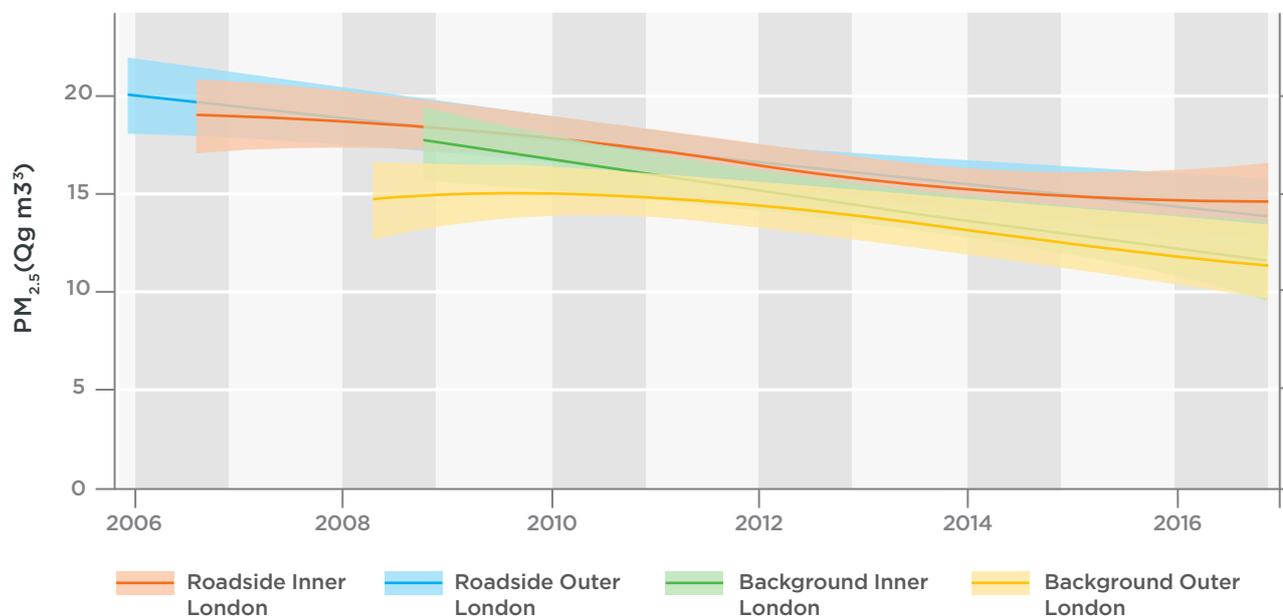
At borough level in 2013, total PM₁₀ emissions were highest in Hillingdon (337.2 tonnes) and lowest in Islington (67.6 tonnes) and the City of London (31 tonnes). As with the other air quality measurers above, this is to be expected as the City of London is by far the smallest borough.

Concentrations

Pollutant concentrations in London are affected by emissions in London, pollution from outside London and the UK, and other factors such as weather.

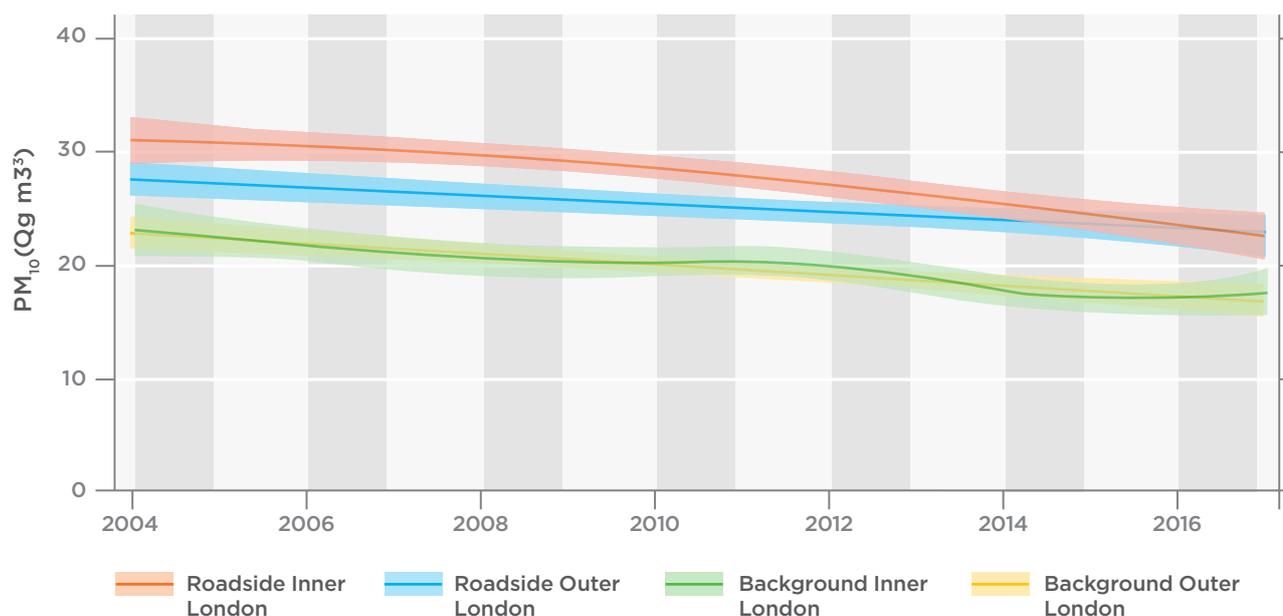
Figures 14 and 15 show the general (average) trend over the last decade or so for PM_{2.5} and PM₁₀ concentrations at sites that are part of the London Air Quality Network⁵⁹, grouped by site type. Roadside monitors (RS) are within five metres of roads, while ‘background sites’ (BG) are located away from major sources of pollution.

Figure 13: Trends in PM_{2.5} concentrations in London - 2006 to 2016



Source: GLA (2016), London Atmospheric Emissions Inventory (LAEI) 2013. Accessed from: <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>

Figure 14: Trends in PM₁₀ concentrations in London - 2004 to 2016



Source: GLA (2016), London Atmospheric Emissions Inventory (LAEI) 2013. Accessed from: <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013>

Overall, there has been a gradual reduction in $PM_{2.5}$ and PM_{10} concentrations at background sites in inner and outer London and at outer London roadside sites. Inner London PM_{10} roadside sites have shown a more variable trend but have seen a steeper decline from 2012 whereas concentrations of $PM_{2.5}$ may be levelling off at inner London Roadside sites⁶⁰. The trends in $PM_{2.5}$ are less certain, as there are fewer monitors available to measure this pollutant. The higher uncertainty is represented by a wider shadow around the central trend lines.

These reductions are important as they show, overall, that air quality is improving in London – albeit it is still not meeting legal targets. While the vast majority of roads in London met the PM_{10} EU annual mean limit value of 40 Qg/m^3 in 2013, 7.9 million Londoners – nearly 95 percent of the capital's population – live in areas of London that exceed the $PM_{2.5}$ guideline limit by 50%⁶¹ or more.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's draft London Environment Strategy (LES)⁶² includes the goal that "London will have the best air quality of any major world city by 2050". The draft LES acknowledges that PM health based guidelines are far from being met and that more action needs to be done at the borough, and UK Government levels to protect public health and raise awareness amongst Londoners.

As described within the policy context for NO_x , specific proposed actions include going beyond the legal requirements (see below), providing better information about air quality to reduce exposure, and phasing out fossil fuels, especially diesel, encouraging

the take up of zero emission vehicles. For PM in particular, the draft LES included the commitment that the Mayor will set new concentration limits for $PM_{2.5}$, with the aim of meeting World Health Organization (WHO) guidelines by 2030. WHO set guideline limits for the protection of human health, for $PM_{2.5}$ the limit is 10 $Qg m^{-3}$.

At the EU level, the 2008 ambient air quality directive (2008/50/EC) sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health, including both $PM_{2.5}$ and PM_{10} .

As Figures 10 and 11 show, further action is required after 2020 if a plateau in particulate matter emissions reductions from non-transport sources is to be avoided.

Relevant Sustainable Development Goals

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality. For example, one of the key indicators to assess progress towards this goal is annual mean levels of fine particulate matter ($PM_{2.5}$ and PM_{10}) in cities (population weighted).



6. RECYCLING

INDICATOR OVERVIEW

Measure	Percentage of household waste recycled or composted in London
Source	GLA, London Data Store. Household Waste Recycling Rates, Borough, Feb 2017 (data originally from Municipal Waste Management Survey, DEFRA)
Link	https://data.london.gov.uk/dataset/household-waste-recycling-rates-borough
Year of data used for 2017 report	2015-16

SUMMARY ASSESSMENT

- The household recycling rate in London in 2015-16 was 32%.
- Household recycling rates in London have steadily fallen since 2012-13.
- However, there has been significant long-term growth in recycling in London since 1998-99 when the rate was 7.6%.
- The rate in London is worse than the average rate for England of 43%.
- Broadly speaking, the recycling rates are higher in outer London than inner London.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"65% of London's municipal waste to be recycled by 2030" (draft LES ⁶³)		 (England)

	Long-term trend 1998-2015	Long-term Progress since 1998	Five-year Progress since 2010
Change			

Why is this issue important to London’s quality of life?

Recycling saves resources, reduces the need for landfill, can reduce air and water pollution, save energy and carbon and it can also create new employment opportunities. By moving towards a city that reuses and recycles, rather than one which relies on disposal, significant new economic and employment opportunities can be created. Participation in household recycling is also an indication of people’s commitment to leading more sustainable lifestyles.

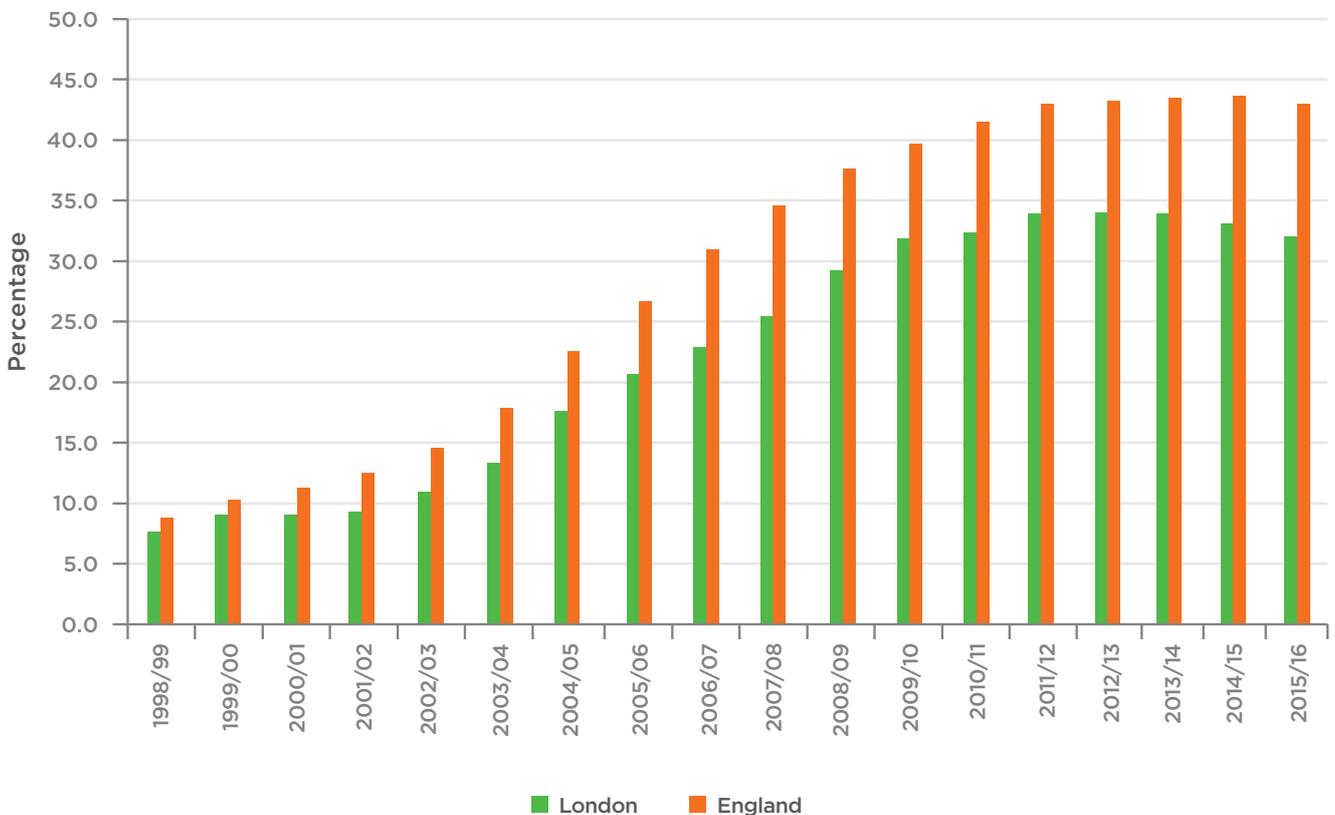
HEADLINES

The household recycling rate in London in 2015-16 was 32%. This is a fall of 0.4 percentage points from the 2010 figure⁶⁴. This fall reflects a trend seen across England since 2013, where the majority of regions have seen a small fall over that time.

The rate in London is worse than the rate for England of 43%. However, it still reflects a significant growth in recycling in London since 1998-99 when the rate was 7.6%.

Figure 15 shows the household recycling and composting rate for London and for England over the 18-year period to 2015-16.

Figure 15: Percentage of household waste recycled or composted in London, 1998-99 to 2015-16



Source: GLA, London Data Store, Household Waste Recycling Rates, Borough, Feb 2017 (data originally from Municipal Waste Management Survey, DEFRA)

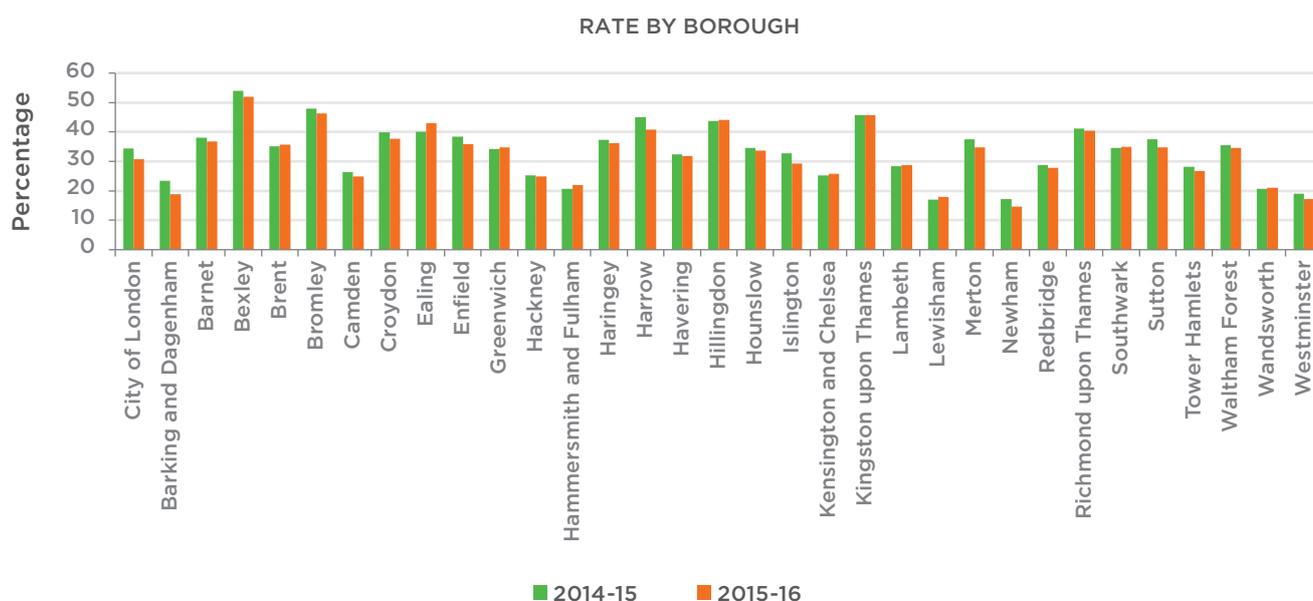
BENEATH THE HEADLINES

The percentage of household waste recycled in each of the boroughs varies from 15% in Newham to 52% in Bexley. Broadly speaking the recycling rates are higher in outer London than inner London. This reflects the comparative difficulty of collecting recyclable materials and particularly kitchen waste in inner London, where there are a large number

of high-rise buildings and flats. It also reflects the fact that more garden waste (a readily recyclable and heavier material) is produced in outer London.

The majority of the boroughs have seen a decline in rates over the last 3 years. This is in line with the trend across England. Figure 16 shows the rates in each borough in the last two years for which data is available.

Figure 16: Percentage of household waste recycled or composted in London boroughs, 2014-15 and 2015-16



Source: GLA, London Data Store, Household Waste Recycling Rates, Borough, Feb 2017 (data originally from Municipal Waste Management Survey, DEFRA)

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s draft London Environment Strategy (LES)⁶⁵ includes the aim that “65% of London’s municipal waste will be recycled by 2030”. The draft Strategy highlights the need to take a circular approach to London’s use of resources that designs out waste, keeps materials in use at their highest value for as long as possible and minimises environmental impact. It also acknowledges that the Mayor is not a waste authority and that in order to move London from 52% municipal waste recycling⁶⁶ today to 65% by 2030, boroughs, businesses, industry and Londoners will need to put into practice a series of actions in collaboration with the Mayor. Some of these proposed actions include efforts to increase recycling rates in flats and consolidating commercially collected waste services.

The European Commission has adopted an ambitious Circular Economy Package, which includes revised legislative proposals on waste. Key elements of the revised waste proposal include:

- A common EU target for recycling 65% of municipal waste by 2030;
- A common EU target for recycling 75% of packaging waste by 2030.

The UK has a statutory recycling target of 57% for plastic packaging and 80% for glass by 2020 (total recycling 75.4% by 2020).

As the draft LES notes, the target for municipal waste will be challenging to deliver. It notes that:

“To help them achieve these targets, waste authorities should deliver the following minimum level of service for household recycling:

- all properties with kerbside recycling collections to receive a separate weekly food waste collection
- all kerbside serviced properties to receive a collection of, at a minimum, the six main dry recycling materials (glass, cans, paper, card, plastic bottles and mixed plastics (tubs, pots and trays)).”

Relevant Sustainable Development Goals

SDG 12 (responsible production and consumption) urges countries to ensure sustainable consumption and production patterns in order to avoid cause irreversible damage to our environment. This goal sets targets and metrics to, for example, substantially reduce waste generation through prevention, reduction, recycling and reuse.

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, reduce the adverse per capita environmental impact of cities, including by paying special attention to waste management.

7. WASTE

INDICATOR OVERVIEW

Measure	London's performance against the greenhouse gas Emissions Performance Standard (EPS). The whole waste system EPS considers the CO ₂ equivalent emissions per tonne of waste managed (CO ₂ e/t)
Source	Eunomia for GLA, Greenhouse Gas Emissions Performance Standard for London's Local Authority Collected Waste - 2015/16 Update, March 2017
Link	https://www.london.gov.uk/WHAT-WE-DO/environment/environment-publications/emissions-performance-standard-eps-annual ⁶⁷
Year of data used for 2017 report	2015-16

SUMMARY ASSESSMENT

- The Emissions Performance Standard (EPS) shows the total carbon impact of managing London's waste. It calculates the sum of the carbon costs of sending waste to landfill or incineration and the carbon benefits of recycling waste. Therefore, it reflects both the total waste arisings and the carbon impacts of managing the waste through recycling and other means.
- London's performance in 2015-16 against the EPS has improved slightly in comparison to that of 2014-15. The negative figure means that there are now net carbon savings from managing London's waste.
- Since the EPS was implemented in 2011, London's CO₂e emissions from local waste management activities have fallen from +135 kt CO₂e in 2008 (the first year the EPS results were developed) to -131 kt CO₂e in 2015-16.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"-0.069 tonnes CO ₂ per tonne of waste managed by 2020/21 -0.084 tonnes CO ₂ per tonne of waste managed by 2024/25 -0.167 tonnes CO ₂ per tonne of waste managed by 2030/31" (draft LES ⁶⁸)		●

	Long-term trend 2008-16	Long-term Progress since 2008	Five-year Progress since 2010
Change			

Why is this issue important to London’s quality of life?

Consumption of goods by households and businesses leads to waste accumulating in landfill sites in and around London – this represents both a waste of resources and an impact on the environment. The overall impacts of disposing of waste by landfill and incineration make a significant contribution to greenhouse gas emissions.

HEADLINES

In 2010 the GLA developed a pioneering emissions performance standard (EPS) to assess the GHG emissions associated with the collection, treatment, energy generation, and final disposal of London’s local authority collected waste⁶⁹.

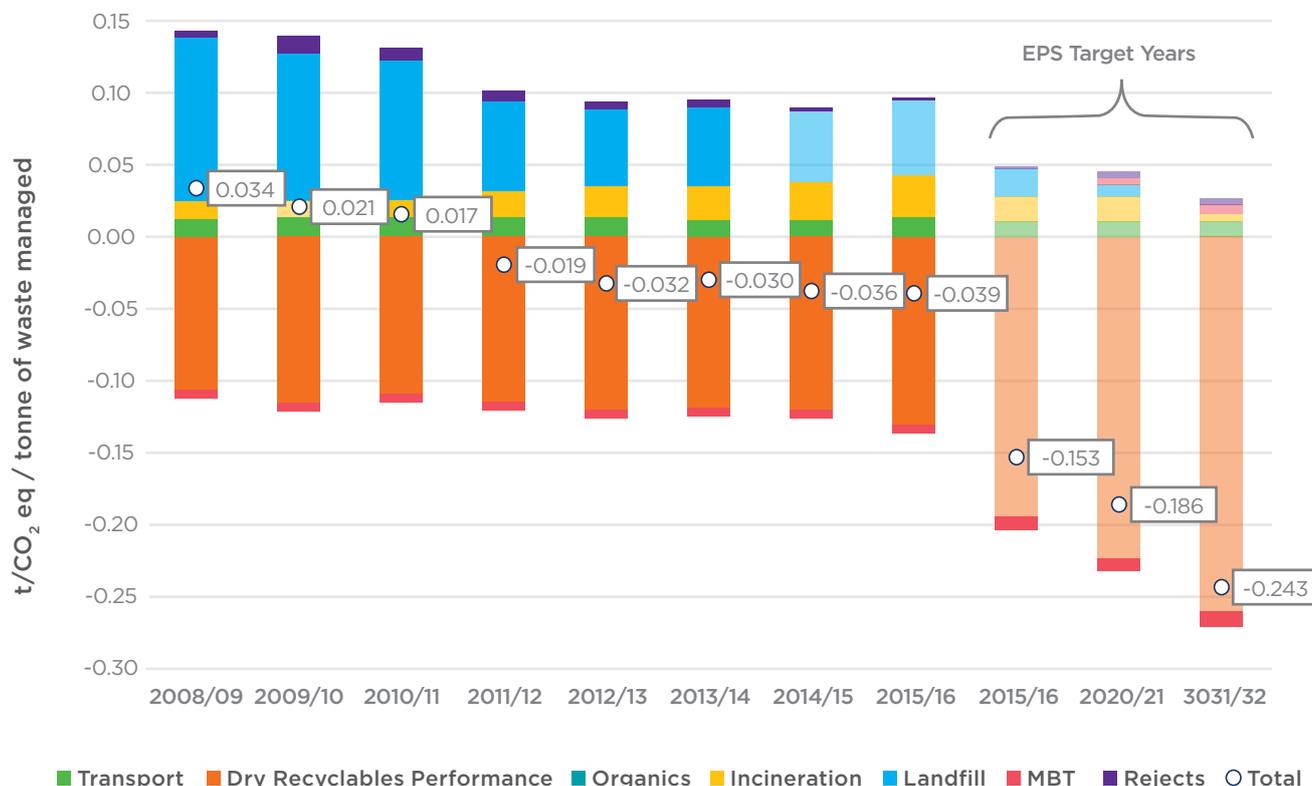
The EPS shows the total carbon impact of managing London’s waste. It calculates the sum of the carbon emissions of sending waste to landfill or incineration and the carbon benefits of recycling waste. Therefore, it reflects both the total waste arisings and carbon impacts of managing the waste through recycling and other means.

London’s performance in 2015-16 against the EPS has improved slightly in comparison to that of 2014-15. The measure has improved slightly over this time period from -123 thousand tonnes of carbon dioxide equivalent emissions per annum (ktpa CO₂e) to -131 ktpa CO₂e. The negative figure means that there are net carbon savings from managing London’s waste.

These results mean that, since the EPS was implemented in 2011, London’s CO₂e emissions from local waste management activities have fallen from +135 kt CO₂e in 2008 (the first year the EPS results were developed) to -131 kt CO₂e in 2015-16.



Figure 17: London's Performance against the EPS (2008-2016)



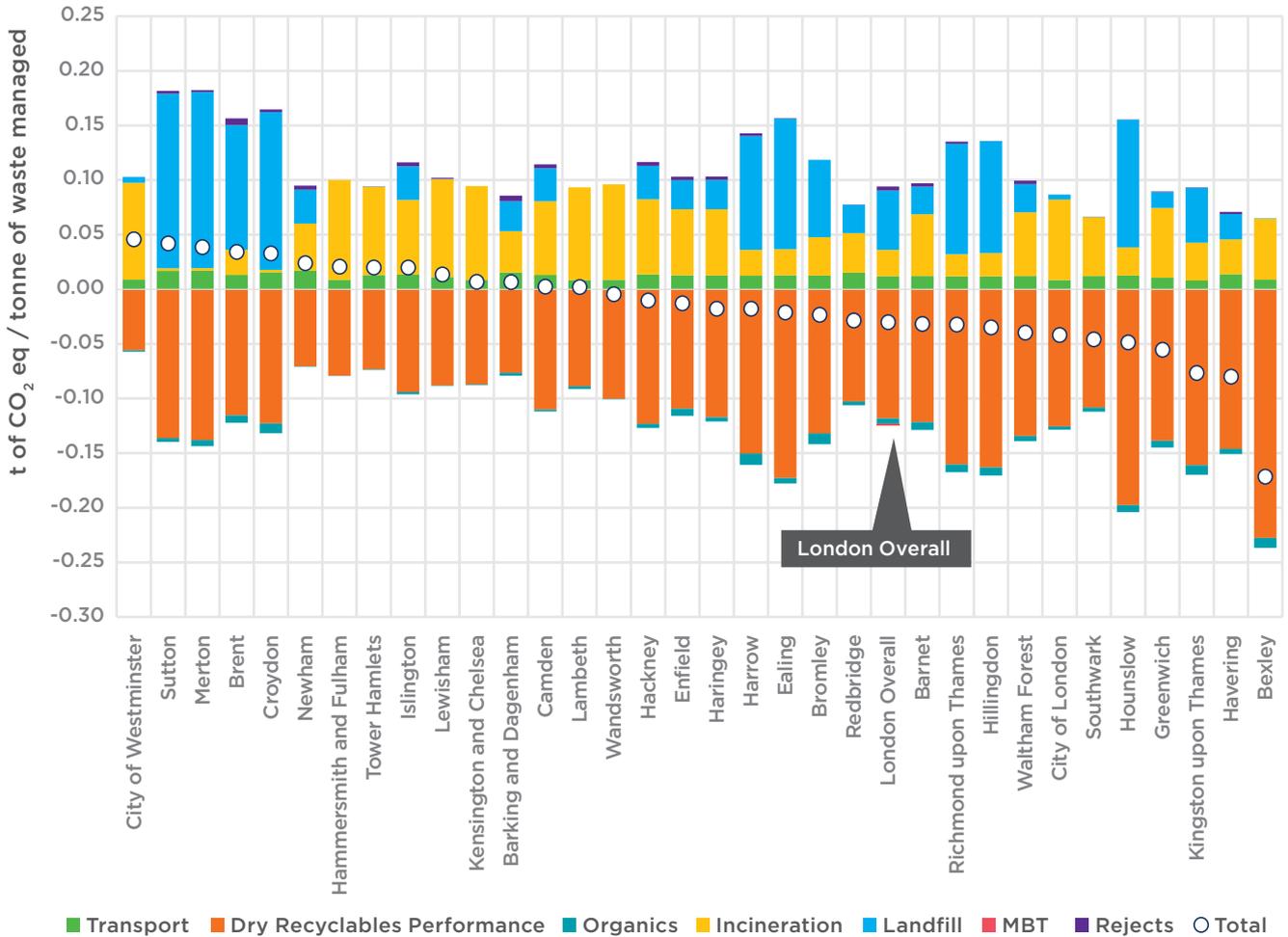
Source: Eunomia for GLA, Greenhouse Gas Emissions Performance Standard for London's Local Authority Collected Waste - 2015/16 Update, March 2017

BENEATH THE HEADLINES

The results for each individual borough show a different pattern to that of the household recycling rate. Some boroughs, such as Ealing, Harrow, Merton and Sutton - all of which perform better than London's average performance for recycling, perform less well

against the overall EPS score as most of their residual waste is sent to landfill, reducing their overall EPS performance. Other boroughs such as Southwark, with a relatively low recycling rate, perform better in the EPS as less waste is sent to landfill. The EPS results for each borough are shown in Figure 18.

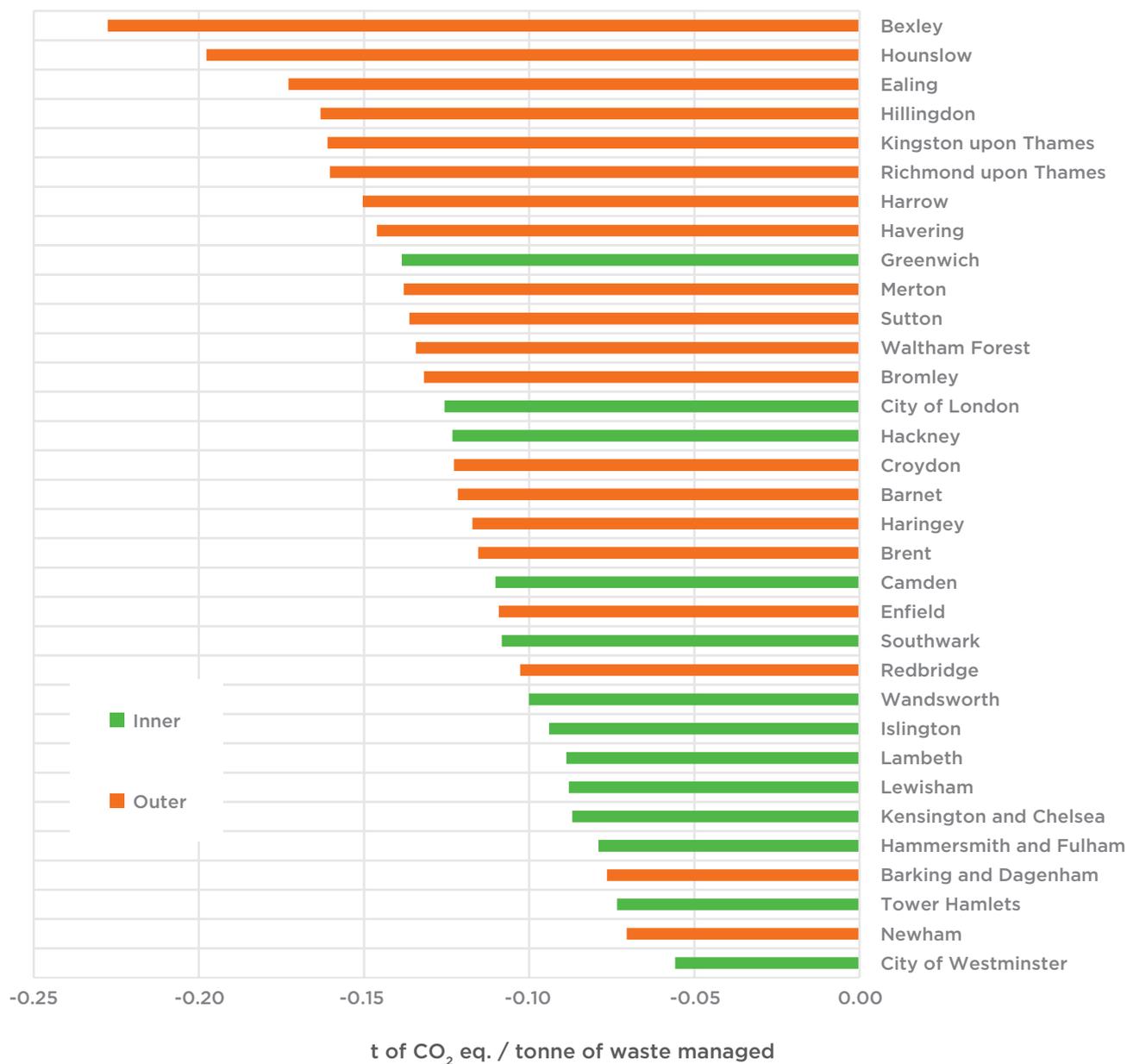
Figure 18: Performance against the EPS of London boroughs for 2015-16



Source: Eunomia for GLA, Greenhouse Gas Emissions Performance Standard for London's Local Authority Collected Waste - 2015/16 Update, March 2017

When you look at the carbon saving performance for recycling of the boroughs, there is a clear difference between inner and outer London boroughs. With a few exceptions, outer boroughs tend to have better EPS than inner boroughs. This is shown in Figure 19.

Figure 19: Recycling performance of Inner and Outer London boroughs for 2015-16



Eunomia for GLA, Greenhouse Gas Emissions Performance Standard for London's Local Authority Collected Waste - 2015/16 Update, March 2017

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's draft London Environment Strategy (LES)⁷⁰ includes the aim that "London will be a zero waste city"⁷¹. The draft Strategy highlights the need to take a circular approach to London's use of resources that designs out waste, keeps materials in use at their highest value for as long as possible and minimises environmental impact. It also acknowledges that the Mayor is not a waste authority and that in order to take a circular approach to waste management in London, boroughs, businesses, industry and Londoners will need to put into practice a series of actions in collaboration with the Mayor. Some of these proposed actions include efforts to increase cutting the use of single use packaging; to promote reuse; and to reduce CO₂ emissions with new and stricter EPS targets.

The draft LES proposes the following specific targets for EPS:

- -0.069 tonnes CO₂ per tonne of waste managed by 2020/21.
- -0.084 tonnes CO₂ per tonne of waste managed by 2024/25.
- -0.167 tonnes CO₂ per tonne of waste managed by 2030/31.

The European Commission has adopted an ambitious Circular Economy Package, which includes revised legislative proposals on waste. Key elements of the revised waste proposal include:

- A binding landfill target to reduce landfill to maximum of 10% of municipal waste by 2030.
- A ban on landfilling of separately collected waste.
- Promotion of economic instruments to discourage landfilling.

- Concrete measures to promote re-use and stimulate industrial symbiosis - turning one industry's by-product into another industry's raw material.
- Economic incentives for producers to put greener products on the market and support recovery and recycling schemes (e.g. for packaging, batteries, electric and electronic equipment, vehicles).

Relevant Sustainable Development Goals

SDG 12 (responsible production and consumption) urges countries to ensure sustainable consumption and production patterns in order to avoid cause irreversible damage to our environment. This goal sets targets and metrics to, for example, substantially reduce waste generation through prevention, reduction, recycling and reuse, and to achieve the environmentally sound management of chemicals and all wastes throughout their life cycle.

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, reduce the adverse per capita environmental impact of cities, including by paying special attention to waste management.

SDG 14 (life below water) urges countries to conserve and sustainably use the world's oceans, seas and marine resources. This goal sets targets and metrics to, for example, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities.

8. FLOOD RISK

INDICATOR OVERVIEW

Measure	7a Properties at risk of tidal and fluvial flooding 7b Properties at risk of surface water flooding
Source	Coastal/fluvial - bespoke spreadsheet provided by Environment Agency using data from National Receptor Dataset (NRD) 2014 (unpublished) and Risk of Flooding from Rivers and Seas (2017) Surface water flood risk - data provided by GLA which will be used in Environment Strategy (based on analysis of The Geo-Information Group property data ⁷² and Environment Agency flood extent maps)
Link	NRD 2014 is unpublished
Year of data used for 2017 report	Risk of Flooding from Rivers and Seas - https://data.gov.uk/dataset/risk-of-flooding-from-rivers-and-sea1

SUMMARY ASSESSMENT

- In 2017, there are an estimated 595,200 London properties (residential and commercial) at risk of tidal or fluvial flooding, of which 48,800 are at medium/high risk. This represents a 10.7% increase since 2013 in properties at medium/high risk.
- The increase in properties at risk from 2013 to 2017 results mainly from improvements in, and updating of, the property dataset used to establish numbers of properties at risk of flooding. There has also been an advancement in understanding of flood risk, including improved techniques for modelling. As a result, this indicator has not been assigned a five-year traffic light assessment rating.
- 233,000 residential properties and 38,800 commercial properties have been assessed as being at medium or high risk of surface water flooding in London. This is a new data and there is no historic or UK-wide collated data to compare it with.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"London and Londoners will be resilient to severe weather and longer-term climate change impacts. This will include flooding, heat risk and drought" (draft LES ⁷³)		

7a	Long-term trend	Long-term	Five-year Progress
Change	n/a	●	●
7b	Long-term trend	Long-term	Five-year Progress
Change	n/a	●	●

Why is this issue important to London’s quality of life?

This indicator aims to give a sense of how well London is adapting to climate change. As London’s climate changes, the probability of flooding is expected to increase, with wetter winters with higher rainfall, an increase in the intensity and frequency of extreme weather events and sea level rises. London is vulnerable to flooding from five main sources: the tidal Thames; fluvial tributaries to the Thames and the non-tidal Thames; surface water flooding from heavy rainstorms; groundwater; and overflowing sewers. Flooding has negative impacts on health, particularly mental health and wellbeing as a result of the stress of managing the disruption of being flooded and clearing up afterwards. It also has an economic impact – for example, through disruption to businesses.

HEADLINES - 7A

Figure 20 shows that in 2017 that in 2017, there are around 48,800 properties at medium/high risk⁷⁴ of tidal or fluvial flooding. (See Table 3 for the risk categories.)

Table 3: Flood risk categories

Risk	Likelihood
Very low	Less than 1 in 1000 chance of a flood happening in any one year
Low	1 in 100 to 1 in 1000 chance of a flood happening in any one year
Medium	1 in 100 - 1 in 30 chance of a flood happening in any one year
High	Greater than 1 in 30 chance of a flood happening in any one year

Figure 20: Properties at risk of tidal/fluvial flooding in London



Source: Data provided by Environment Agency via email, 24 July 2017

Due to the major flood defences and flood defence structures in the Thames Estuary, including the Thames Barrier and associated flood walls, gates and embankments, the majority of properties (more than 500,000) at risk are situated in areas with a low or very low likelihood of flooding. Although their risk is lower, these properties are still at risk and the Environment Agency and the GLA suggest that investment is still needed to ensure they are protected.

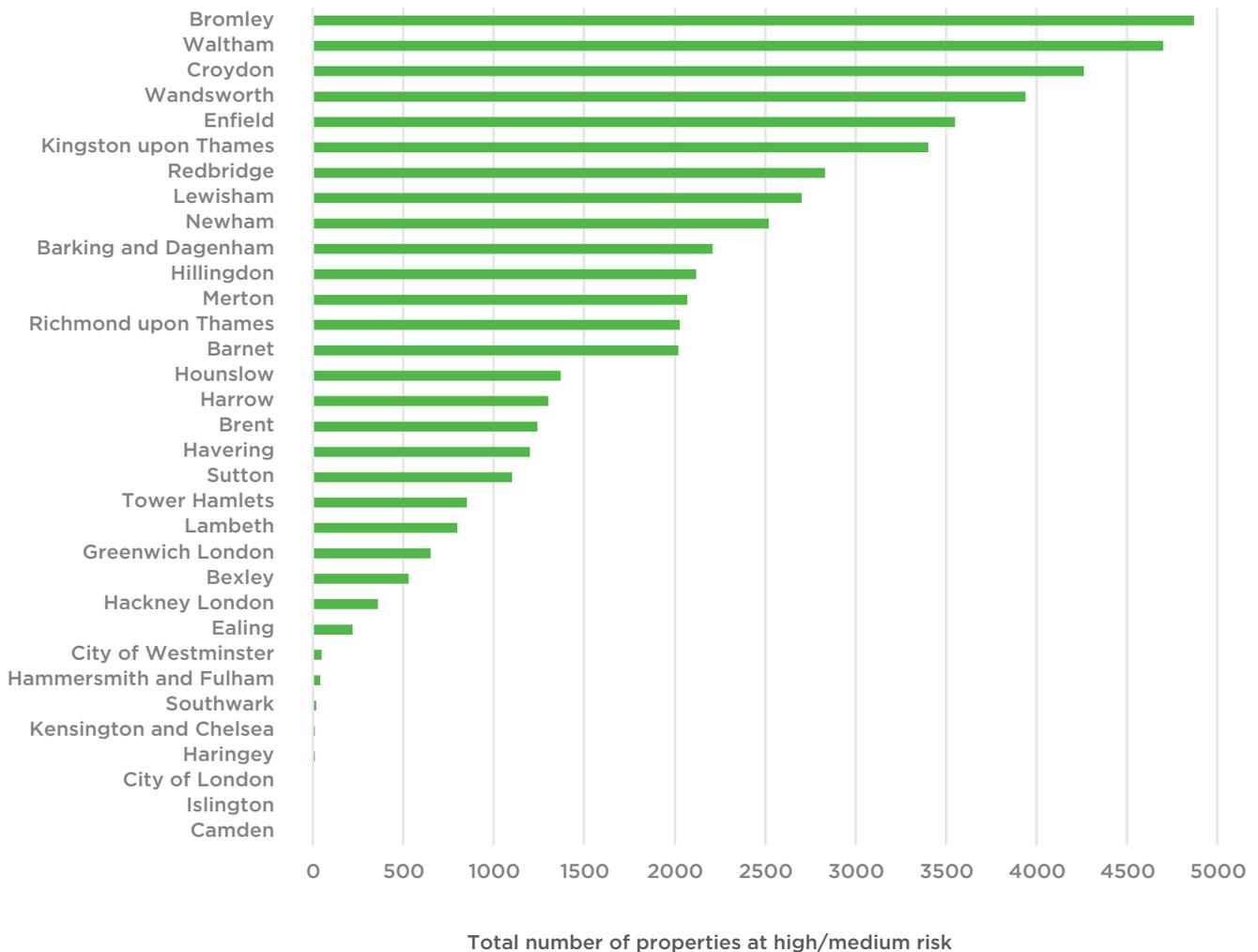
The methodology used for this measure has changed from that used for the previous QoL report, meaning the current data is not comparable with previous figures. When the previous QoL indicators were set, the risk categories for fluvial and tidal flooding were different. These categories used different terms; for example 'Significant' risk was a 1 in 75 chance of a flood happening in any one year. This means that the data from the 2012 QoL report are not directly comparable to the 2017 data. In order for some comparison to be made, the 2013 data have been used, which are in the same format as the 2017 data. In 2013, 536,500 properties were at risk, with 54,000 at a medium/high risk.

This represents a 11% increase in properties at medium/high risk since 2013. This increase results mainly from improving and updating the property dataset used to establish numbers of properties at risk of flooding along with an advancement in the understanding of flood risk, including improved techniques for modelling. There has also been a considerable amount of construction within London during this time, increasing the numbers of properties at medium/high risk since 2013. As a result, the two figures are not a fair comparison and therefore we cannot assign a 5-year rating to this indicator.

HEADLINES - 7B

233,000 London residential properties and 38,800 commercial properties have been assessed as being at medium or high risk of surface water flooding. (There is no previous data to compare this figure to⁷⁵).

Figure 21: Properties at medium/high risk of tidal/fluviial flooding by borough (2017)



Source: Data provided by Environment Agency via email, 24 July 2017

BENEATH THE HEADLINES

7a - Tidal and fluvial flooding

Due to their different geographic characteristics, tidal and fluvial flood risk varies considerably by borough, as illustrated in Figure 21. It is not possible to compare London with other regions (regional totals have not been calculated since 2009).

7b - Surface water flooding

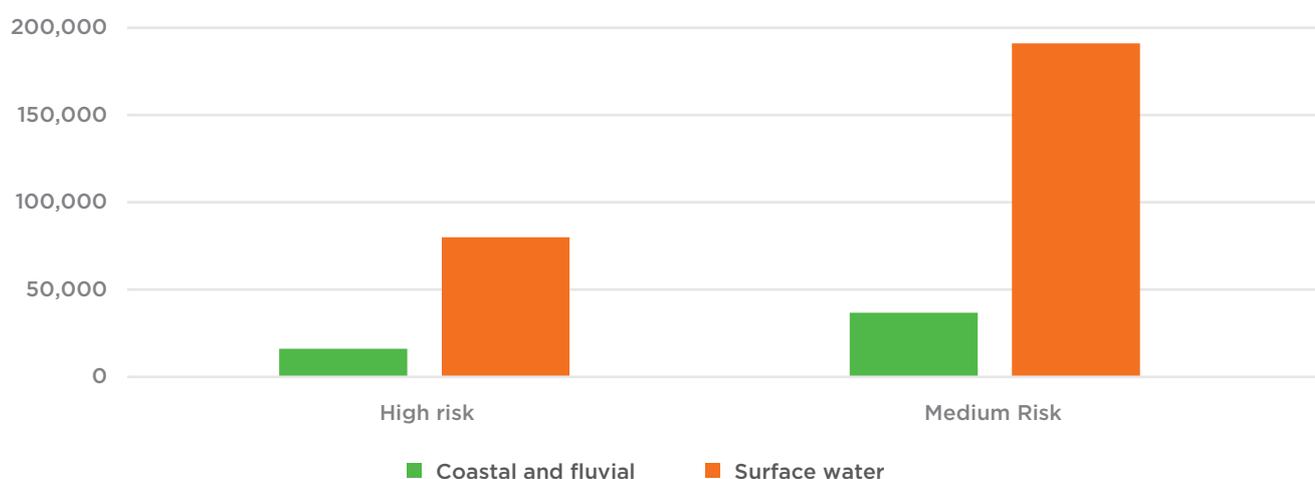
As Figure 22 shows, many more London properties are at medium or high risk of surface water flooding than tidal or fluvial flooding.

Each borough has data for the number of properties at risk of surface water flooding (as part of their Local Flood Risk Management Strategies),

The Environment Agency publish a model of risk of flooding from surface water but this is reliant on local authorities submitting their most up to date information to the Environment Agency and ensuring it is in a compatible format for inclusion. This therefore means that the mapping the Environment Agency holds on surface water may not be the most up to date information. For the most accurate data on surface water flooding, the boroughs should be contacted directly.

London boroughs have the opportunity to deliver surface water schemes as part of the government’s six-year investment programme to reduce flood risk, which runs until 2020/21. They also deliver schemes that can reduce surface water flood risk as part of their internal works programmes. After completing these works, boroughs are unlikely to update their surface water flood risk data. As a result, the number of properties at surface water flood risk is not expected to show much or any change over time. It has therefore been suggested that a different metric is used for this indicator in future (see Annex A).

Figure 22: Flood risk level by type of risk



Source: Data provided by Environment Agency via email, 24 July 2017

WIDER EVIDENCE

Between 2000 and 2100, a 0.9 metre rise in mean tide levels is projected. For London to stay protected from tidal flood risk, the defences must be upgraded and maintained⁷⁶.

In the 6-year capital programme agreed in 2015/16, £302 million of Grant in Aid funding was secured from Government to

invest in all forms of flood risk management in the Thames Regional Flood and Coastal Committee area, which includes London. This is in addition to an investment of £75m local levy paid by local authorities in the Committee area. Local authorities, water companies and the Environment Agency are working together with local communities to develop approximately 190 schemes in London⁷⁷.

In the Thames catchment (which covers more than just London), 39,415 homes have been better protected via 99 projects delivered since 2011 – most involve a partnership between the Environment Agency and local authorities. These include new flood risk management schemes and the renewal of ageing defences⁷⁸.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

In relation to both 7a and 7b, The Mayor's draft London Environment Strategy (LES)⁷⁹ includes the goal that "London and Londoners will be resilient to severe weather and longer-term climate change impacts. This will include flooding, heat risk and drought". To achieve this, the Mayor is proposing a series of specific actions to reduce risks and impacts of flooding in London on people and property. These include supporting the upgrade and effective management of flooding defences, increasing natural flood management, as well as supporting the Thames Estuary 2100 plan, an adaptable plan to manage flood risk within London and the estuary into the next century.

In relation to 7b, the GLA's London Sustainable Drainage Action Plan 2016⁸⁰ outlines actions to make the capital's drainage system work in a more natural way in order to reduce flood risk by easing the burden on drains and sewers. The main focus of the action plan is on retrofitting sustainable drainage to existing buildings, land and infrastructure. The vision of the action plan is that, "by 2040, London will manage its rainwater more sustainably to reduce flood risk and improve water quality and security. This will maximise the benefits for people, the environment and the economy."

The European Commission's Directive 2007/60/EC on the assessment and management of flood risks aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. It requires Member States to assess whether all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas, and to take adequate and coordinated measures to reduce this flood risk.

Following the EU requirement, the Environment Agency developed the Flood Risk Management Plan (FRMP) for the Thames river basin district⁸¹. The FRMP sets out the social, economic and environmental objectives the risk management authorities have agreed for 2015 to 2021 in order to manage flood and coastal risks in the basin district. Some of these include measures to reduce the likelihood of flooding affecting people and property in specific locations or in locations that have flooded in the past.

Relevant Sustainable Development Goals

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies.

SDG 15 (life on land) urges countries to sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss. This goal sets targets and metrics to, for example, restore degraded land and soil, including land affected by floods, and strive to achieve a land degradation-neutral world.

9. WATER CONSUMPTION

INDICATOR OVERVIEW

Measure	Per capita consumption per household (Thames Water region), annual
Source	Water Company Returns to OFWAT, via the Environment Agency in email a correspondence to author, 13 July 2017.
Link	n/a
Year of data used for 2017 report	2016-17

SUMMARY ASSESSMENT

- Per capita consumption in the Thames Water London zone has fallen to 148 litres per head per day since 2005-06, a fall of slightly over 10%.
- The mean Thames Water per capita consumption is 10% higher than that for England as a whole.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
“London and Londoners will be resilient to severe weather and longer-term climate change impacts. This will include flooding, heat risk and drought” (draft LES ⁸²)		 (England)

	Long-term trend 2005 - 2016	Long-term Progress since 2005	Five-year Progress since 2011
Change			

Why is this issue important to London’s quality of life?

Nationally, London has the most people living in the driest region in the UK. Monitoring domestic water consumption and the availability of water in London is therefore key to managing London’s natural resources, particularly in the face of climate change. In future, changes to rainfall patterns and increasing temperatures are expected to affect river flows, and therefore water availability.

HEADLINES

The methodology used for this measure has changed from that used for the previous QoL report, meaning the current data is not comparable with previous figures. The 2017 Indicator uses per capita consumption in the Thames Water London zone. It has been changed on the advice of the Environment Agency as it provides actual data rather than estimates, which were used in 2012. This means that the data from the 2012 QoL report are not directly comparable to the 2017 data. In order for some comparison to be made, water pcc in London has been assessed using the TW pcc data from 2005/06.

Thames water covers 78% of London households. Per capita consumption (pcc) in the Thames Water London zone⁸³ has fallen from 164.63 litres per head per day (l/h/d) to 148.00 l/h/d since 2005/6 a fall of slightly over 10%.

The mean Thames Water pcc⁸⁴ over 5 years (2011-12 to 2015-16) was 154.16 l/h/d. This measure is used by water companies to average out fluctuations in consumption due to differences in weather from year to year. The comparable rate for England was 140.20 l/h/d.

Figure 23 below shows the household consumption in the Thames Water London zone and England since 2005.

Figure 23: Average household water consumption in Thames Water London zone and England 2005-06 - 2016-17



Source: Water Company Returns to OFWAT, via the Environment Agency in email correspondence to author, 13 July 2017.

BENEATH THE HEADLINES

There was no information available per borough at the time of writing.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s draft London Environment Strategy (LES)⁸⁵ includes the goal that “London and Londoners will be resilient to severe weather and longer-term climate change impacts. This will include flooding, heat risk and drought”. To achieve that, the Mayor is proposing a series of specific actions to ensure efficient, secure, resilient and affordable water supplies for Londoners. These proposed actions include efforts to promote water metering; encourage wise water usage; further improve water efficiency; and a reduction in leaks.

Metering and water efficient appliances can help reduce household demand and consumption of water. At the moment Thames Water has about 39.5% metering, whilst the national average is approximately 50%⁸⁶. Thames Water is currently rolling out a compulsory metering programme so their numbers are projected to increase to 78.5% by 2040. They recently installed their 200,000th meter.

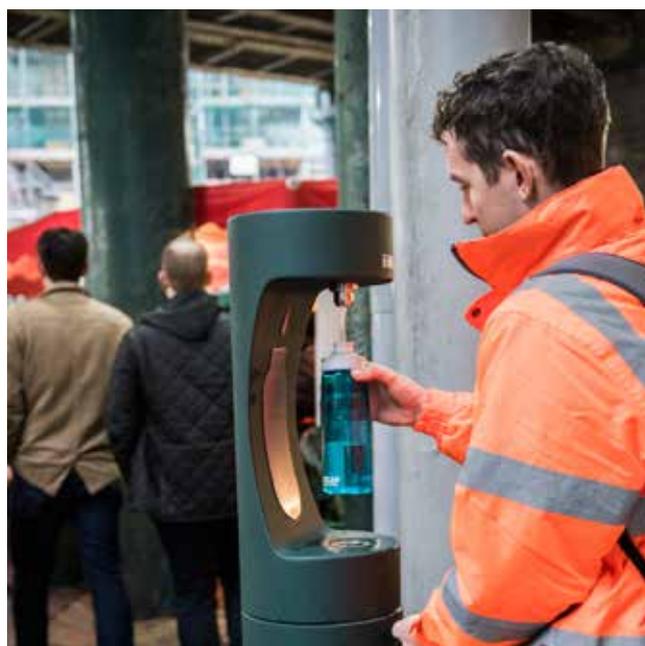
The European Commission’s Water Scarcity & Droughts (WS&D) policy⁸⁷ aims to ensure “access to good quality water in sufficient quantity for all Europeans, and to ensure the good status of all water bodies across Europe”. Within the WS&D policy, actions are set up in order to prevent and to mitigate water scarcity and drought situations, with the priority to move towards a water-efficient and water-saving economy.

Relevant Sustainable Development Goals

SDG 6 (clean water and sanitation) urges countries to ensure access to safe water sources and sanitation for all. This goal sets targets and metrics to, for example, substantially increase water-use efficiency across all sectors and, ensure sustainable withdrawals and supply of freshwater to address water scarcity.

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies.

SDG 15 (life on land) urges countries to sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss. This goal sets targets and metrics to, for example, restore degraded land and soil, including land affected by floods, and strive to achieve a land degradation-neutral world.





SOCIAL INDICATOR ASSESSMENTS

Table 4: 2017 QoL social indicators

	Indicator	Measure
10	Healthy Life Expectancy	Healthy Life Expectancy at birth for (a) men and (b) women
11	Education	Proportion of pupils obtaining at least 5 GCSE passes at A*-C or equivalent, including English and Maths
12	Travel	Share of trips in London made by a sustainable mode
13	Crime	Total recorded crime in London
14	Decent housing	Percentage of decent housing stock
15	Happiness	Self-scored happiness levels
16	Satisfaction with London	Proportion of Londoners satisfied with the capital as a place to live
17	Volunteering	Participation in formal or informal volunteering over previous 12 months
18	Social integration	Proportion of people who think their local area is a place where people from different backgrounds get on well together

10. HEALTHY LIFE EXPECTANCY

INDICATOR OVERVIEW

Measure	Healthy Life Expectancy at birth for: (a) men (b) women
Source	Office for National Statistics
Link	https://www.ons.gov.uk
Year of data used for 2017 report	2013-15

SUMMARY ASSESSMENT

- Newborn babies in London – boys or girls - could expect to live 64.1 years in good health if they experienced the same health status rates as observed between 2013 and 2015.
- For men, there has been a 1.4 year improvement in healthy life expectancy (HLE) at birth since 2009-11. For women, the improvement over the same time period has only been slight.
- People born in London have better HLE at birth than in the United Kingdom as a whole.
- There are large geographic differences in HLE at birth in London. Women in Richmond upon Thames, for example, had the best HLE at birth (71.1 years), whilst women in Tower Hamlets had the lowest (52.4 years).

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
“A healthier, fairer city, where nobody’s health suffers because of who they are or where they live” (draft LHS ⁸⁸)		(a)  (b)  (United Kingdom)

a. Men

	Long-term trend 2009-11 to 2013-15	Long-term	Five-year Progress since 2009-11
Change			

a. Women

	Long-term trend 2005 - 2016	Long-term Progress since 2005	Five-year Progress since 2009-11
Change			

Why is this issue important to London's quality of life?

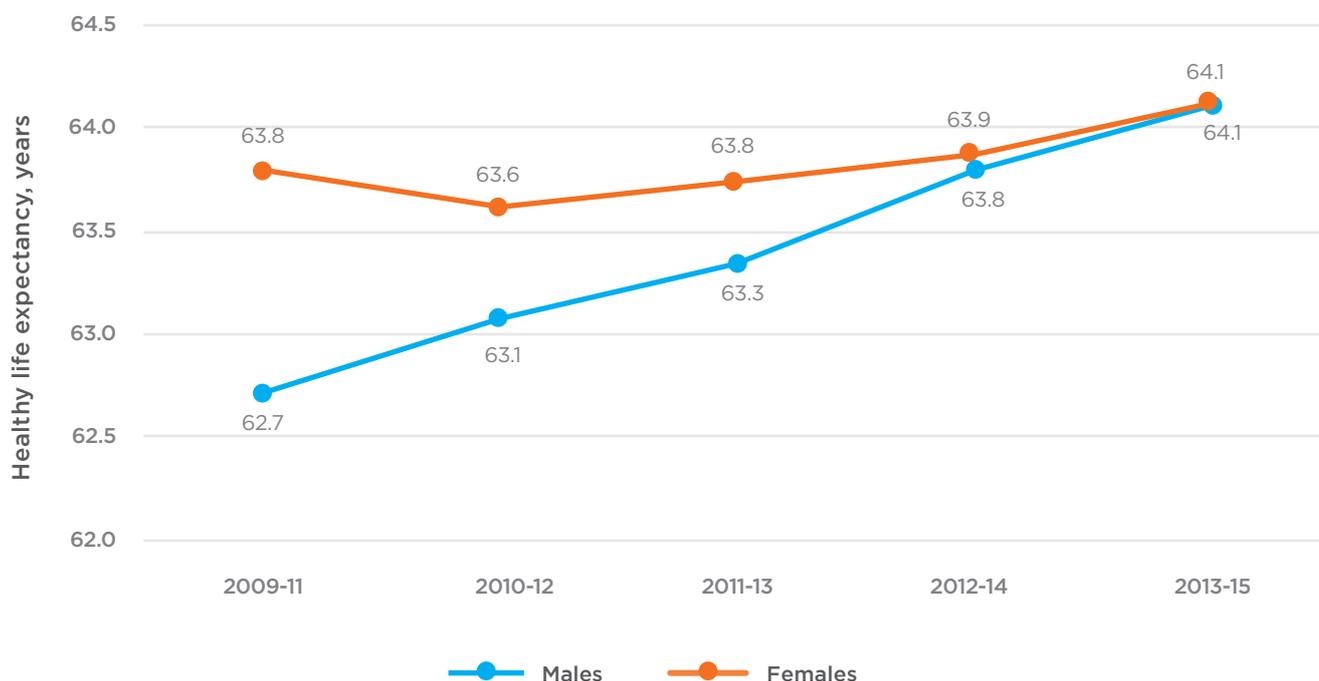
Healthy Life Expectancy (HLE) adds a quality of life dimension to estimates of life expectancy by dividing expected lifespan into time spent in different states of health. HLE estimates lifetime spent in 'very good' or 'good' health and is based on how individuals perceive their general health. HLEs are an important measure of the health of city's residents and are influenced by a range of factors such as income, education, housing and lifestyle.

HEADLINES

Figure 24 shows that a newborn baby – boy or girl – could expect to live 64.1 years in good health if they experienced the same health status rates as observed between 2013 and 2015.

For men, healthy life expectancy increased by 1.4 years since 2009 to 2011 but for women it increased by only 0.3 years. It is not clear why HLE for men and women has gradually converged.

Figure 24: Healthy Life Expectancy for men and women in London, 2009-11 to 2013-15



Source: Office for National Statistics

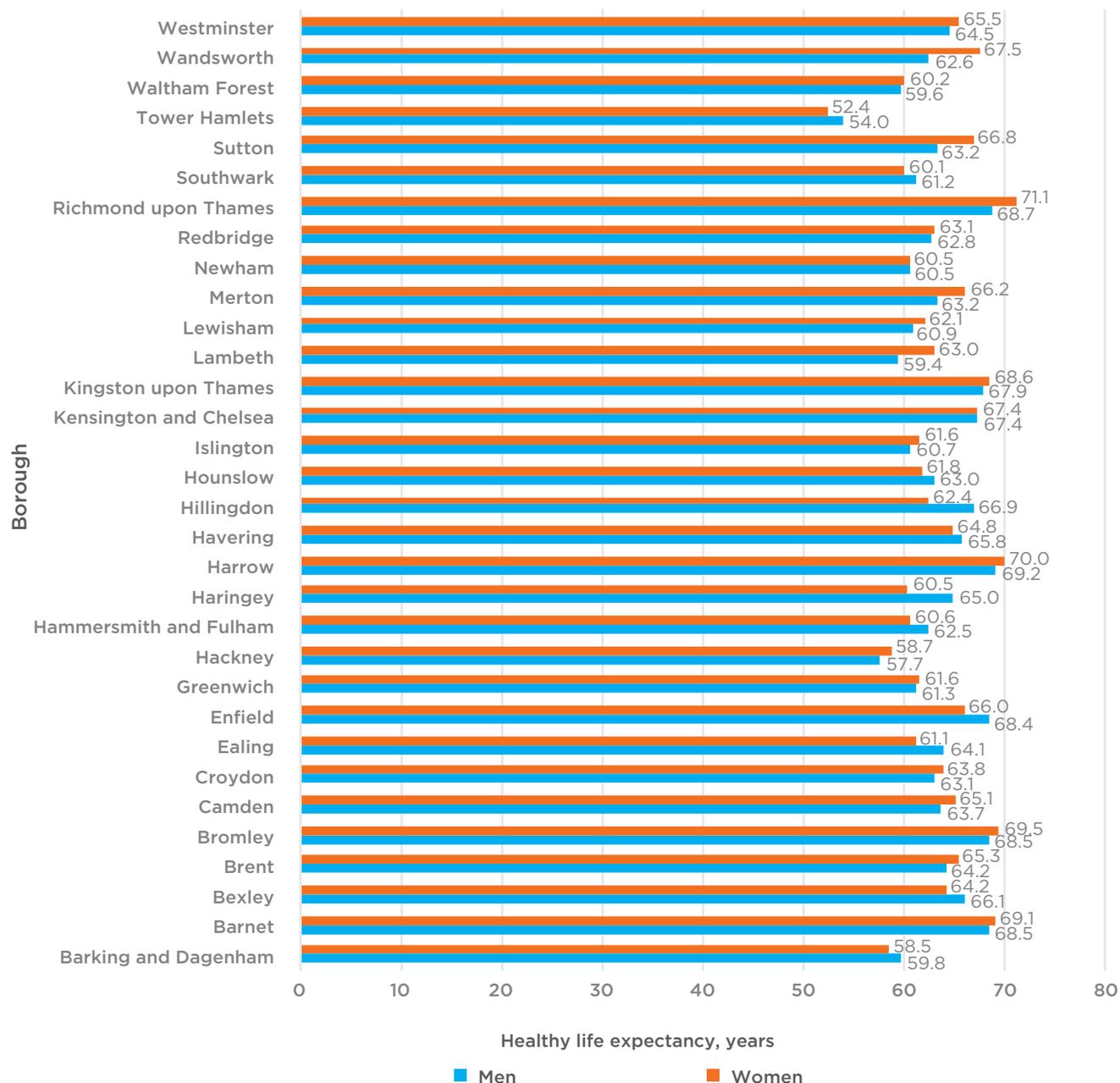
BENEATH THE HEADLINES

There are large geographic differences in HLE at birth in London. Figure 25 shows that men in Harrow had the best HLE at birth in London (69.2 years), whilst their counterparts in Tower

Hamlets have the lowest (54 years). Women in Richmond upon Thames had the best HLE at birth (71.1 years), whilst women in Tower Hamlets have the lowest (52.4 years), which is lower than for men in the same borough.



Figure 25: Health state life expectancies for females and males at birth, by London borough, 2013-2015



Source: Office for National Statistics

We understand that the ONS is currently reviewing the methodology for this indicator and anticipate that this is likely to impact the figures and potentially change the ranking order in London in future QoL reports.

WIDER EVIDENCE

Women in London continue to have a longer life expectancy at birth than men at birth. However, men in London live a higher proportion of their lives in good health.

Proportion of lives spent in good health

In 2013 to 2015 men at birth in London could expect to spend a higher proportion (79.9%) of their remaining lives in good health than women (76.3%). London had the largest inequality in HLE at birth between upper tier local authorities for men and women at 13.6 years and 17.6 years respectively⁸⁹.

Life expectancy

The ONS' latest statistical bulletin on life expectancy shows that life expectancy has increased in all English regions since 1991-1993⁹⁰. Some regions have experienced greater increases than others and the most rapid increase was in London, closely followed by the North East and the North West. Figures for 2012-2014 show that life expectancy for a new born baby boy in London is now 7.0 years higher than it was in 1991-1993.

A similar picture was observed for baby girls, with life expectancy increasing by 4.9 years in London and 4.3 years in the North East. Life expectancy is increasing most rapidly in London; the region now has the highest female life expectancy at birth.

In the same bulletin, The ONS suggests a number of reasons why London has seen the greatest increase in life expectancy over the last two decades. One is that deaths from causes amenable to healthcare and public health interventions, such as certain cancers, respiratory diseases and heart disease, have fallen more rapidly in these regions than anywhere else since 2001.

ONS also notes that it is possible that there is a selective migration of healthy individuals from deprived areas in other regions into London for employment or other economic reasons. This type of migration has been shown to raise average ill-health and death

rates in those areas where these individuals moved from, whilst lowering them in the areas that they move to. However, it is not possible to quantify the extent to which better health areas are benefiting from selective migration of healthy people since the health status of these migrants is not known.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's draft Health Inequalities Strategy (LHIS)⁹¹ includes the overall goal of a "healthy London: a healthier, fairer city, where nobody's health suffers because of who they are or where they live". One of the overall ambitions of the draft Strategy is to see "healthy life expectancy as well as less variation in how long men and women and different Londoners can expect to live in good health". The draft Strategy proposes a series of key objectives and actions in order to ensure health inequalities are reduced through, for example, good planning, clean air, access to green spaces and a reduction on income inequalities.

Relevant Sustainable Development Goals

SDG 3 (good health and wellbeing) urges countries to ensure healthy lives and promote well-being for all at all ages. This goal sets targets and metrics to, for example, improve maternal and child health, and to reduce deaths attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease.

SDG 2 (zero hunger) urges countries to end hunger, achieve food security and improved nutrition and promote sustainable agriculture. This goal sets targets and metrics to, for example, ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.

11. EDUCATION

INDICATOR OVERVIEW

Measure	Proportion of pupils obtaining at least 5 GCSE passes at A*-C or equivalent, including English and Maths
Source	Department for Education
Link	https://www.gov.uk/government/collections/statistics-gcses-key-stage-4
Year of data used for 2017 report	2015-16

SUMMARY ASSESSMENT

- Attainment in English and Maths at A* to C has declined in London since the 2012 QoL report by 1.3 percentage points.
- London's attainment rate is better than that for England as a whole.
- There are large geographical differences in attainment in London. Kingston upon Thames has the highest rate (75.7%), whilst the lowest is in Lewisham (50.6%).
- Of London's major ethnic groups, the attainment of black children is lowest, with 54% meeting expected secondary school standards in 2016.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"For every child in London to have the opportunity to attend a good or outstanding local school" (draft Vision for a Diverse and Inclusive City ⁹²)		 (England)

	Long-term trend 2009-10 to 2015-16	Long-term	Five-year Progress since 2010-11
Change			

Why is this issue important to London’s quality of life?

Education provides people with the skills they need to make a contribution to the economy and to society. Learning also makes a wider contribution to promoting active citizenship and social cohesion. Education remains a high profile issue in London and is strongly connected to issues of deprivation.

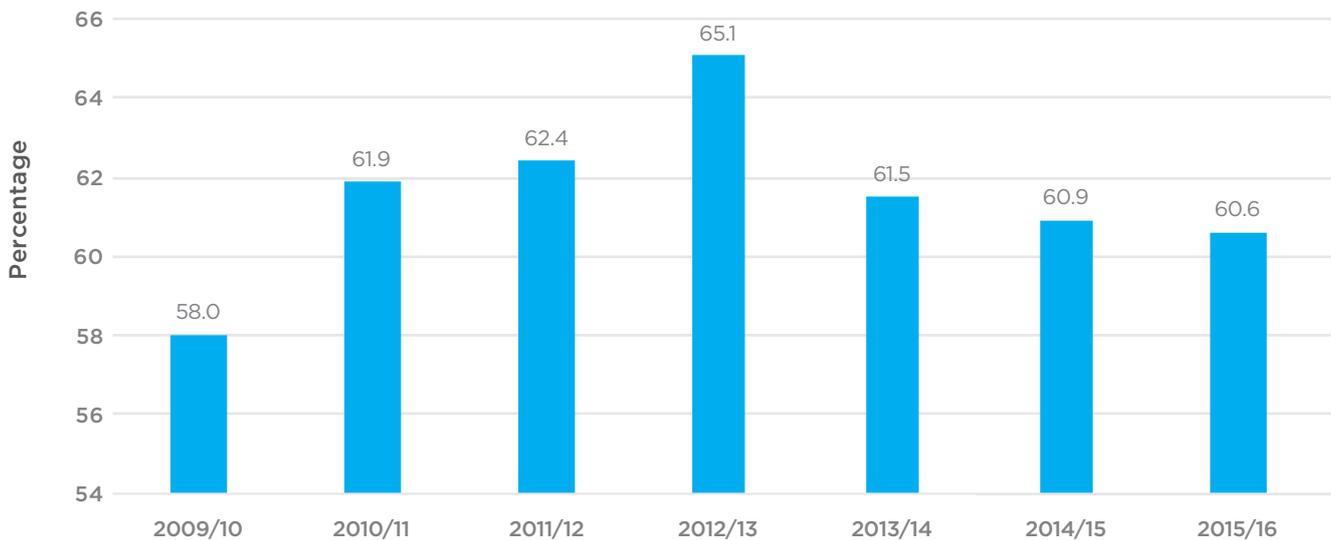
HEADLINES

Figure 26 shows that attainment in English and Maths at A* to C has declined in London since the 2012 QoL report by 1.3 percentage points, although it has improved since 2009-10 from 58% to 60.6%.

London’s attainment rate of 60.6%, however, is better than that for England as a whole (53.5%).

The Annual London Education Report 2017 argues that the proportions of pupils achieving the expected standard of five good GCSEs including English and Maths has fallen since 2012-13 as a result of the introduction of stricter rules on which qualifications are included in national performance measures, and the counting of first GCSE entries rather than the best grade achieved in each subject⁹³.

Figure 26: Proportion of pupils with an achievement of 5+ A*-C grades including English and Maths GCSEs at the end of key stage 4 for London (2009-10 to 2015-16)

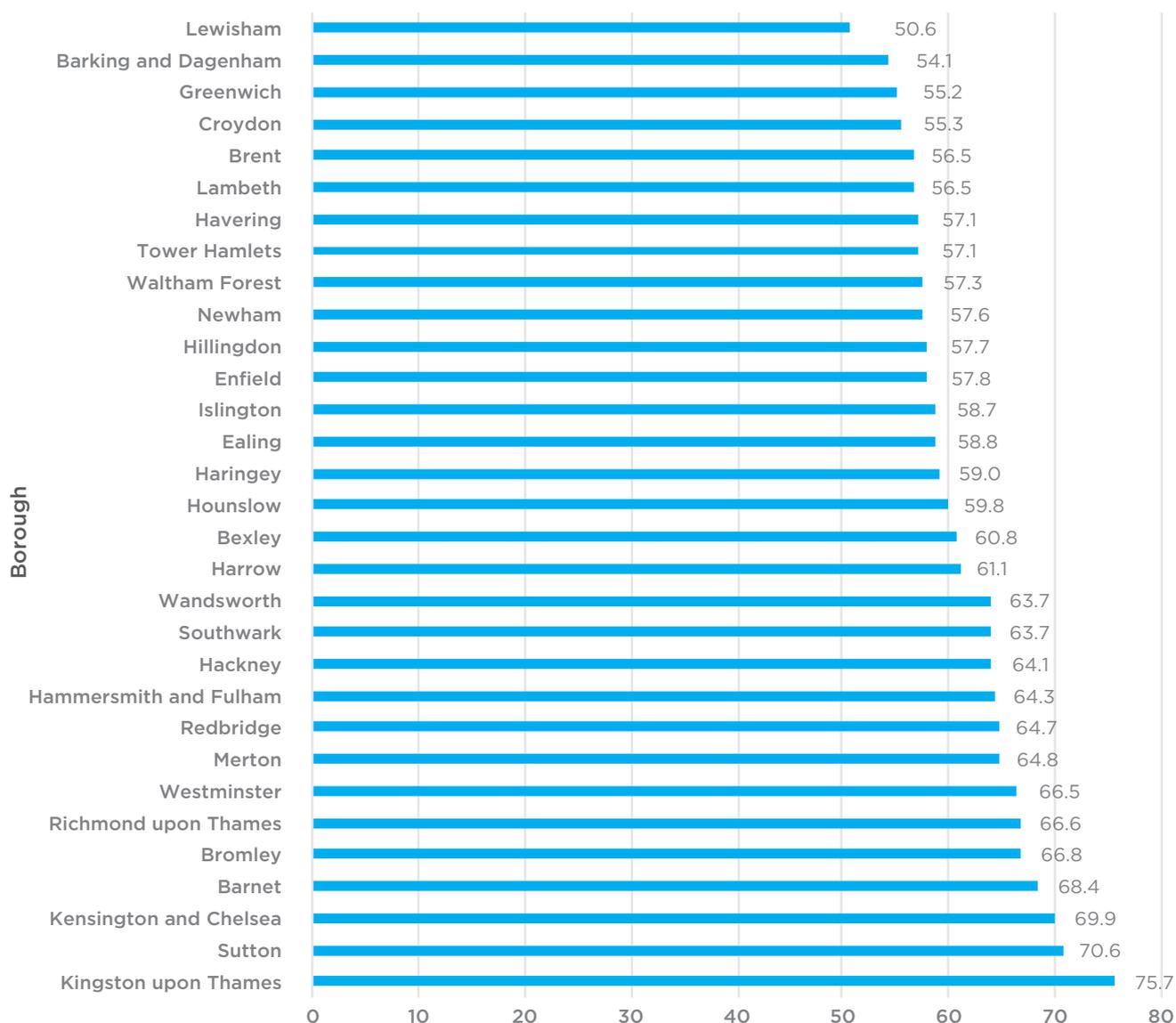


Source: Department for Education

BENEATH THE HEADLINES

There are large geographical differences in attainment in London. Figure 27 shows that Kingston upon Thames has the highest rate (75.7%), whilst the lowest is in Lewisham (50.6%).

Figure 27: Proportion of pupils with an achievement of 5+ A*-C grades including English and Maths GCSEs at the end of key stage 4 for each borough (2015-16)



Source: Department for Education

WIDER EVIDENCE

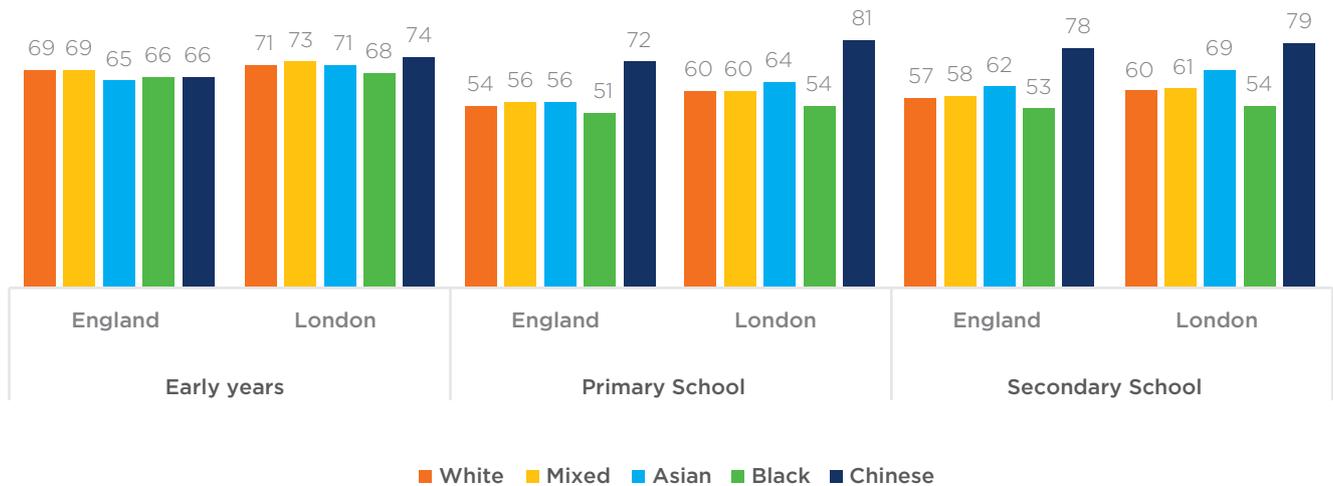
The Annual London Education Report 2017⁹⁴ reported that black pupils are the lowest attaining major ethnic group nationally at all three stages. At the end of primary school, black pupils perform six percentage points behind the next lowest ethnic group.

The attainment of black Caribbean boys in particular is low. In 2016, 42 per cent of black Caribbean boys in London achieved the expected standard in reading, writing and

mathematics at the end of Key Stage 2. Whilst ahead of black Caribbean boys nationally, these pupils are currently 12 percentage points behind the national average of all pupils and 17 percentage points behind the average across London.

Figure 28 shows the proportion of pupils in England and in London meeting expected education standards by major ethnic group.

Figure 28: Percentage of pupils meeting expected standard in the early years (2016), primary school (2016), and secondary school (2015); by major ethnic group



Source: Mayor of London, Annual London Education Report 2017

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s ambition for education⁹⁵ is “for every child in London to have the opportunities our great city has to offer”. The Mayor’s draft Vision for a Diverse and Inclusive City⁹⁶ aims “for every child in London to have the opportunity to attend a good or outstanding local school”. Although the Mayor is not directly responsible for providing early years’ education or schooling, he is proposing to take on a leadership role and work with key stakeholders in order to help children and young people – particularly the most disadvantaged. In order to achieve these ambitions, all Mayoral Strategies will aim to include specific actions to, for example, address income inequalities and to help make childcare and early years’ education more affordable and accessible to all parents.

The UK Government Department for Education’s goal⁹⁷ is “to provide world-class education and care that allows every child and young person to reach his or her potential, regardless of background”. One of the three key objectives within DfE’s plan 2015 to 2020 is to achieve “educational excellence everywhere”, where every child and young person can access high-quality provision, achieving to the best of his or her ability regardless of location, attainment and background. It is important to note that the

benchmark of 5 A*-C GCSEs including English and Maths is changing⁹⁸ and DfE is using new benchmarks to indicate how well schools are doing to improve pupil outcomes. It has therefore been suggested that additional metrics might be used for this indicator in future (see Annex A).

Relevant Sustainable Development Goals

SDG 4 (quality education) urges countries to ensure inclusive and quality education for all and promote lifelong learning. This goal sets targets and metrics to, for example, ensure that all children complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.



12. TRAVEL

INDICATOR OVERVIEW

Measure	Percentage of journey stages in London made by a sustainable mode
Source	Transport for London, Travel in London, Report 9, 2016
Link	https://tfl.gov.uk/corporate/publications-and-reports/travel-in-london-reports
Year of data used for 2017 report	2015

SUMMARY ASSESSMENT

- In 2015, 45% of journey stages in London were made by public transport, with a further 21% by walking and 2% by bicycle. This compares with 32% made by private transport.
- This reflects and continues a now well-established trend away from private motorised transport to public transport. Since 1993 the public transport mode share has increased by 15.2 percentage points.
- There are significant differences in car ownership and use of modal transport based on age, income, and geographical location. Car use, for example, is highest amongst older Londoners. And cycling is more prevalent amongst higher income earners.
- London's public transport mode share has increased from one of the lowest in comparable European cities in 1995, to higher than Stockholm, Paris, Brussels and Berlin in 2012.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"80 per cent of Londoners' trips to be on foot, by cycle or by using public transport by 2041" (draft LTS ⁹⁹)		 (England)

	Long-term trend 1993-2015	Long-term Progress since 1993	Five-year Progress since 2010
Change			

Why is this issue important to London’s quality of life?

Transport is closely linked to economic growth, social inclusion and environmental quality and, as such, is a key quality of life indicator. Reductions in traffic through shifts to more sustainable modes of transport can help ease congestion and safety on the roads, as well as reducing vehicle emissions, which (in the case of fossil fuel powered vehicles) negatively affect air quality. Reducing road traffic volumes and increasing walking and cycling benefit health and reduce the risk of obesity.

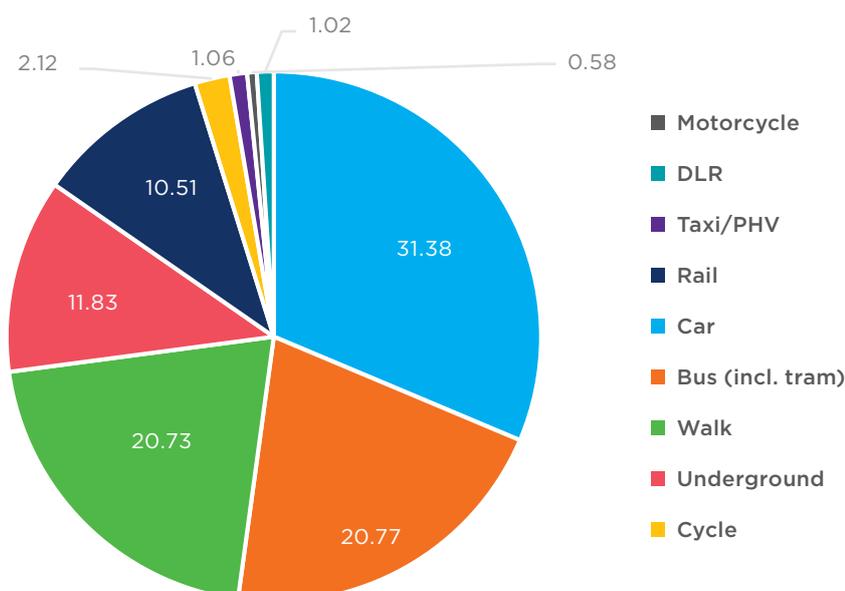
HEADLINES

In 2015, 45% of journey stages¹⁰⁰ in London were made by public transport, with a further 21% by walking and 2% by cycle. This compares with 32% by private transport. The breakdown by modes is shown in Figure 29 below. This reflects and continues a now well-established trend away from private motorised transport to the public transport modes as shown in Figure 30.

Since 1993 the public transport mode share has increased by 15.2 percentage points. In the latest year, the public transport mode share increased by a further 0.2 percentage points while the private transport mode share fell by a corresponding 0.4 percentage points.

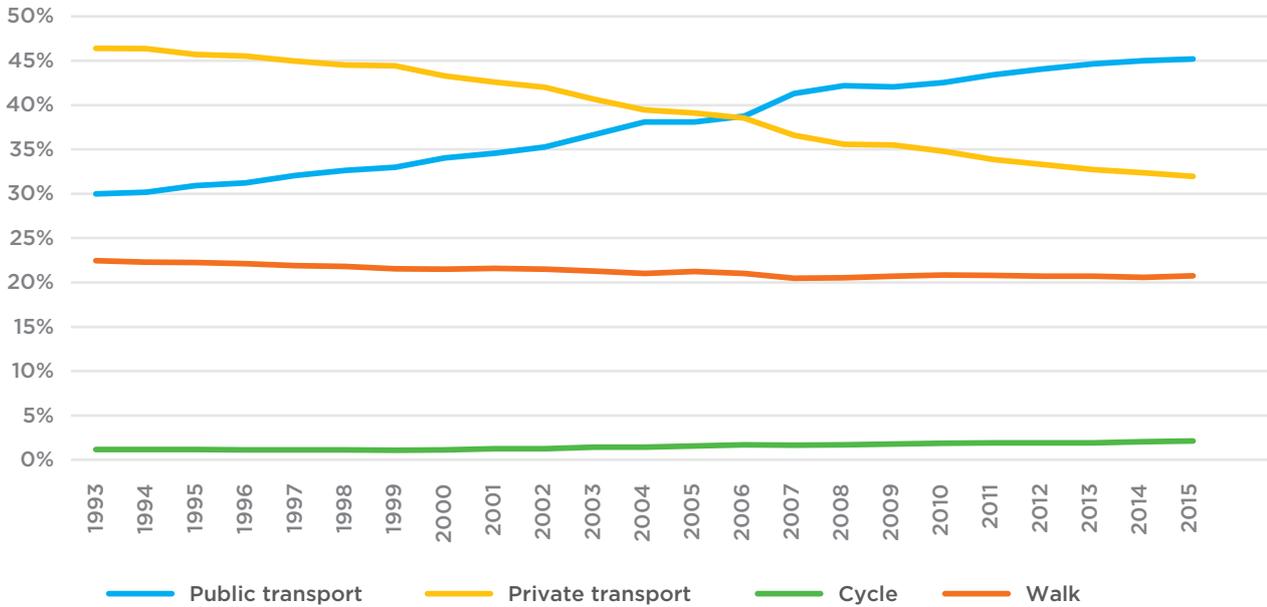
Cycling and walking mode shares remained at 2 and 21% respectively in the latest year. While walking as a percentage of journey modes has declined slightly since 1993 (by 1.7%), cycling has increased almost 1% since then.

Figure 29: Modal shares of daily journey stages in London, 2015



Source: Transport for London, Travel in London, Report 9, 2016, Fig 2.3

Figure 30: Percentage of journey stages in London made by a sustainable mode



Source: *Transport for London, Travel in London, Report 9, 2016, Table 2.3*

BENEATH THE HEADLINES

Car use is higher among Londoners aged 45 to 59¹⁰¹, where the car mode share is 47%. Public transport use is highest among the 17 to 24 age group, with a 43% modal share. Correspondingly, only 22% of trips by 17 to 24-year-olds are by car.

As household income increases, car use also increases, with car mode shares of more than 40% for households earning £35,000 or more. Rail and Underground mode shares also increase with household income, while bus mode share decreases. Cycle mode share also increases in households with higher incomes, with the highest mode share for cycling of 4% in households earning £100,000 or more¹⁰².

Among inner London residents, there has been a sustained decline in private transport mode share, falling from 27% in 2005/06 to 22% in the latest year. The modal shift away from private transport has been equally shared between public transport, cycling and walking¹⁰³.

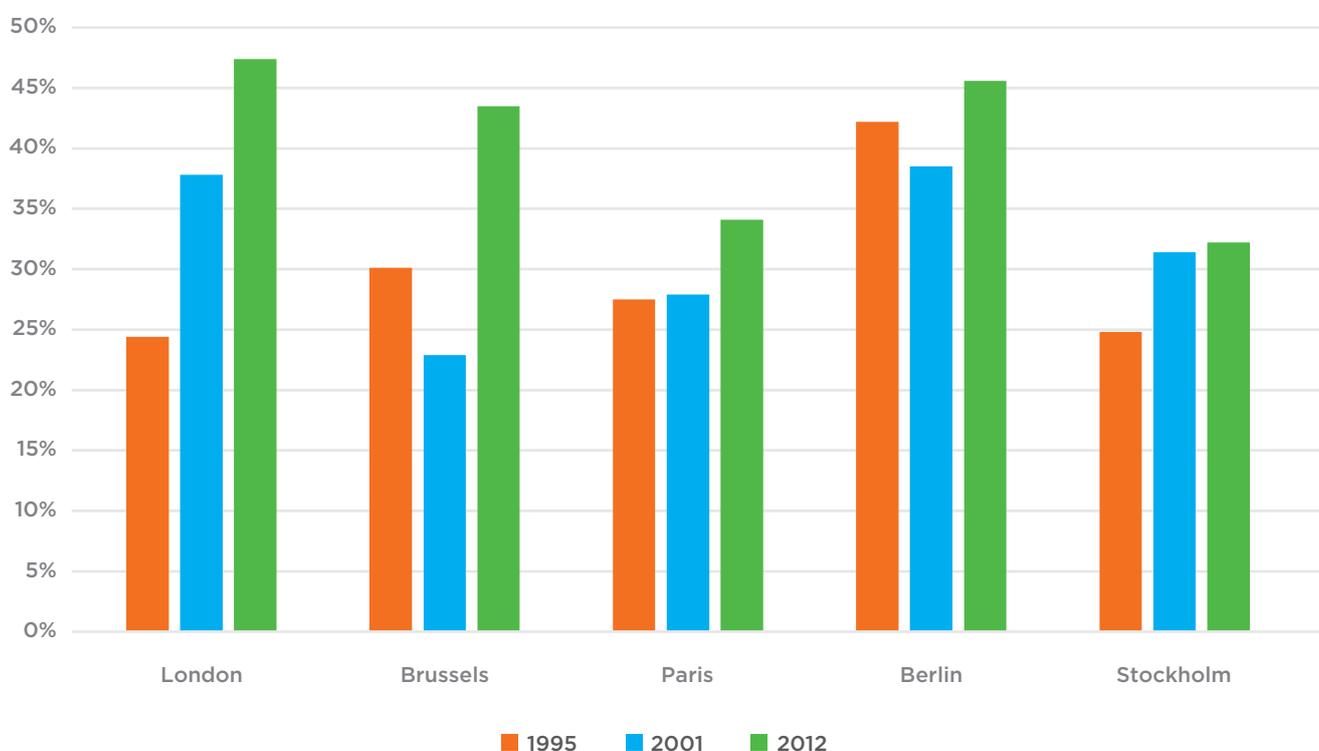
In outer London, the trends have been fairly different, with private transport mode share falling at a slower rate, from 50% in 2005/06 to 48% in 2015/16. Part of this modal shift has been at the expense of walking, with walk mode shares decreasing by 4 percentage points between 2005/06 and 2015/16¹⁰⁴.

WIDER EVIDENCE

The total of 68% journeys made by sustainable modes for London in 2015 compares to 36% for England¹⁰⁵.

However, a more appropriate comparison is with other European cities. London's public transport mode share has increased from one of the lowest in comparable European cities in 1995, to higher than Stockholm, Paris, Brussels and Berlin in 2012. This is shown in Figure 31 below.

Figure 31: Public transport modal share: London compared with other major European cities



Source: Transport for London, Travel in London, Report 9, 2016, Figure 2.11 (from International Institute of Public Transport)

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s draft London Transport Strategy’s¹⁰⁶ (LTS) aim for 2041 is “for 80 per cent of Londoners’ trips to be on foot, by cycle or by using public transport”. The draft Strategy states how “the success of London’s future transport system relies upon reducing Londoners’ dependency on cars in favour of increased walking, cycling and public transport use”. In order to achieve its goals, the Strategy proposes specific actions to, for example, increase active and sustainable travel for short trips around new town centres; and to improve public transport connections between existing communities that will support a shift away from car dependency.

The ongoing trend in favour of sustainable transport modes in London provides some confidence that this aim can be achieved. Nonetheless, long term continuation of walking, cycling and public transport prioritisation, together with other progressive transport policies, will likely be required in order to meet this 2041 target.



Relevant Sustainable Development Goals

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

SDG 9 (industry, innovation, and infrastructure) urges countries to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. This goal sets targets and metrics to, for example, develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

13. CRIME

INDICATOR OVERVIEW

Measure	Total recorded crime in London ¹⁰⁷
Source	ONS
Link	https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/
Year of data used for 2017 report	2016-17 (year ending March 2017)

SUMMARY ASSESSMENT

- There were 774,734 recorded crimes in London in 2016-17.
- There has been 5.61% fall in recorded crime levels since the 2012 QoL was published.
- The long-term trend is also positive. Recorded crime levels have fallen by 29% since 2002-03.
- However, overall recorded crime levels grew in the last year by 4.4%.
- There were rises in the last year in recorded robbery, sexual offences, theft and violence against the person.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
“A safer city for all Londoners” (Policy and Crime Plan 2017-2021 ¹⁰⁸)		● (England)

	Long-term trend 2002-03 to 2016-17	Long-term Progress since 2002-03	Five-year Progress since 2011-12
Change			

Why is this issue important to London’s quality of life?

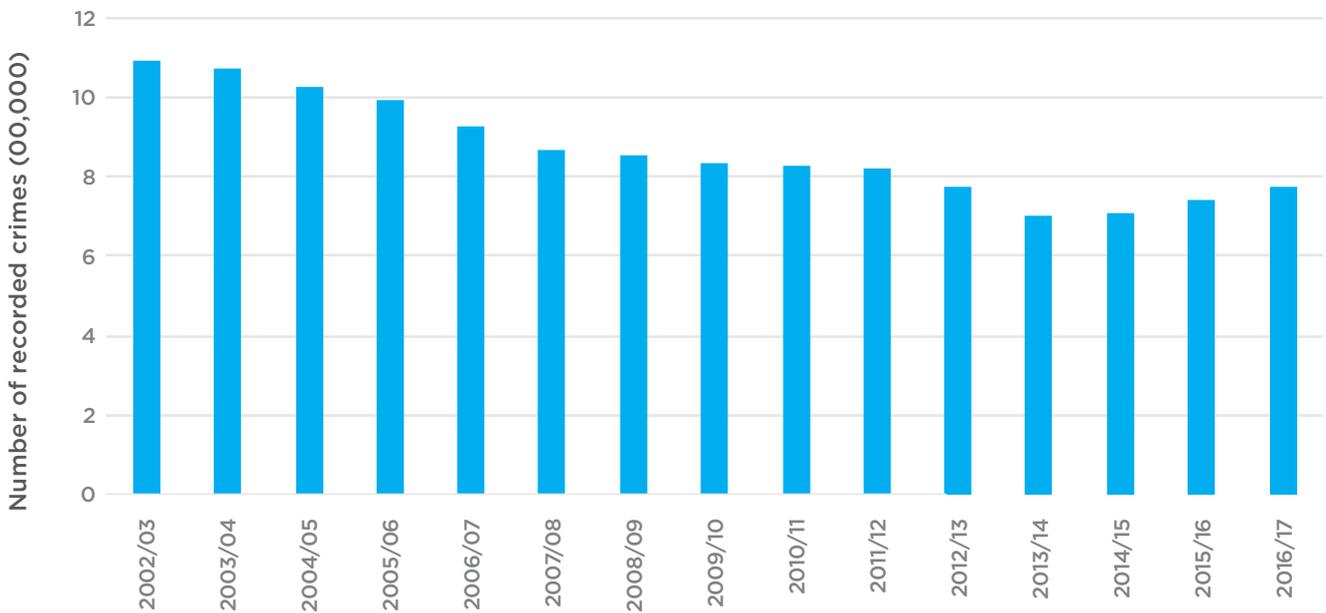
Crime is an important indicator of a city’s quality of life. Crime harms victims mentally, physically and financially and broadly affects people’s feelings of safety and trust, their daily routines, their freedom of choice and the extent to which they feel they belong to a community. Crime also imposes economic costs on society, reinforces social exclusion, impacts on personal wellbeing and can contribute towards environmental degradation.

HEADLINES

There were 774,734 recorded crimes in London in 2016-17.

Figure 32 shows the total numbers of recorded crime in London between 2002-03 and 2016-17.

Figure 32: Total recorded crime in London between 2002-03 and 2016-17



Source: Office for National Statistics

There was a 5.6% fall in recorded crime levels since the 2012 QoL report was published¹⁰⁹, including Fraud Offences¹¹⁰; there were 820,744 recorded crimes in 2011-12.

The long-term trend is also positive. Recorded crime levels were at 1,089,903 in 2002-03, meaning that recorded crime levels in London have fallen by 28.9% since this time.

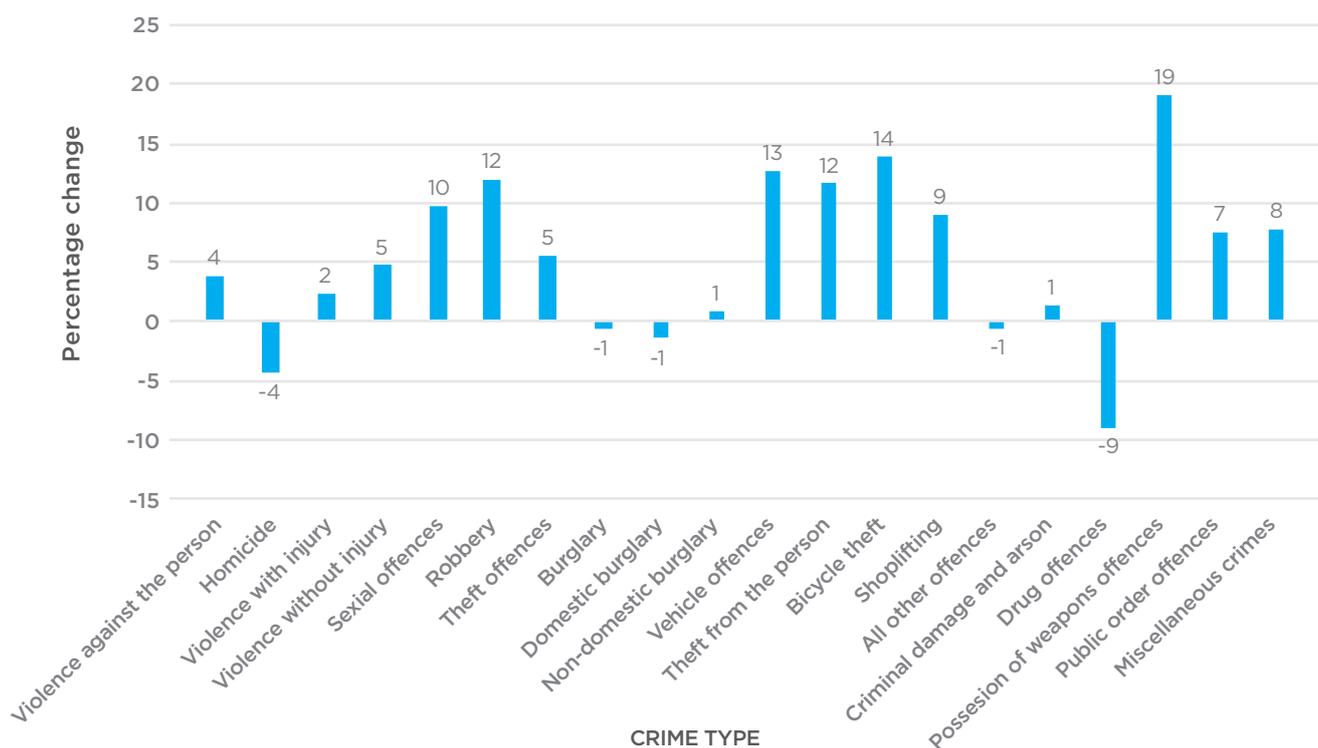
However, overall recorded crime levels in London grew 4.4% in the last year¹¹¹. Although

this is also the general trend across England and Wales¹¹², this will be something to monitor in future reports.

BENEATH THE HEADLINES

Figure 33 shows the percentage change in recorded crime levels for different offence types in London over the last year (2015-16 to 2016-17).

Figure 33: Police recorded crime by offence group, London, percentage change, year ending March 2016 compared with year ending March 2017



Source: Office of National Statistics

Fig 34 shows there were rises in most crime types in the last year. The largest rises were for: possession of weapons offences (19%), bicycle theft (14%), vehicle offences (13%), theft from the person and robbery (both 12%). There were falls for: drug offences (-9%), homicide (-4%), burglary, domestic burglary and all other theft offences (all 1%).

WIDER EVIDENCE

Demographic insights

Data from the Mayor's Office for Police and Crime (MOPAC)¹¹³ suggests that the victims of high harm crime reside in vulnerable locations. MOPAC reports¹¹⁴ that:

- The number of victims from either Black and Minority Ethnic (BAME) or White groups is proportionate to the current London population figures.
- Half of high harm victims were between 25 and 44 years of age.
- The gender split is equal between victims of high harm.

Perceptions of crime

Fear of crime and perceptions about safety can be as important to quality of life as crime levels themselves. A MOPAC and Metropolitan Police Service (MPS)¹¹⁵ survey of public attitudes in London¹¹⁶ found that, in 2016-17:

- 83% of Londoners felt safe walking in their area after dark. This is the same level as 2013-14.
- 31% were worried about crime their area. This is the same level as 2013-14.
- 21% were worried about anti-social behaviour in their area. This is broadly the same as in 2013-14 (when 22% of respondents reported being worried).

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's Police and Crime Plan for London 2017-2021¹¹⁷ aims for "a safer city for all Londoners". This Plan sets out his priorities for the safety of London. The Plan includes specific actions to tackle key safety issues, reduce crime and disorder in London and improve police services across the city. The proposed actions include efforts to, for example, increase the number of Dedicated Ward Officers in all London's wards; and to increase action against hatred, intolerance and extremism.

Relevant Sustainable Development Goals

SDG 16 (peace, justice and strong institutions) urges countries to promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels. This goal sets targets and metrics to, for example, reduce all forms of violence and related death rates everywhere, and to increase the percentage of the population that feel safe walking alone around the area they live.

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.



14. DECENT HOUSING

INDICATOR OVERVIEW

Measure	Percentage of homes exceeding the Decent Homes Standard
Source	GLA, 2017, Housing in London 2017 and Draft London Housing Strategy
Link	https://www.gov.uk/government/statistical-data-sets/local-authority-housing-statistics-data-returns-for-2015-to-2016
Year of data used for 2017 report	2015

SUMMARY ASSESSMENT

- In 2015, 84% of London's homes exceeded the Decent Homes Standard.
- This is an increase of more than 14 percentage points from the level of 70% reported in the 2012 QoL report and an increase of 21 percentage points from the 2006 levels of 63%. Progress continues to be made; between 2014 and 2015 the figure increased by 2.5 percentage points.
- The proportion of Decent Homes is highest in the housing association sector (89%) followed by owner occupied housing (88%) and council owned (82%), though the figure for council owned homes has fallen since 2013. Private rented accommodation has the lowest rate at 76%.
- There is still some way to go to meet the aim of the draft LHS that every Londoner has a good quality home.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"Every Londoner to have access to a good quality home that meets their needs and at a price they can afford" (draft LHS ¹⁸)	With 24% of privately rented homes still 'non-decent', there remains some way to go towards achieving this aim. And the proportion of non-decent council homes has risen since 2013.	 (England)

	Long-term trend 2006-2015	Long-term Progress since 2006	Five-year Progress since 2010
Change			

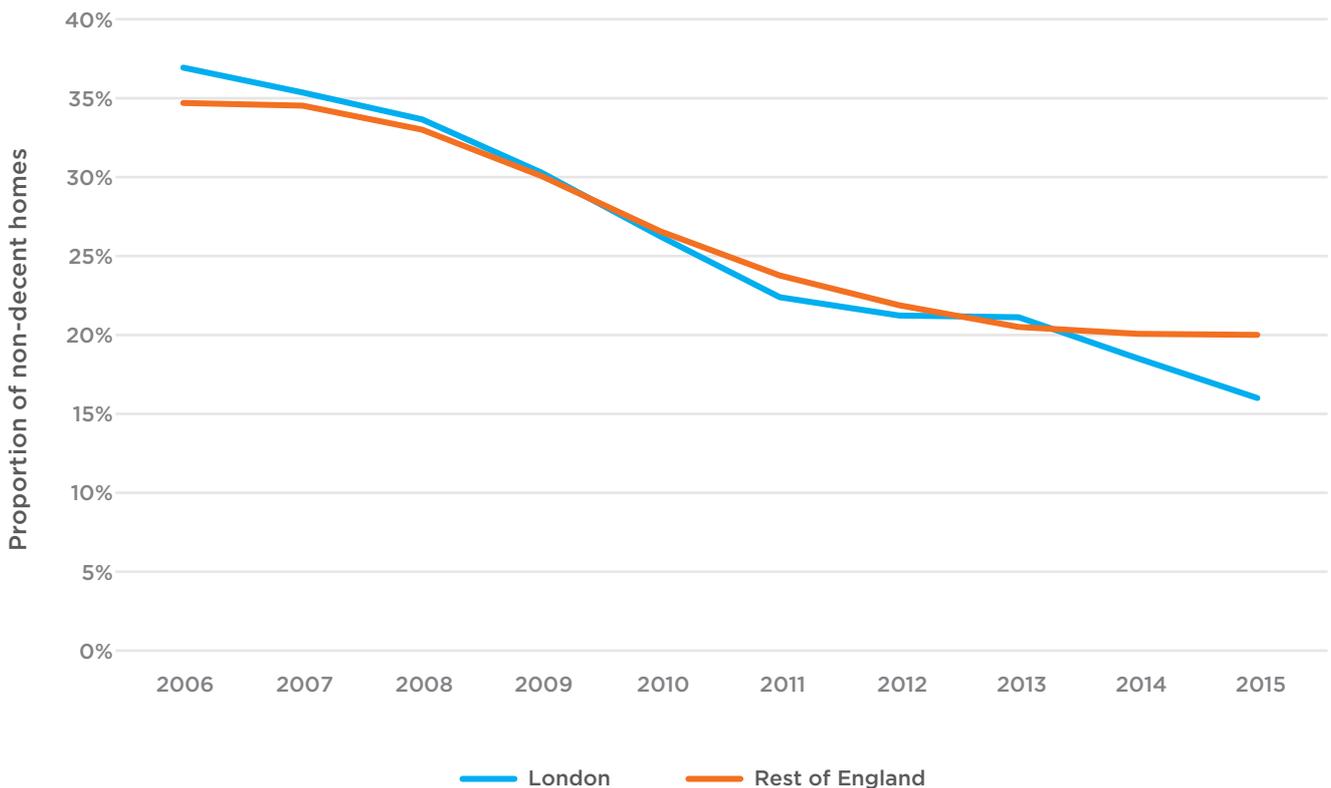
Why is this issue important to London’s quality of life?

Housing is a fundamental aspect of a decent quality of life. Poor quality housing can harm health and is often linked to a variety of social problems.

Decent Homes are defined as meeting the current statutory minimum standard for housing and being in a reasonable state of repair. Figure 34 shows that in 2015, 16% of London’s homes (around 550,000) were

below the Government’s Decent Homes Standard. This represents a decrease from the 2009 figure of 30% and a greater decrease from the 2006 figure of 37%.

Figure 34: Non-decent homes in London and the rest of England, 2006-15



Source: GLA, 2017, *Housing in London 2017 and Draft London Housing Strategy*

BENEATH THE HEADLINES

As Figure 29 shows, rates of non-decent homes have fallen in London at a slightly faster rate than for the rest of England. As a result, the capital, which had higher rate of non-decent homes in 2006 (37% compared to the rest of England's 35%), had a lower rate than the rest of the country in 2015 (16% compared to 20%). In 2015, London also had a lower rate than the North West, the West Midlands, the East and the South West.

Figure 35 shows that, within London, the proportion of non-decent homes is lowest in the housing association sector (11%) followed by owner occupied housing (12%) and council owned (18%), though number are increasing in the latter sector. Private rented accommodation has the highest rate at 24%. This contrasts to

the figures for 2006 when council properties had the highest non-decent rate. Standards in this and the housing association sector have improved partly as a result of the UK Government's target, set in 2000, to ensure that all social housing met the Decent Homes Standard by 2010¹¹⁹. While this target has not been met, considerable improvements have been achieved in terms of reducing the number of non-decent homes. Improvements in the private rented sector remain poorer than for other tenures and, though they have improved since 2006, are doing so at a more gradual rate than for either social or owner-occupied tenures. The introduction of Minimum Energy Efficiency Standards for the private rented sector from 2018 should see accelerated rates of improvement, at least in terms of the thermal comfort of Decent Homes¹²⁰.

Figure 35: Proportion of non-decent homes in London by tenure



Source: Survey of English Housing data 2006 to 2007, English Housing Survey stock data 2008 to 2015.



While the proportion of non-decent homes is falling, homelessness is on the rise, driven by the high cost of housing and the lack of support for those who need it. It is estimated that one in 50 Londoners is now homeless, including people who are sleeping rough and those living in temporary accommodation and hostels¹²¹.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor of London's draft London Housing Strategy¹²² (LHS) aims for "every Londoner to have access to a good quality home that meets their needs and at a price they can afford". To achieve that, the Mayor

is proposing a series of specific actions to enable private renters to benefit from decent property standards and management practices across the sector. These proposed actions include working with councils and Government in order to encourage good standards in London's private rented sector and to target enforcement resources against the minority of poor quality and criminal landlords.

Relevant Sustainable Development Goals

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, reduce the proportion of urban population living in inadequate housing.

15. HAPPINESS

INDICATOR OVERVIEW

Measure	Self-reported levels of happiness
Source	Department for Digital, Culture, Media and Sport (DCMS), Taking Part Survey 2016
Link	https://www.gov.uk/government/statistics/taking-part-longitudinal-report-2016
Year of data used for 2017 report	2015-16

SUMMARY ASSESSMENT

- The average happiness score for London was 7.84 (out of 10) in 2015-16.
- The score has increased by 1.3% since the 2012 QoL report and by 5.8% since 2005-06.
- On average, Londoners are less happy than the UK as a whole, scoring 2.2% less.
- The exceptions are young people aged 16-29 and non-Whites, who are considerably happier than their non-London counterparts, and women who are very slightly happier than those the rest of the UK.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
“All Londoners share in a city with the best mental health in the world” (draft LHIS ¹²³)		 (United Kingdom)

	Long-term trend 2005-2015	Long-term Progress since 2005	Five-year Progress since 2010
Change			

Why is this issue important to London’s quality of life?

Feeling happy is critical to an individual’s quality of life. The ‘happiness agenda’ has become an increasingly important issue for policy-makers. A number of factors are cited as contributing to feelings of happiness, including: seeing relatives and friends regularly; being married, cohabiting or in a civil partnership; satisfaction with one’s neighbourhood; and owning one’s own home¹²⁴.

HEADLINES

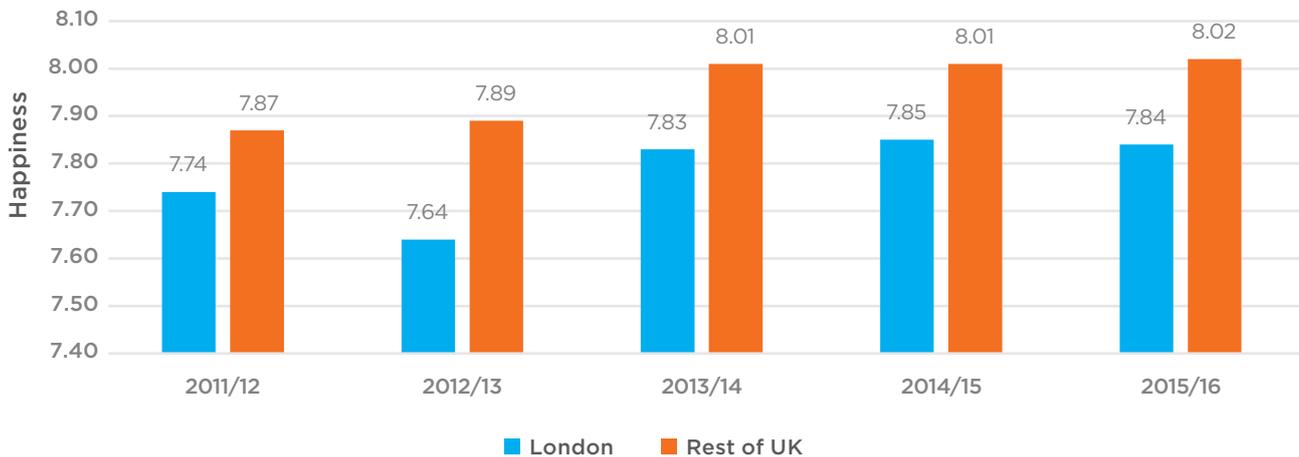
This indicator measures Londoners’ subjective level of happiness and is taken from the Department for Digital, Culture, Media and Sport Taking Part survey. The survey asks people “Taking all things together, how happy would you say you are?”

Figure 36 shows that the average happiness score for London has increased from 7.74 in

2011-12 to 7.84 in 2015-16. This represents an increase of 1.29%, and an increase of 5.8% on the 2005-06 figure of 7.41. The score has remained broadly stable since 2013-14.

Londoners are less happy than those living in the rest of the UK. In 2015-16, the rest of the UK rated itself 0.18 higher in terms of feeling happy than London.

Figure 36: Level of happiness in London and UK



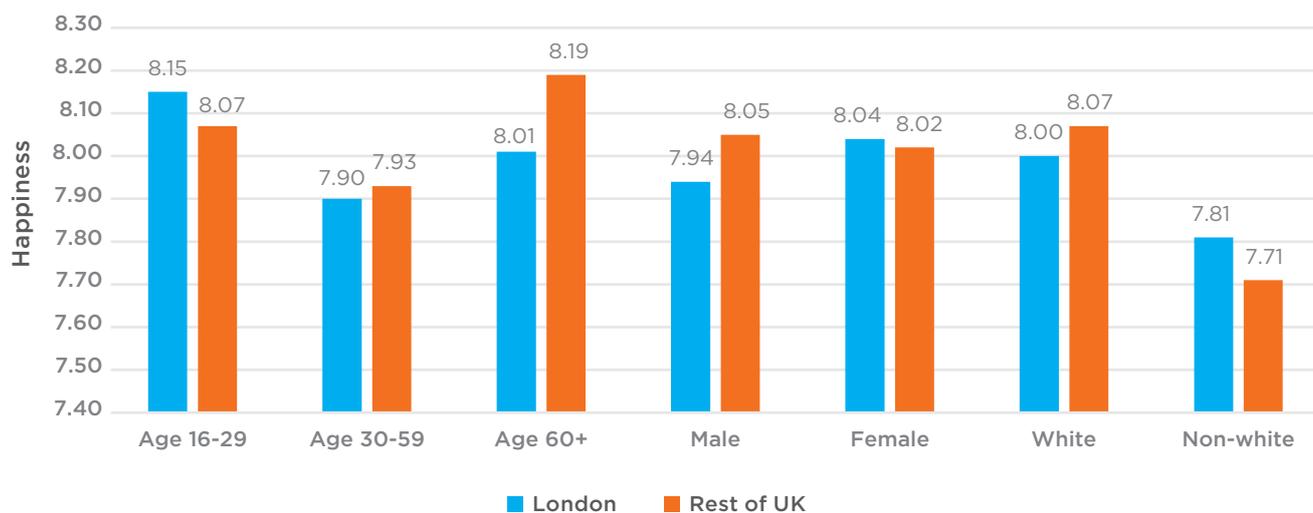
Source: DCMS, 2016, Taking Part Survey accessed via London Datastore

BENEATH THE HEADLINES

Self-reported happiness levels are different between age groups, genders and ethnicities in London. Figure 37 shows that those aged 16-29 had the highest rates. This is in contrast to 2010-11 when those over 60 rated had the highest rates.



Figure 37: Happiness in London and UK in 2015-16 by demographic



Source: DCMS, 2016, Taking Part Survey accessed via London Datastore

Women in London report being happier than men (8.04 as opposed to 7.94). In contrast, there are not big differences across the UK.

White Londoners, meanwhile, are happier than BAME Londoners (8.0 and 7.81 respectively; a difference of 0.19). The difference is less marked than the UK average, where there is a 0.36 differential. BAME Londoners score higher than UK average of this category.

In the UK as a whole, those over 60 have the highest happiness scores. However, this group in London scores 0.18 below the UK average, putting them lower than a number of other demographic groups (16-29, white, female).

It is important to note that there is an important distinction between ‘happiness’ and wellbeing. Asking people how happy they are is a subjective measure, reflecting how people feel. Wellbeing can be understood as the state produced when people lead a good life, i.e., when they function well, on both a personal and a social level. Functioning well depends on the satisfaction of physical as well as psychological needs, which in turn depends on external conditions such as health, relationships, education and skills, what we do, where we live, our finances, the economy, governance and the environment¹²⁵.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s draft London Health Inequalities Strategy (LHIS)¹²⁶ aims that “all Londoners share in a city with the best mental health in the world”. To achieve that, the Mayor is proposing a series of specific actions to educate, equip and empower all Londoners to lead healthier, happier lives. These proposed actions include supporting the new Thrive LDN programme, a movement bringing the city together around a collective purpose for mental wellbeing in London.

Relevant Sustainable Development Goals

SDG 3 (good health and wellbeing) urges countries to ensure healthy lives and promote well-being for all at all ages. This goal sets targets and metrics to, for example, reduce suicide mortality rate and substance abuse by promoting mental health and well-being.



16. SATISFACTION WITH LONDON

INDICATOR OVERVIEW

Measure	Percentage of Londoners satisfied with the capital as a place to live
Source	London Datastore, 2016, Annual London Survey 2015
Link	https://data.london.gov.uk/dataset/annual-london-survey-2015
Year of data used for 2017 report	2015

SUMMARY ASSESSMENT

- In 2015, three quarters (75%) of Londoners were satisfied with the capital as a place to live in.
- This is a deterioration on satisfaction levels in 2014 (82%). Data collection methods changed in 2013 meaning the figures are not directly comparable with figures prior to that date.
- Levels of satisfaction vary enormously by category; 73% are satisfied with the culture and sport in London but only 8% with the housing.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
London to be “a healthy, green, safe and enjoyable city” (draft Vision for a diverse and inclusive city ¹²⁷)		●

	Long-term trend	Long-term	Five-year
Change	●	●	●

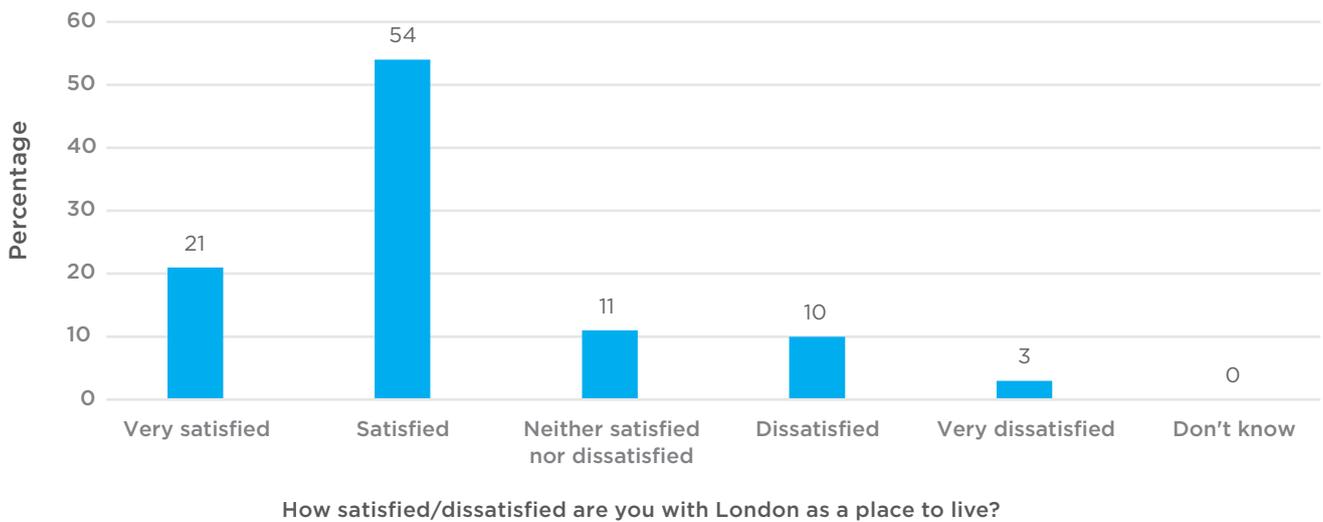
Why is this issue important to London’s quality of life?

Neighbourhood wellbeing and feeling included in the city you live in are important features of sustainable communities. This survey-based indicator is a simple and effective way to measure Londoners’ view of their neighbourhood and of London as a whole.

HEADLINES

Figure 38 shows that, in 2015, three quarters (75%) of Londoners were satisfied with the capital as a place to live in whilst 13% said they were dissatisfied.

Figure 38: Satisfaction with London as a place to live (2015)



Source: GLA, 2015, Annual London Survey Toplines

The Annual London Survey was historically collected by conducting approximately 1,400 face-to-face interviews (exact numbers vary year on year) in respondents' homes. However from 2014 onwards the methodology and sampling framework has changed significantly as responses are now collected online using the Greater London Authorities' consultation website Talk London. Due to these changes the latest results cannot be compared directly with the pre-2014 figures.

The Annual London Survey 2015 also found that:

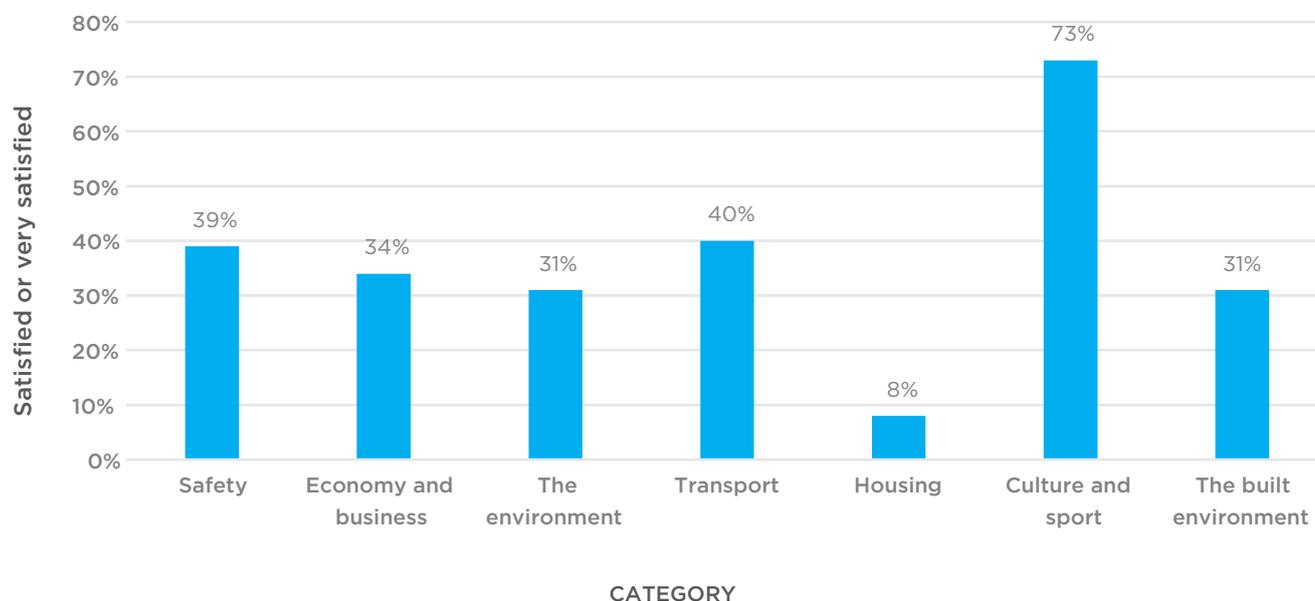
- Those most satisfied with London are those over the age of 65 (87.4%), home-owners (81%) and those who have lived in London for between 11 and 20 years (80.5%).

- Those who are least satisfied with London are those in socially rented accommodation (of whom 68.2% are satisfied), those who are Black (67.5%), those with lower educational attainment (GCSEs or no qualifications) (63.7%) and those aged 25-34 (65.7%).

BENEATH THE HEADLINES

Figure 39 shows that satisfaction varies enormously with category, ranging from just 8% for housing up to 73% for culture and sport.

Figure 39: Satisfaction by category



Source: GLA, 2015, Annual London Survey Toplines

The survey shows that the things people consider to be best about living in the capital have changed somewhat from those identified in the previous Quality of Life report. The range of things to do (identified by 26% of respondents) and the diversity of London (21%) were considered the best aspects of London in 2012; a change from the previous report when transport and the range of shops were considered to be the best aspects of London living. The arts, transport services, business and employment opportunities and the cultural scene were also all well-regarded (each scoring 15%).

The worst things about living in London are considered to be accommodation costs (identified by 31% of respondents), the cost of living (28%), pollution and air quality (14%) and traffic/congestion (11%).

In terms of challenges, affordable housing was identified as the biggest challenge by 27% of respondents, whilst population growth was identified as a challenge by 27%, pressures on the health services by 11%, transport capacity by 10% and inequality by 9%.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's draft Vision for a Diverse and Inclusive City¹²⁸ aims for London to be "a healthy, green, safe and enjoyable city". In the consultation document, the Mayor sets out his vision for London as the city where all Londoners are able to reap the rewards of their city's growth and play active roles in their communities, and where all young people have the opportunities they need to fulfil their potential. To achieve that, the Mayor aims to publish a Diversity and Inclusion Strategy setting out the specific objectives and actions in order to achieve that goal.

Relevant Sustainable Development Goals

SDG 16 (peace, justice and strong institutions) urges countries to promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels. This goal sets targets and metrics to, for example, increase the amount of people satisfied with their experience of public services.



17. VOLUNTEERING

INDICATOR OVERVIEW

Measure	Proportion of adults taking part in volunteering in last 12 months
Source	Department for Digital, Culture, Media and Sport (DCMS) Taking Part Survey 2016
Link	https://www.gov.uk/guidance/taking-part-survey
Year of data used for 2017 report	2015-16

SUMMARY ASSESSMENT

- 26% of Londoners participated in formal or informal volunteering in 2015-16.
- This is an increase on last year, when levels were at 23%.
- It also represents a long-term increase; volunteering levels were at 24% in 2005-06.
- Levels in London were also higher in 2015-16 than for England as a whole (24%).

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
“For all people from different backgrounds to be able to lead inter-connected lives” (draft Vision for a diverse and inclusive city ¹²⁹)		

	Long-term trend 2005-06 to 2015-16	Long-term Progress since 2005-06	Five-year Progress since 2010-11
Change			

Why is this issue important to London’s quality of life?

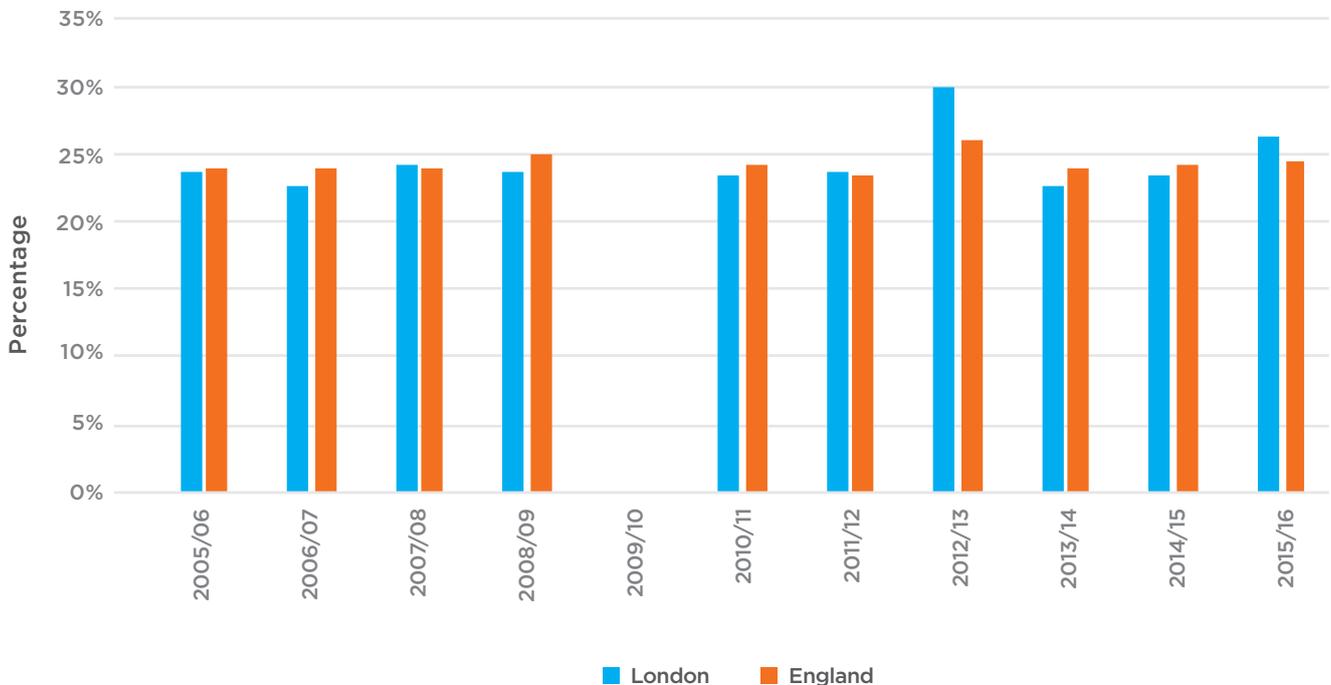
High levels of volunteering are considered to be good indicators of healthy and well-functioning communities, where people actively participate and ‘give back’ to their local area. This indicator complements the neighbourhood cohesion measure to provide a fuller indication of Londoners’ social participation and cohesion.

Taking Part asks whether respondents have participated in voluntary work in the last 12 months and whether this relates to one of the DCMS sectors (sport, art, heritage, museum and galleries, libraries or archives).

HEADLINES

Figure 40 presents the proportion of adults taking part in voluntary activity in the last 12 months.

Figure 40: Proportion of adults taking part in voluntary activity in last 12 months, London and England 2005-06 to 2015-16



Source: Taking Part Survey, DCMS <https://www.gov.uk/guidance/taking-part-survey>. No data was collected in 2009-10

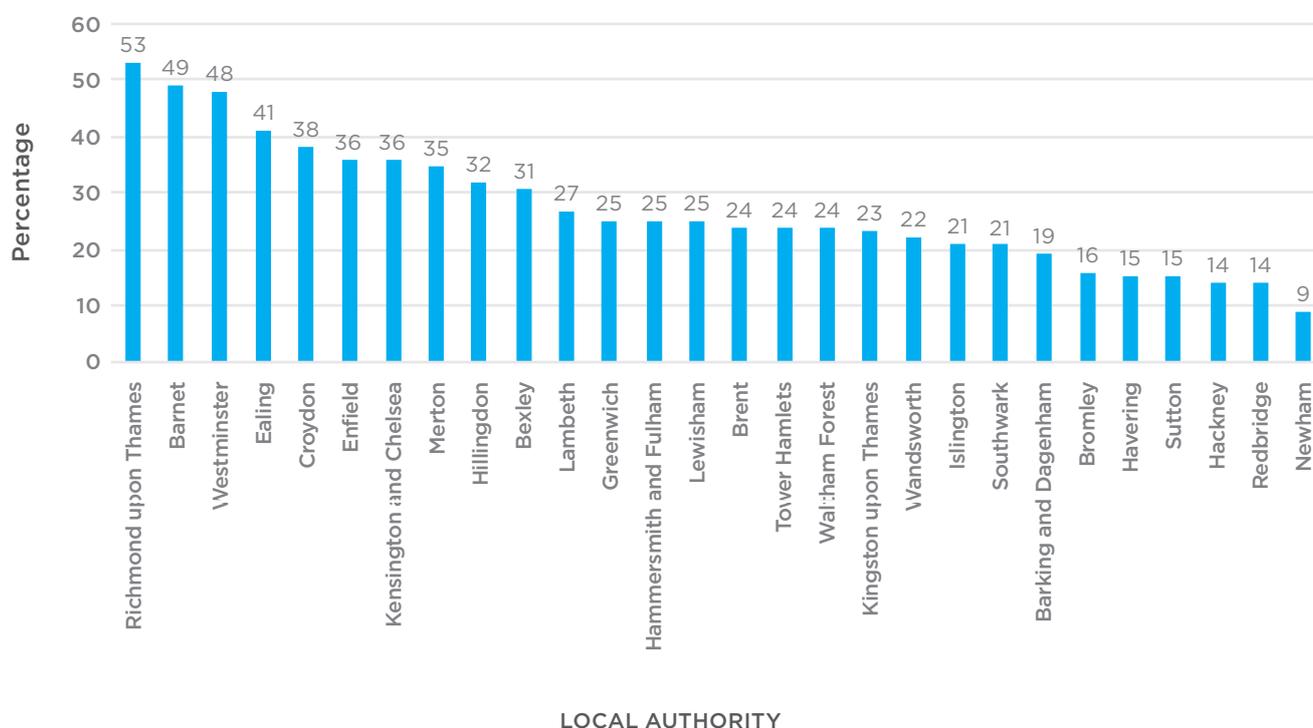
26% of Londoners participated in formal or informal volunteering in 2015-16. This was an increase on the previous year, when levels were at 23%. It also represents a long-term increase; volunteering levels were at 24% in 2005-06. Volunteering levels hit a high of 30% in 2012-13, coinciding with the Olympic Games being hosted in London, which involved a significant volunteering effort.

There is no significant difference between London and England in volunteering levels in 2015-2016.

BENEATH THE HEADLINES

Survey data reveals large differences in reported volunteering data by local authority area in London. Figure 41 shows that Richmond upon Thames had the highest reported volunteering levels in London (53% of the adult population) over the three-year period 2013/14-2015/16, whilst Newham had the lowest (9%). Note that Haringey, Harrow, Hounslow and Camden are not included in the figures because survey sample sizes were too small.

Figure 41: Proportion of survey respondents per local authority that reported doing voluntary work during the last 12 months (2013/14 - 2015/16; three-year combined due to small sample sizes)



Source: DCMS Taking Part Survey (figures provided by the GLA, 25 October 2017)



There were also variations in volunteering levels by age and by ethnicity over the three-year period 2013/14 – 2015/16. Volunteering levels were generally highest amongst older Londoners. Levels were at 30%, 31% and 33% respectively for the age groups 55-59, 60-64 and 65-74. Volunteering levels were also relatively high amongst very young adults; 29% of 16-24 age group reported volunteering in the previous 12 months. The lowest levels of volunteering were the 30-34 age group, for whom levels were 15%. Meanwhile, more white Londoners reported volunteering (27%) compared with BAME Londoners (22%).

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s draft Vision for a Diverse and Inclusive City¹³⁰ sets social integration as one of the Mayor’s top priorities, aiming “for all people from different backgrounds

to be able to lead inter-connected lives; “this includes through volunteering, sport, voting and taking part in public and political life¹³¹”. In the consultation document, the Mayor sets his vision for London as the city where all Londoners can play active roles in their communities. To achieve that, the Mayor will propose a series of actions in order to promote active citizenship, making it easier for Londoners of all backgrounds to work together on volunteering and social action programmes in schools and local communities.

The Mayor’s draft Economic Development Strategy (EDS)¹³² aims to prepare young people for work in a global city. To achieve that, the Mayor will, for example, help young people to develop the necessary skills through volunteering activities organised by Team London¹³³, which is the Mayor’s volunteering programme.

Relevant Sustainable Development Goals

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, enhance inclusive and sustainable urbanisation and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.

SDG 17 (partnership for the goals) urges countries to revitalise the global partnership for sustainable development. This goal sets targets and metrics to, for example, encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.

18. SOCIAL INTEGRATION

INDICATOR OVERVIEW

Measure	Proportion of people who think their local area is a place where people from different backgrounds get on well together
Source	Metropolitan Police Public Attitude Survey
Link	Data not publicly available
Year of data used for 2017 report	2016-17

SUMMARY ASSESSMENT

- In 2016-17, 91% of Londoners surveyed agreed that their local area is a place where people of different backgrounds get on well together.
- This compares with 81% of adults in England in 2016-17.
- The percentage varies from borough to borough, with the highest rates recorded in 2016-17 in Westminster and Hammersmith and Fulham and the lowest rates in Newham and Barking and Dagenham.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
“All Londoners can lead interconnected lives and play an active part in their city and the decisions that affect them” (draft Vision for a diverse and inclusive city ¹³⁴)		 (England)

	Long-term trend 2012-13 to 2016-17	Long-term	Five-year Progress since 2012-13
Change			

Why is this issue important to London’s quality of life?

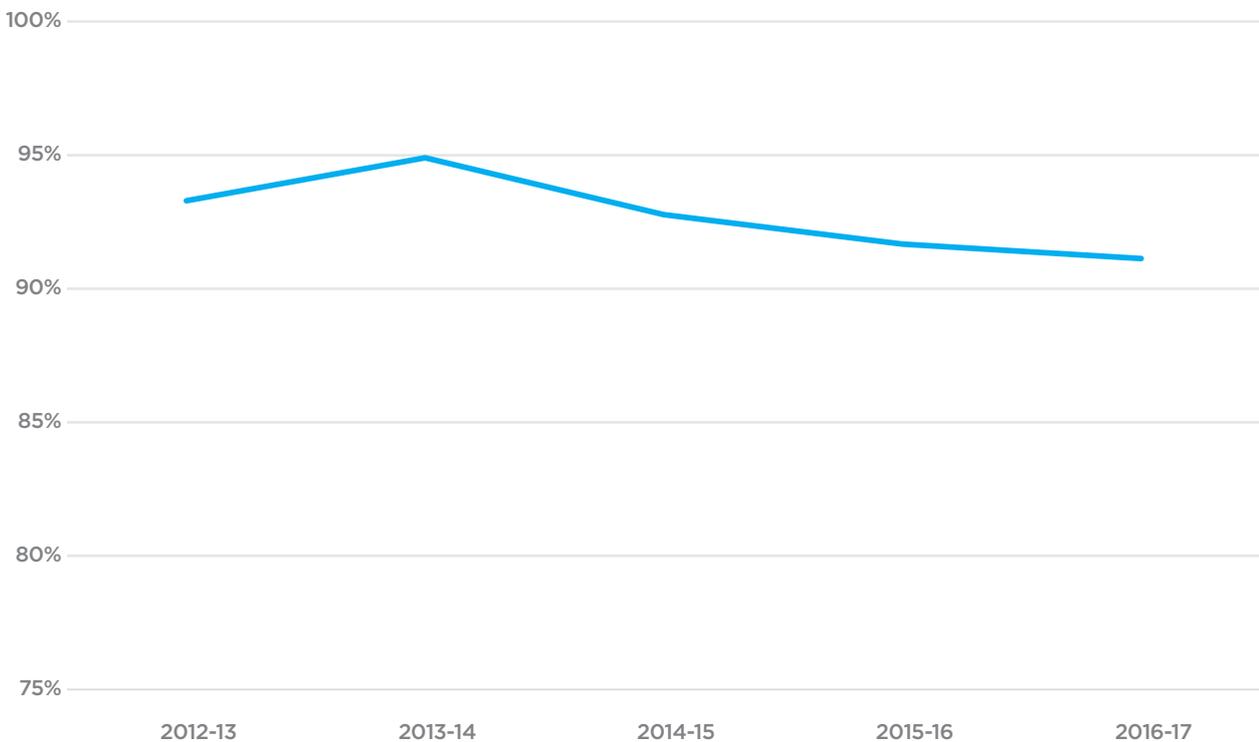
This indicator is intended to measure social integration¹³⁵ or cohesion, which is a concept without an agreed clear definition. However, one frequently accepted summary of social cohesion is the peaceful existence of diverse groups¹³⁶. London is a highly diverse city, and the degree to which those from different ethnic groups can live together without conflict has an important impact on the quality of life of all Londoners.

HEADLINES

In the 2016-17 survey, 91% of Londoners agreed that their local area is a place where people of different backgrounds get on well together.

Figure 42 below shows, the figure has fallen slightly since a high of 95% in 2013-14. The percentage agreeing has fallen by 2% since the first survey in 2012-13. This compares with 81% of adults in England in 2016-17¹³⁷.

Figure 42: Percentage of Londoners that agree that their local area is a place where people from different backgrounds get on well together 2012-13 to 2016-17



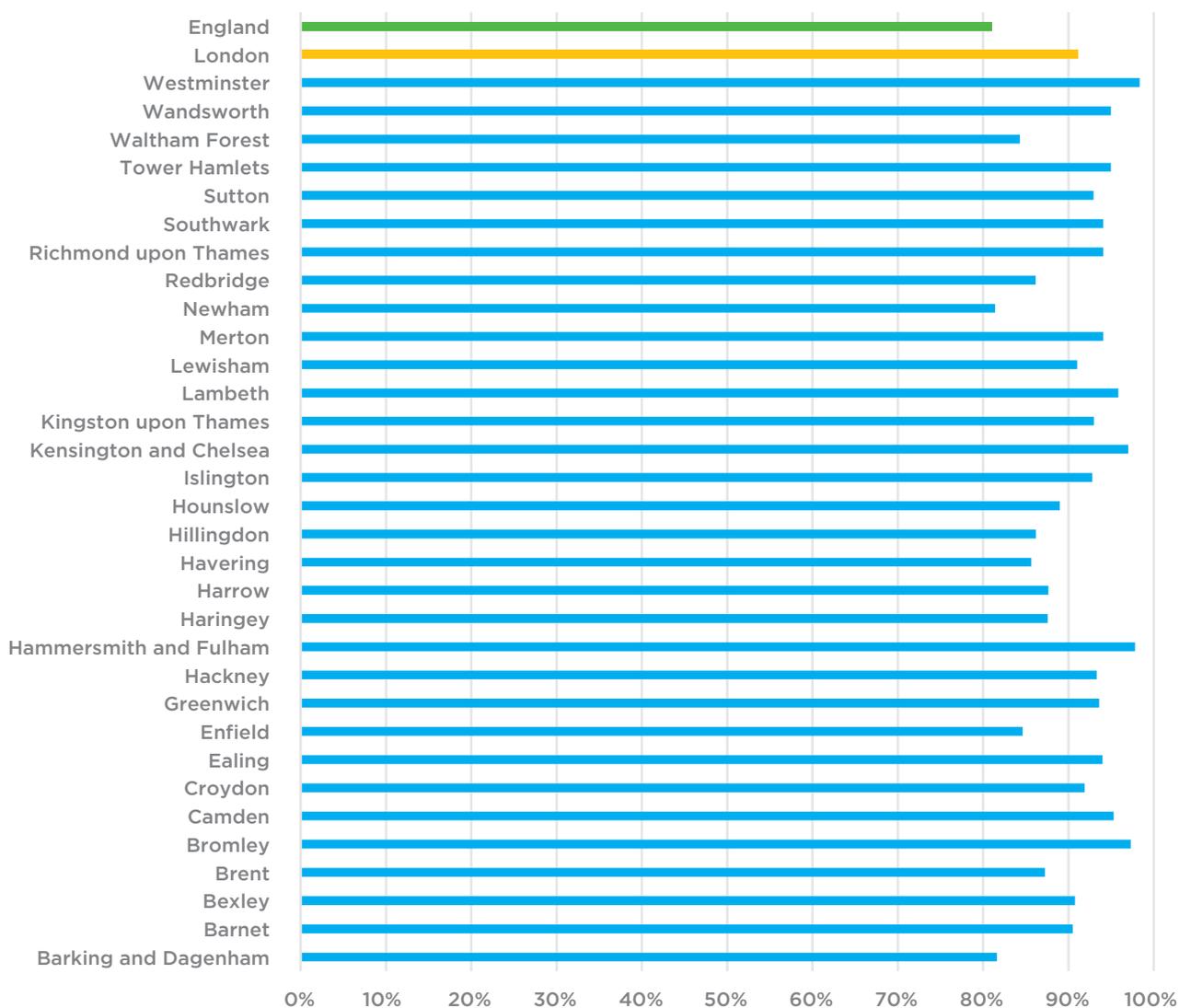
Source: Metropolitan Police Public Attitude Survey

BENEATH THE HEADLINES

The percentage varies from borough to borough as shown in Figure 43 below, with the highest rates recorded in 2016-17 in Westminster and Hammersmith and Fulham

at 98%, and the lowest rates in Newham (81%) and Barking and Dagenham (82%). However, because of the small sample size of 400 interviewees per borough, there is a 5% margin of error¹³⁸ with the borough level figures.

Figure 43: Percentage of residents that agree that their local area is a place where people from different backgrounds get on well together by borough 2016-17



Source: London data from Metropolitan Police Public Attitude Survey, England data from Department for Digital, Culture, Media and Sport, Community Life Survey



WIDER EVIDENCE

In the UK the Migration Observatory¹³⁹ reviews the evidence on the factors that help, or hinder, social integration. While evidence from the US suggests that increased diversity undermines social integration, this is not confirmed by data from British neighbourhoods. It notes that studies based on British data have raised the question whether it is income inequality, in particular deprivation and impoverishment of an area, rather than diversity per se that tends to lead to division.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's Vision for a Diverse and Inclusive City¹⁴⁰ sets social integration as one of the Mayor's top priorities. In the consultation document, the Mayor sets his vision for London as the city where "all Londoners can lead interconnected lives and play an active part in their city and the decisions

that affect them". To achieve that, the Mayor will propose a series of actions in order to prevent, identify and remove inequalities and barriers that prevent people from engaging in their communities and wider society, whilst recognising the important role interaction and participation play in overcoming these.

Relevant Sustainable Development Goals

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, enhance inclusive and sustainable urbanisation and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.

SDG 5 (gender equality) urges countries to achieve gender equality and empower all women and girls. This goal sets targets and metrics to, for example, ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.



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ECONOMIC INDICATOR ASSESSMENTS

Table 5: 2017 QoL economic indicators

	Indicator	Measure
19	Gross Value Added	Gross Value Added per capita
20	Employment rates	Employment rate
21	Business Survival	Survival of London businesses after one year of trading
22	Human capital	Full human capital per head in London OR Employed human capital per head in London
23	Innovation	a. Proportion of firms reporting introducing product innovations b. Proportion of firms reporting introducing process innovations
24	Income inequality	Disposable income differentials in London
25	Child poverty	Children living in households below 60% median income
26	Fuel poverty	Proportion of fuel poor households in London
27	Housing affordability	Ratio of lower quartile house prices to lower quartile earnings
28	London Living Wage	Proportion of people earning less than London Living Wage (LLW) per hour in London

19. GROSS VALUE ADDED

INDICATOR OVERVIEW

Measure	Gross Value Added (GVA) per head (£) in London
Source	Office for National Statistics, 2016, Regional Gross Value Added (Income Approach)
Link	https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/regionalgrossvalueaddedincomeapproach
Year of data used for 2017 report	2015

SUMMARY ASSESSMENT

- Gross Value Added (GVA) per head for London in 2015, at current basic prices, was £43,629.
- This is 72.1% higher than the GVA per head for the UK as a whole which was £25,351 in 2015. It is also higher than the GVA for all other individual regions.
- London's GVA represents 22.7% of the total GVA for the UK.
- London's GVA is growing; it has grown by 92.6% (on a constant price basis) since 1997, by 18.1% since 2010 and by 1.6% since 2014. The growth since 2014 is less than the growth in average GVA per head for the UK as a whole (2.1%) and less than for most other regions.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"London to be the world's greatest city for business - a world capital for trade and investment" (draft EDS ¹⁴¹)		 (United Kingdom)

	Long-term trend 1997-2015	Long-term Progress since 1997	Five-year Progress since 2010
Change			

Why is this issue important to London's quality of life?

GVA is a measure of the total value of goods and services produced by London's economy. It is a key measure of material well-being and an important factor in relation to living standards.

HEADLINES

GVA per head measures the productivity of London's economy and provides a measure of economic competitiveness. It is the difference between the value of goods and services produced and the cost of the inputs that are used in the production of those goods and services. (The figures here have been adjusted to current prices, to take out the effects of inflation.)

Between 1997 and 2015, London's GVA per capita increased by 92.6% on a constant prices basis. Figure 44 shows that this

figure has risen steadily since 2009 with a drop between 2008 (the figure used for the last QoL report) and 2009, due to the economic recession.

The average GVA per capita for London in 2015 was £43,629 per capita, in current prices. The equivalent figure for the UK as a whole was £25,351, showing that London's economy is significantly more productive than the UK-wide economy. The differential between London and the rest of the UK has widened over the period 1997 (when it was 58.7% higher) to 2015 (72.1% higher).

Figure 44: GVA per head for London and the UK 1997-2015



Source: Office for National Statistics, 2016, Regional Gross Value Added (Income Approach)

BENEATH THE HEADLINES

Figure 45 shows that there is enormous variation within London. Inner London West, which includes the City of London, has a GVA per head that is more than seven times greater than that of Outer London - East and North East, which has a GVA per head of just £18,487 - 27.1% lower than the UK average. Within this, Redbridge and Waltham Forest have the lowest GVA per head in London (£17,053) whilst Camden and the City of London have a GVA that is more than 17 times higher - £292,855.

In terms of total GVA, Westminster had the highest level of GVA of any London local authority in 2015, producing output worth £53.6 billion, followed by the City of London at £46.7 billion, while Barking and Dagenham had the lowest GVA at £3.3 billion. A number of London's authorities also contributed a significant portion of the UK's total GVA, with Westminster and the City of London each contributing 3.2% and 2.8% respectively of all the UK's GVA in 2015¹⁴².

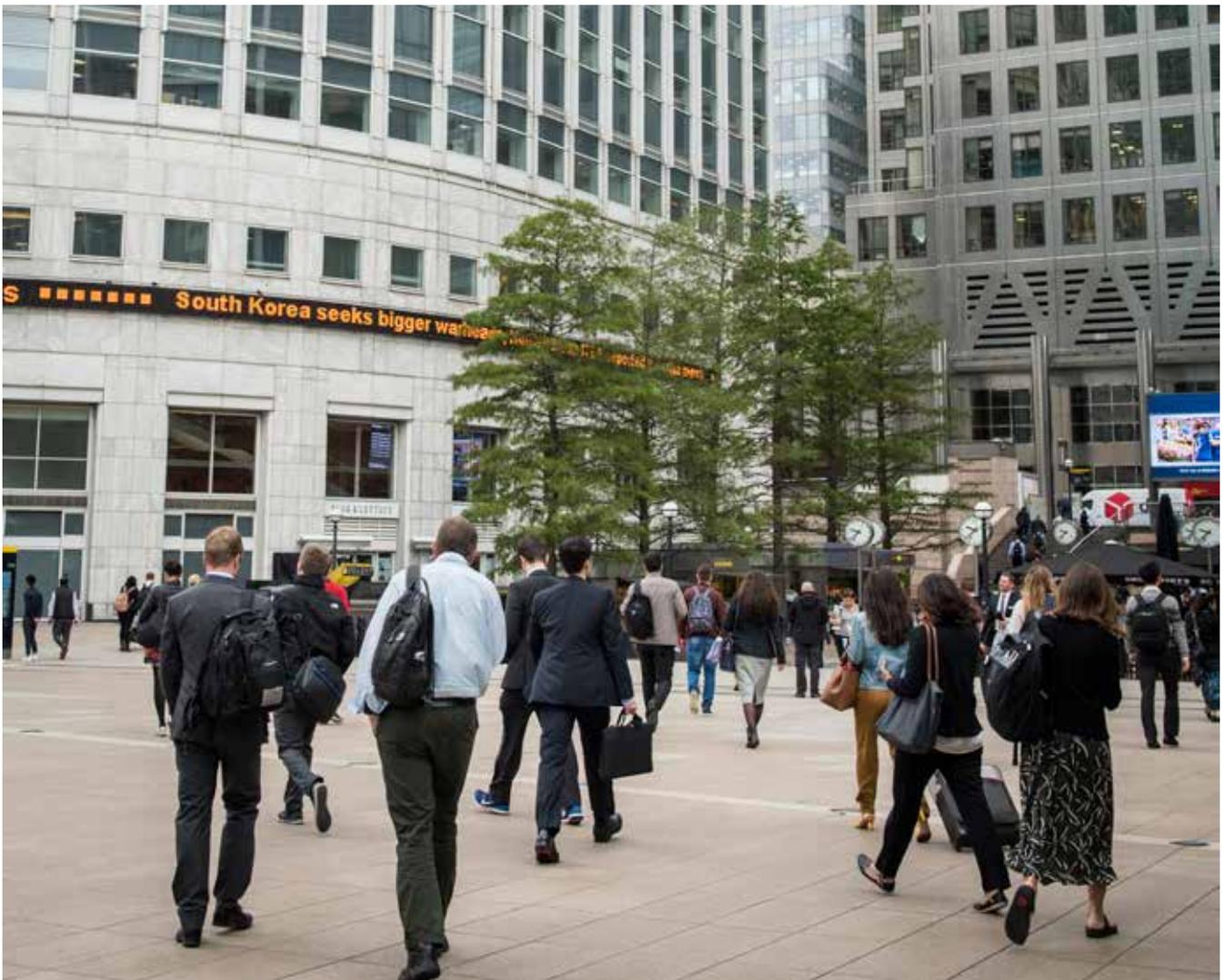


Figure 45: GVA for London by sub-region 2015



Source: Office for National Statistics, 2016, Regional Gross Value Added (Income Approach)

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s London Economic Development Strategy¹⁴³ (EDS) aims for “London to be the world’s greatest city for business - a world capital for trade and investment”. To achieve this, the draft strategy proposes a series of actions to enable London’s competitive and sustainable growing economy to create a wide range of work opportunities. His actions to enable these conditions of growth will focus on land and property, transport, infrastructure, innovation and skills, and enterprise.

Relevant Sustainable Development Goals

SDG 8 (decent work and economic growth) urges countries to promote inclusive and sustainable economic growth, employment and decent work for all. This goal sets targets and metrics to, for example, sustain per capita economic growth in accordance with national circumstances, and to achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.

20. EMPLOYMENT RATES

INDICATOR OVERVIEW

Measure	Employment rate
Source	ONS, 2017, Labour Force Survey 1992-2017
Link	https://data.london.gov.uk/dataset/employment-rates
Year of data used for 2017 report	2015

SUMMARY ASSESSMENT

- The employment rate in London in 2016 was around 73.4%, an increase of 8.8% from 2011's figure of 67.4% and an increase of 10.8% from 1992's figure of 66.7%. In the past year, employment rates have increased by 1.5%.
- Some of this growth in employment rates is underpinned by slow wage growth and an increase in fragile forms of employment like zero hours contracts and self-employment; since 2004, self-employment has grown at twice the rate of employee roles.
- Employment rates in London are around 1% lower than for the UK as a whole, though the gap has narrowed considerably from 2006 when it was 4% lower.
- Employment rates are higher for 'white' Londoners than ethnic minority groups and higher for men than women.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"Londoners who want to work, and are able to, have access to quality employment" (draft EDS ¹⁴⁴)		 (United Kingdom)

	Long-term trend 1992-2016	Long-term Progress since 1992	Five-year Progress since 2011
Change			

Why is this issue important to London's quality of life?

Being in employment has an important bearing on a person's overall economic, mental and physical health and wellbeing. 'Employment rates' express the number of Londoners of working age in employment as a proportion of the population.

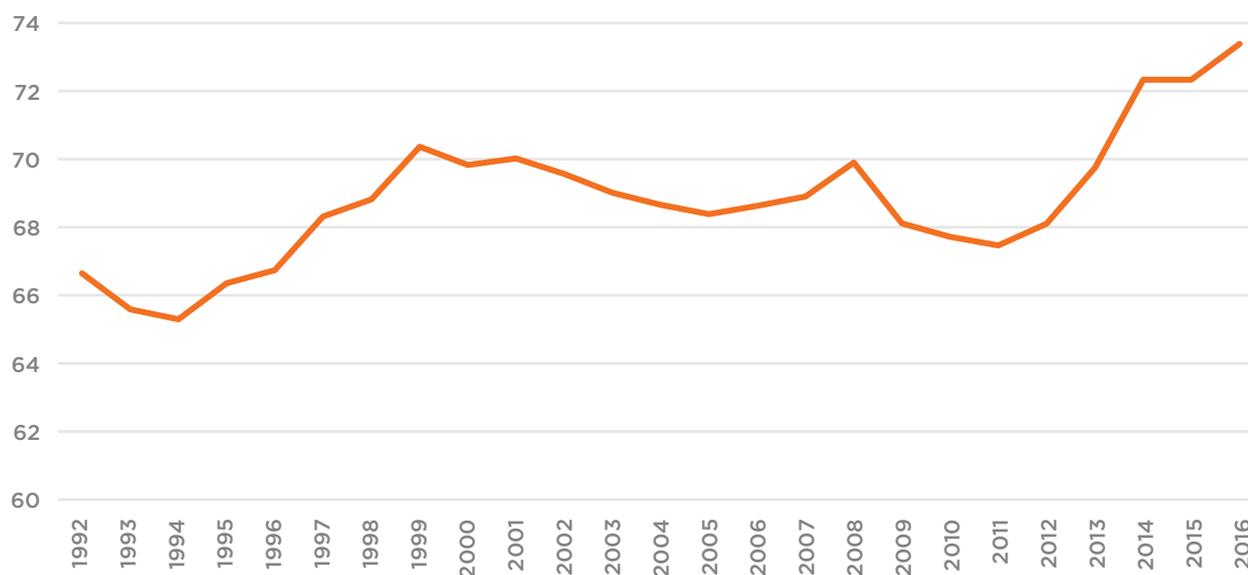
The health benefits of work are dependent on job quality (such as earnings, labour market security and the quality of the working environment). Some recent research suggests that poor quality work can be detrimental for health¹⁴⁵.

HEADLINES

Figure 46 shows that the employment rate in London has grown considerably since 1992, rising from a low of 65.3% (1994) to its peak

of 73.4% last year. However, within this period, there was an extensive period of gradual decline lasting from 1998 until 2011 (apart from a brief increase from 2005-2008).

Figure 46: Employment rate in London 1992-2016



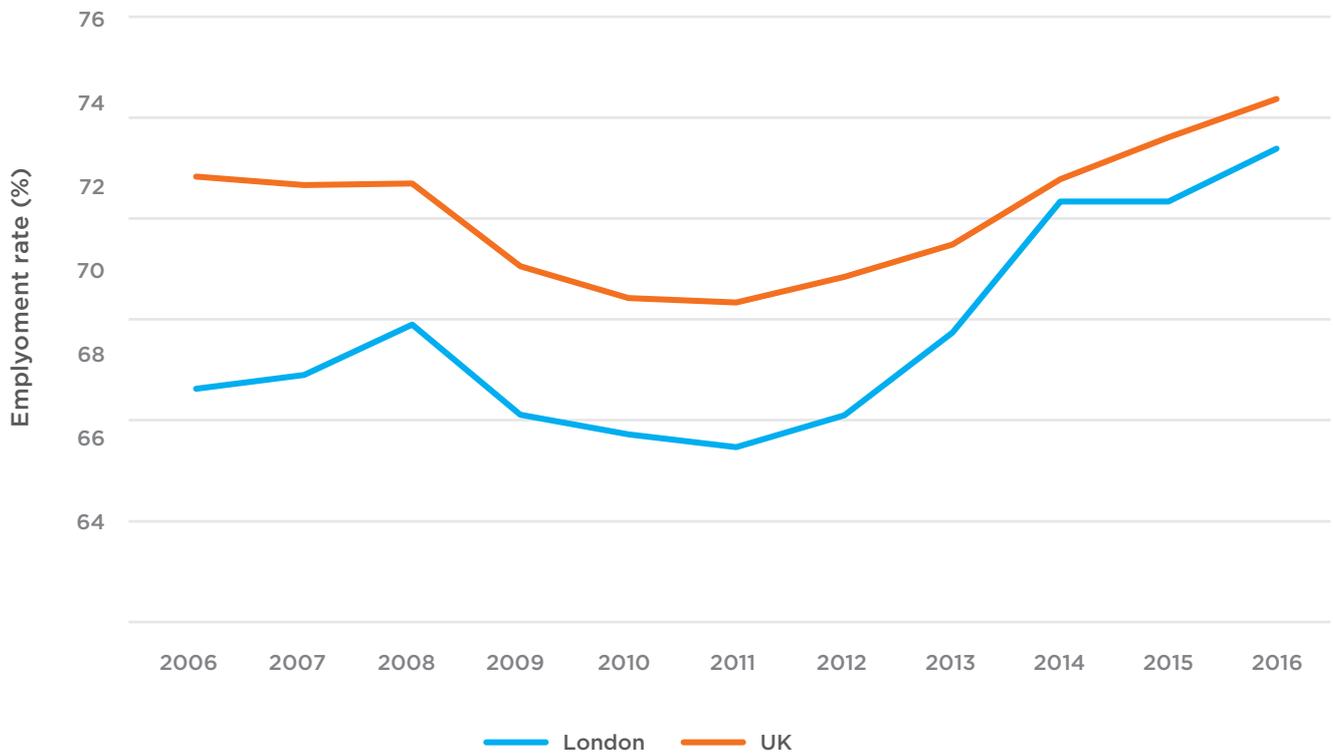
Source: ONS, 2017, Labour Force Survey 1992-2017

BENEATH THE HEADLINES

Figure 47 shows that, whilst the employment rate in London remains lower than that for the UK as a whole, the gap has narrowed considerably since 2006. A key factor in employment rates being lower in London than the rest of UK is the high proportion of students in the London population¹⁴⁶.



Figure 47: Employment rates in London and the UK



Source: ONS, 2017, Labour Force Survey 1992-2017

The GLA's Labour Market Indicators spreadsheet for boroughs and regions shows that rates of employment vary across London, with inner London having a lower average employment rate (71.5%) than outer London (72.9%)¹⁴⁷. In 2015, the borough with the highest employment rate was Lambeth (80%) while Westminster had the lowest (62.4%).

Employment rates in London are higher for the 'White' group (78.3%) than ethnic minority groups (65.1%) and higher for men (80.5%) than women (66.5%). GLA economic analysis suggests women appear to be disadvantaged in comparison to men due to factors which are peculiar to London, such as the higher cost of childcare, transport and, more generally, the cost of living which can influence the opportunity cost of women working. As well as having a higher employment rate, men also earn more on average than women in London - £18.23/hour on average compared to £16.06 for women, suggesting that women earn on average 13.5% less than men in London. Since 2005, this pay gap for full-time workers has been larger in London than the UK as a whole¹⁴⁸.

Whilst the majority of older people aged 65 and over were retired and therefore economically inactive, 17% of men and 8.9% of women aged over 65 were still in employment in 2015¹⁴⁹. One in five said this was to pay for essential items such as bills. Amongst younger people the proportion of 16-18 year olds in London who are NEET (Not in Education, Employment or Training) is lower than for England as a whole; 3.2% compared to 4.2%¹⁵⁰.

WIDER EVIDENCE

GLA projections show jobs in London growing from 2016 at an annual average rate of 0.78% a year, equivalent to 49,000 jobs, to reach 6.907 million in 2041. Jobs in the professional, real estate, scientific and technical sector are expected to grow strongly, accounting for over a third of the total increase expected in London to 2041. Strong employment growth is also expected in the administrative and support services, accommodation and food services, information and communications sectors, education, and health sectors¹⁵¹.

It should be noted that the growth in employment rates is partly underpinned by slow wage growth and an increase in fragile forms of employment like zero hours contracts (ZHC) and self-employment. For example:

- Self-employment: GLA analysis has found that, since 2004, self-employment has grown at twice the rate of employee roles, while the number of part-time workers in London has grown by over 34% (compared to 22% for full time workers).
- Temporary workers: London has a slightly larger share of temporary workers than the UK as a whole (6.9% versus 6.1%) and has seen faster rates of growth in temporary workers over the past decade or so. Compared with the reasons given in 2004, there was an 8.8 % increase in the number of temporary workers that said they could not find a permanent job.

- Slow wage growth: The nominal median gross hourly wage increased 8.4% between 2008 and 2015 in London. This was the slowest rate of increase across all 12 UK regions (11.5% average).
- Zero Hour Contracts (ZHCs): In London, there were approximately 95,000 people on ZHC in 2015, equivalent to 2.2% of all those in employment (slightly less than the UK average of 2.5%). People on ZHC are more likely to be female or in young or older age groups. 36.8% of these workers said they wanted to work more hours¹⁵².

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s draft London Economic Development Strategy¹⁵³ (EDS) aims for all Londoners who want to work, and are able to, have access to quality employment. To achieve that, the draft strategy proposes a series of actions to create a fairer, more inclusive economy. The actions within the EDS will aim to, for example, raise employment rates among disadvantaged groups and communities. However, the draft strategy highlights the importance of action in order to improve quality of employment as the health and wellbeing benefits of work are also dependent on the quality of the job, including the pay and working conditions and job security.

The Mayor of London’s draft London Health Inequalities Strategy¹⁵⁴ (LHIS) aims for “all Londoners to benefit from a society, environment and economy that promotes good mental and physical health”. To achieve that, the Mayor is proposing a series of specific actions to ensure London’s workplaces support more Londoners into healthy, well paid and secure jobs.



Relevant Sustainable Development Goals

SDG 8 (decent work and economic growth) urges countries to promote inclusive and sustainable economic growth, employment and decent work for all. This goal sets targets and metrics to, for example, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

SDG 5 (gender equality) urges countries to achieve gender equality and empower all women and girls. This goal sets targets and metrics to, for example, ensure women’s full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life (e.g. proportion of women in managerial positions).

21. BUSINESS SURVIVAL

INDICATOR OVERVIEW

Measure	Survival of London businesses after one year of trading
Source	ONS Business Demography
Link	https://www.ons.gov.uk/file?uri=/businessindustryandtrade/business/activitysizeandlocation/datasets/businessdemographyreferencetable/current/businessdemographyexceltables2015.xls
Year of data used for 2017 report	2014

SUMMARY ASSESSMENT

- The survival of businesses in London after one year of establishment in 2014 was 90.9%, compared to the rate for England of 92.2%.
- The survival rate has risen and fallen since 2002 with a clear drop during and after the 2008-9 recession. The rate for London closely tracks the rate for England.
- The survival rate varies across the boroughs. Since 2008, the rate has been slightly higher for Outer London boroughs. In 2014 the average rate for Inner London was 89.5% and 92.6% for Outer London.
- In 2014 the rate of business start-ups (that is new business as a % of all active enterprises¹⁵⁵) was 17.7% in London, compared with 13.7% in the rest of the UK.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"All businesses of all sizes and stages in their development to grow" (draft EDS ¹⁵⁶)		 (England)

	Long-term trend 1999-2013	Long-term Progress since 1999	Five-year Progress since 2009
Change			

Why is this issue important to London's quality of life?

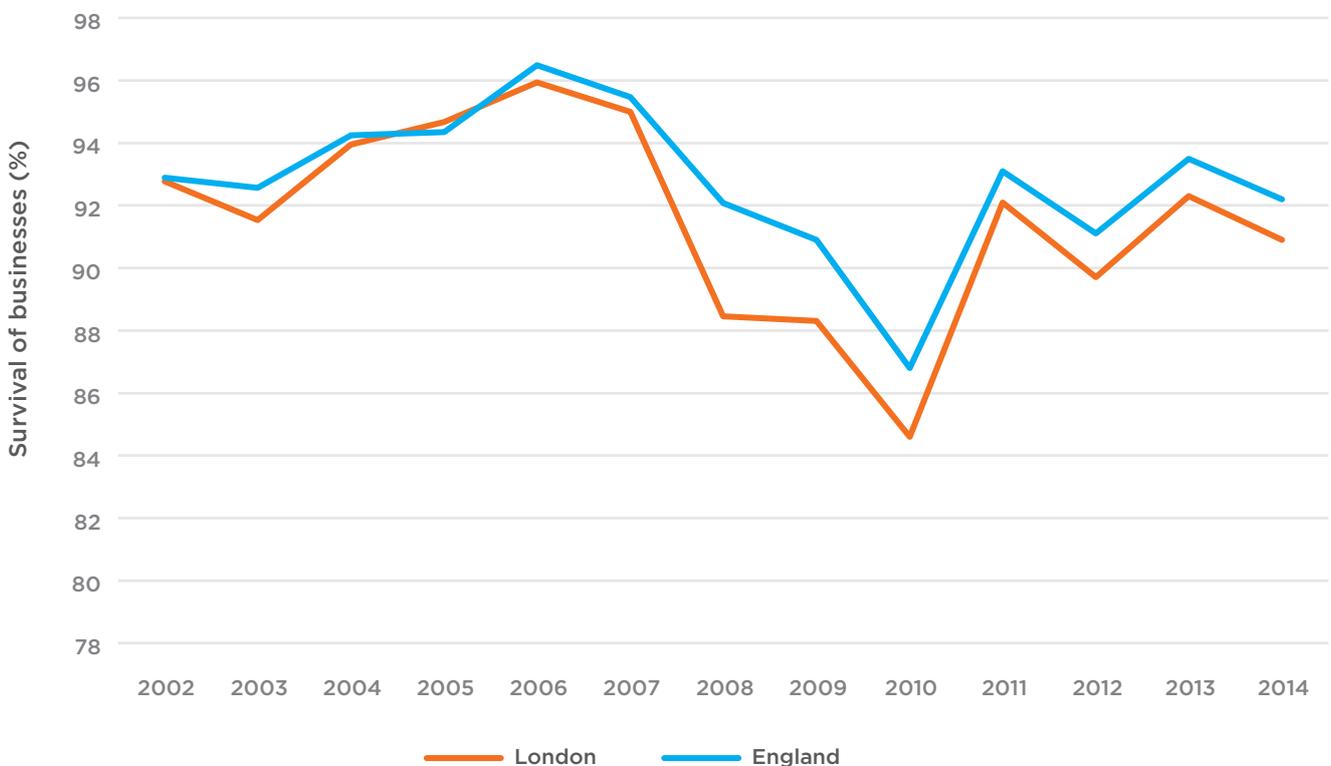
London's business survival rate gives a broad indication of small business success within the city's economy. Small businesses help to foster entrepreneurship and innovation, which are essential in maintaining London's globally competitive position. They may also be more likely than large businesses to be based locally, and to recruit local labour. This offers London's residents the opportunity to develop their skills.

HEADLINES

The survival of businesses in London after one year of establishment in 2014 was 90.9%, compared to the rate for England of 92.2%.

The survival rate has risen and fallen since 2002 with a clear drop during and after the financial crisis of 2007-08 and the ensuing recession. The rate for London closely tracks the rate for England. This is shown in Figure 48 below.

Figure 48: Survival of businesses after one year of trading; London and England 2002-2014



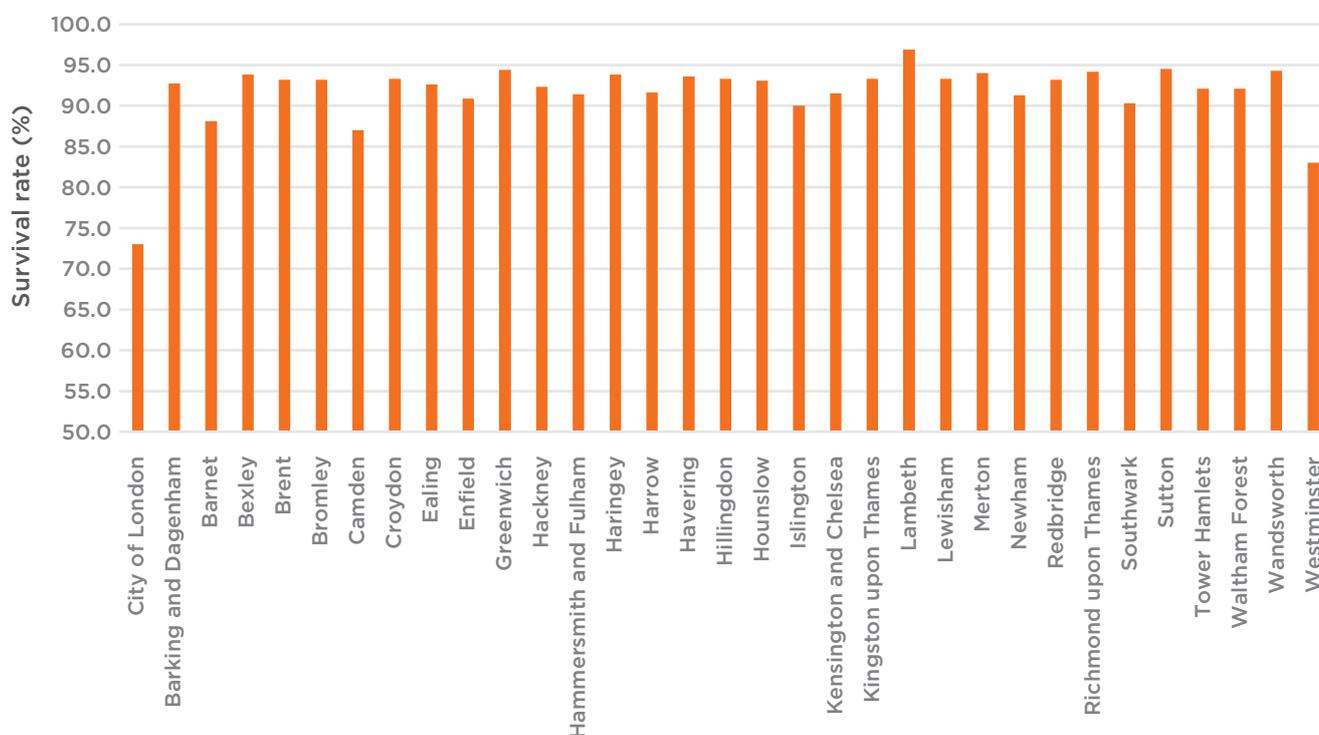
Source: ONS Business Demography

BENEATH THE HEADLINES

The survival rate varies across the boroughs, as shown in Figure 49 below. Since 2008, the rate has been slightly higher for Outer London boroughs. In 2014 the average rate for Inner London was 89.5% and 92.6% for Outer London.



Figure 49: Survival of London businesses after one year of trading by borough 2014



Source: GLA, London Datastore, Business Demographics and Survival Rates, Borough, December 2016, from ONS Business Demographics

WIDER EVIDENCE

The business survival indicator provides a mixed measure of the health of the economy, and small businesses in particular. A high 'churn rate' of businesses can indicate high levels of dynamism and an entrepreneurial culture, whereas high business survival rates can point to stagnation of the business base. This indicator therefore needs to be taken within the context of looking at new business start-ups to give a clearer picture.

Whilst business survival rates have worsened, the number of new businesses has not been impacted by the downturn in 2008 and has increased significantly between 2010 and 2014. Figures from ONS Business Demographics¹⁵⁷ show that there were 88,580 new businesses in 2014, compared to 53,120 in 2007 in London.

Furthermore, in 2014 the rate of business start-ups (that is new business as a % of all active enterprises¹⁵⁸) was 17.7% in London, compared with 13.7% in the rest of the UK¹⁵⁹.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's draft Economic Development Strategy¹⁶⁰ (EDS) aims for "all businesses of all sizes and stages in their development to grow". To achieve that, the draft strategy proposes a series of actions to remove all barriers and obstacles in the way of entrepreneurs and growth that some start-ups and small businesses still face today. The actions will aim to, for example, support start-ups; help address the small and medium-sized enterprises (SMEs) finance gap in London; and to support more businesses to export.

Relevant Sustainable Development Goals

SDG 8 (decent work and economic growth) urges countries to promote inclusive and sustainable economic growth, employment and decent work for all. This goal sets targets and metrics to, for example, promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.

22. HUMAN CAPITAL

INDICATOR OVERVIEW

Measure	Full Human Capital Per Head (£, 2015 prices)
Source	Office of National Statistics
Link	https://www.ons.gov.uk
Year of data used for 2017 report	2015

SUMMARY ASSESSMENT

- Full human capital per head in London was £667,259 in 2015. This is a slight decline since 2010, when it was £673,140, but an improvement since last year (£636,713).
- London's full human capital per head was superior to all other regions in the UK and was higher than the UK total of £487,313 in 2015.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"A skilled future workforce in London" (draft Vision for a diverse and inclusive city ¹⁶¹)		 (United Kingdom)

	Long-term trend 2004-2015	Long-term Progress since 2004	Five-year Progress since 2010
Change			

Why is this issue important to London's quality of life?

Human capital is considered important because of its contribution to a range of well-being aspects, including individuals' labour market outcomes, equality (in terms of the distribution of human capital) and social impacts¹⁶². It is also an important aspect of sustainability; the human capital approach states that economic, natural, human and social capitals are all resources that matter for the present and future well-being of individuals. And it is important for the economy because evidence suggests that countries with higher levels of human capital, all other things being equal, have greater potential output and income in the future. More information about human capital can be found on the ONS website¹⁶³.

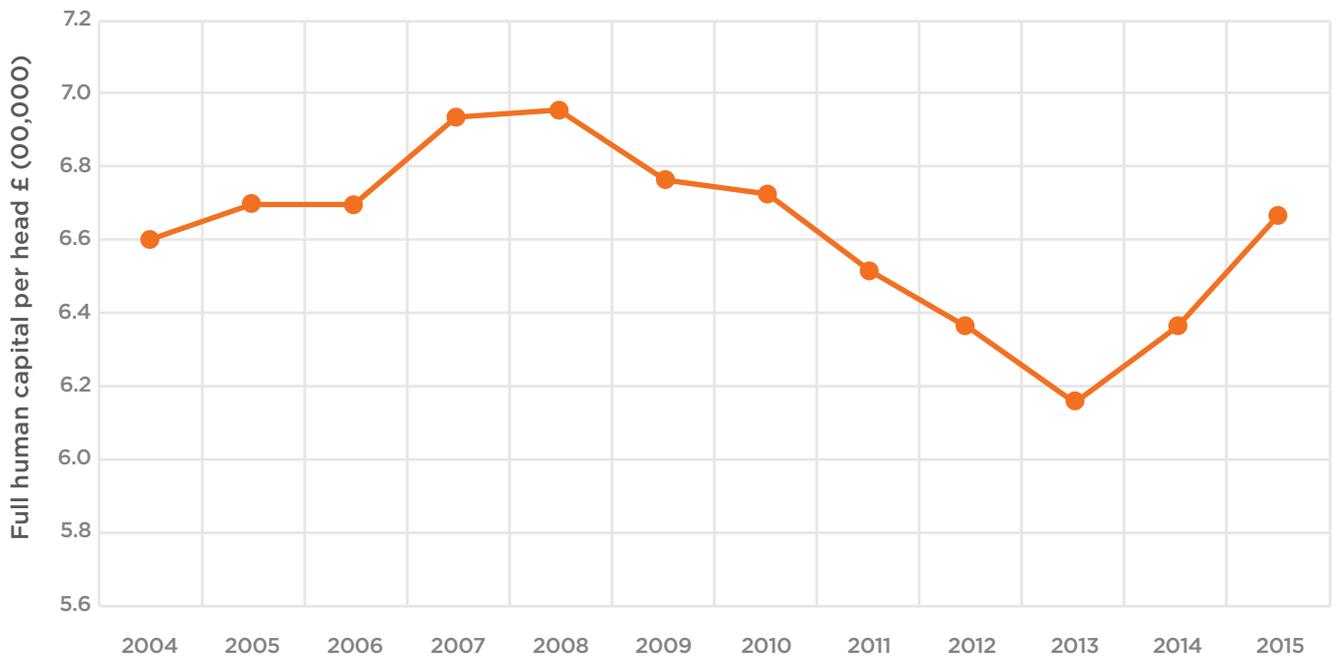
HEADLINES

Human capital is a measure of the “knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being”¹⁶⁴. Human capital is measured in monetary terms as the total potential future earnings of the working age population. The headline measure in this

report is ‘full’ human capital, which captures the human capital of the employed and unemployed.

Full human capital per head in London was £667,259 in 2015. This was a 4.80% rise since 2014. As Figure 50 highlights, however, the medium and long-term trends are not as positive.

Figure 50: Full human capital per head in London (£, 2015 prices) 2004-2015



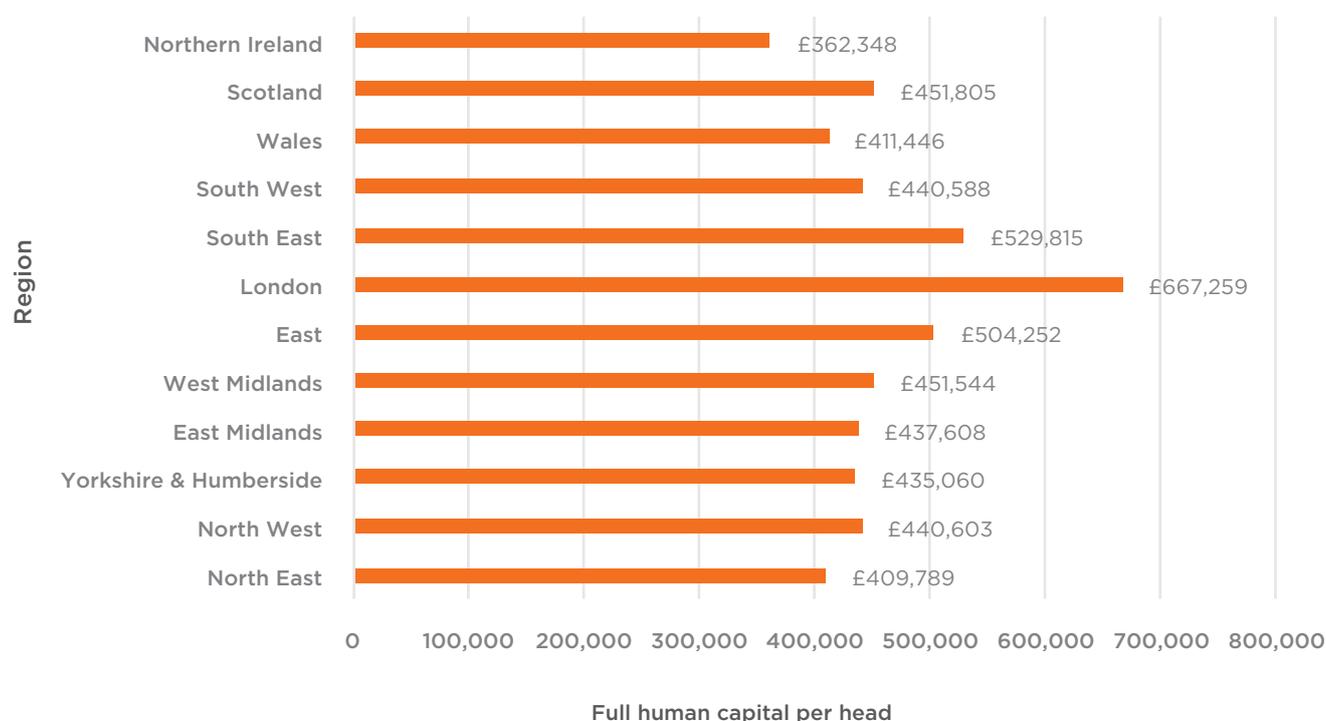
Source: Office of National Statistics

Full human capital per head has declined in London since the 2012 QoL report (it was £673,140 in 2010). Indeed, it declined almost continuously between 2008 and 2013. And there has only been a slight (1.02%) rise per head since 2004.

BENEATH THE HEADLINES

Figure 51 shows that London's human capital per head was superior to all other regions in the UK in 2015. London's full human capital per head was also higher than the UK total of £487,313 in 2015.

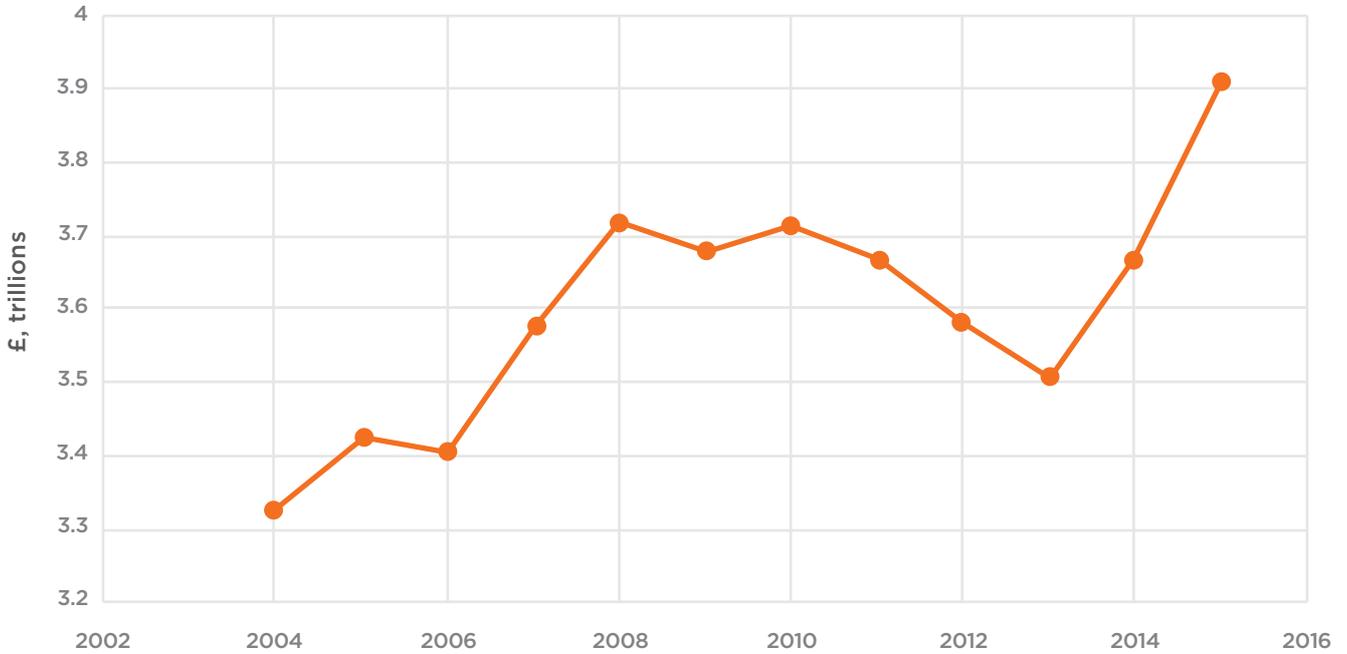
Figure 51: Full human capital per head by region, 2015 (£, 2015 prices)



Source: Office of National Statistics

In 2015, the total value of full human capital in London was £3.91 trillion. Figure 52 shows that there has been an upward trend in the value of full human capital in London since 2004, despite a decline between 2010 and 2013. It increased 6.54% between 2014 and 2015. And there was a 17.42% increase between 2004 and 2015.

Figure 52: Full human capital in London, 2004-2015



Source: Office of National Statistics

Comparing estimates of employed human capital with full human capital provides a measure of potential spare capacity within a region. Whilst London had the most human capital in 2015, it had the second largest gap between employed and full human capital (4.1%). The only region with a larger gap between employed and full human capital was the North East (4.2%)¹⁶⁵.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s Vision for a Diverse and Inclusive City¹⁶⁶ aims for “a skilled future workforce in London”. To achieve that, the Mayor will propose a series of actions to help young people to acquire the skills they need to

join the workforce of the future. The actions will involve, for example, working with key government and business in order to create more high-quality apprenticeship programmes, increase diversity in key industries, and increase volunteering and community sport initiatives.

Relevant Sustainable Development Goals

SDG 4 (quality education) urges countries to ensure inclusive and quality education for all and promote lifelong learning. This goal sets targets and metrics to, for example, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

23. INNOVATION

INDICATOR OVERVIEW

Measure	a. Proportion of firms reporting introducing product innovations b. Proportion of firms reporting introducing process innovations
Source	BEIS UK Innovation survey
Link	https://www.gov.uk/government/statistics/uk-innovation-survey-2015-statistical-annex-and-interactive-report
Year of data used for 2017 report	2012-2014

SUMMARY ASSESSMENT

- In 2014, 19.1% of firms in London reported introducing product innovations over the period 2012-14. Over the same period 9.5% of London firms reported introducing process innovations.
- These figures are similar to the UK rates of 19.2% for product innovations and lower than the UK rates of 12.8% for process innovations.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average	
“London to be a global leader in innovation and creativity” (draft EDS ¹⁶⁷)		Product innovation 	Product innovation 

a. Product innovation

	Long-term trend 2006-08 to 2012-2014	Long-term	Five-year Progress since 2006-8
Change			

b. Product innovation

	Long-term trend 2006-08 to 2012-2014	Long-term	Five-year Progress since 2006-8
Change			

Why is this issue important to London’s quality of life?

Innovation is important because it supports efficiency and contributes to economic performance. It can help create new markets and increase productivity. As a result, it can also boost employment growth and income. Cities need to continue to innovate in order to maintain their position nationally and globally.

Table 6: Definitions of innovation

Innovation	Is defined as new or significantly improved goods or services and/or the processes used to produce or supply these.
Product innovation	Bringing to the market or into use by business, new and improved products, including both tangible goods and the provision of services. The degree of innovativeness is shown by the distinction between products new just to the business or which are also new to the market.
Process innovation	Significant changes in the way that goods or services are produced or provided, again differentiating between processes new to the business only or also new to the industry.

Source: Department for Business, Energy and Industrial Strategy, UK innovation survey 2012-2014

HEADLINES

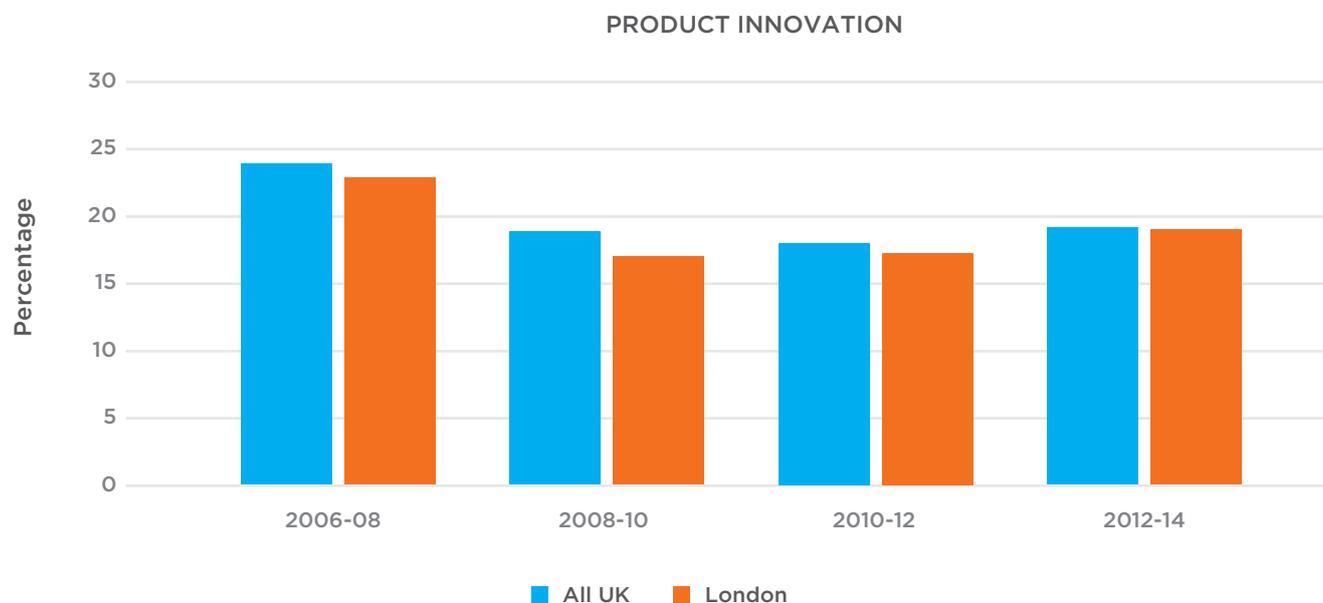
In 2014, 19.1% of firms in London reported introducing product innovations over the period 2012-14. Over the same period 9.5% of London firms reported introducing process innovations.

These figures are similar to the UK rate of 19.2% for product innovations and lower than the UK rate of 12.8% for process innovations.

The rates for London and for the UK for product and process innovation fell after the period 2006-2008 which may be

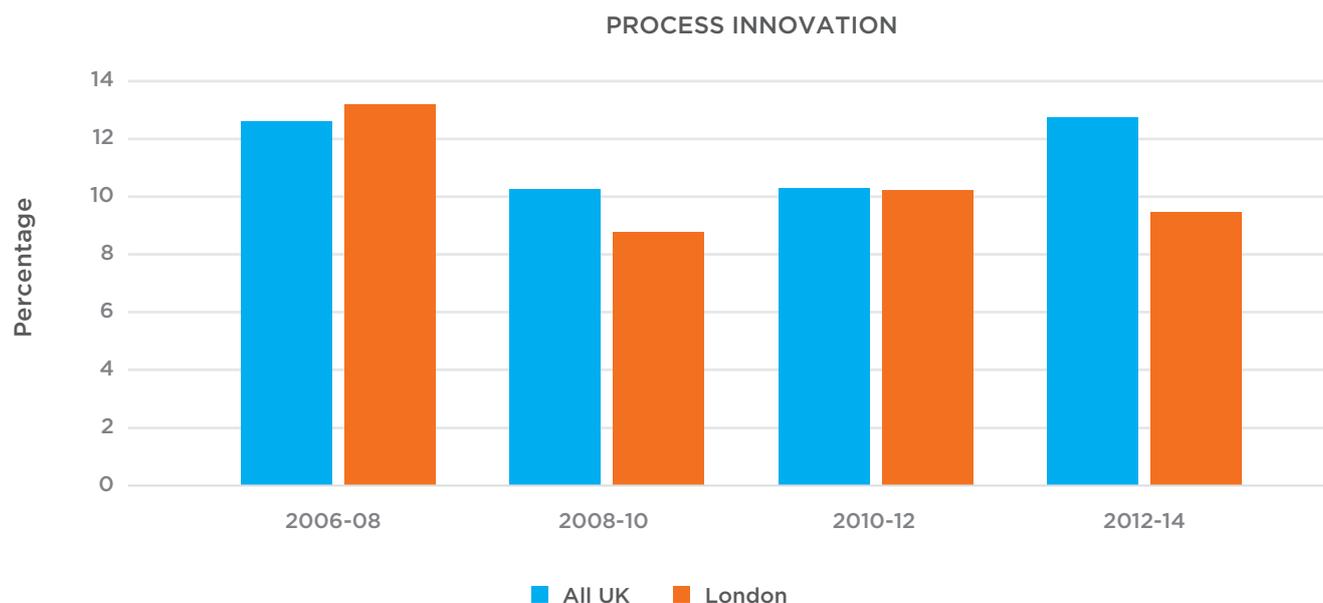
connected to the financial crisis of 2007-08 and the recession that followed. Reported rates have slowly recovered since then as shown in Figure 53 and Figure 54 below. It is important to note that previous QoL reports considered the statistical error of the survey data and proved that in the past differences in UK and London rates were not significant. However, since 2008-2010 BEIS does not publish error levels beyond UK as a whole, assessing whether the UK and London rates are significantly different therefore cannot be done for this report.

Figure 53: Product innovation reported by London and UK businesses



Source: BEIS UK Innovation surveys 2009, 2011, 2013 and 2015

Figure 54: Process innovation reported by London and UK businesses



Source: BEIS UK Innovation surveys 2009, 2011, 2013 and 2015

BENEATH THE HEADLINES

Looking at the survey results in greater detail, manufacturing appears to be where the greatest process/product innovations are made. Conversely, hotels and restaurants, transport, and real estate sectors show the lowest levels of innovation. This may go some way to explaining the difference in innovation activity between regions and London's performance compared to the UK average.

For example, in Yorkshire and the Humber which performs better in the BEIS Innovation survey than London, manufacturing accounts for 14% of all economic output, while in London, manufacturing accounts for just 2%. Meanwhile, in Yorkshire and The Humber, real estate activities make up just 3% of GVA, while in London they account for over 14%.

A wide range of work is being undertaken to promote and support business innovation in the sectors important to London. Some examples are:

- **The Knowledge Quarter (KQ)**, a partnership of 92 academic, cultural, research, scientific and media organisations located in a one-mile radius around King's Cross, Euston Road and Bloomsbury. The KQ partnership was formed to foster collaboration between different organisations and shape the area as a world-class innovation district. It has established links between: universities and cultural organisations, research institutes and businesses; businesses and cultural organisations; and universities and start-ups.
- **Queen Elizabeth Olympic Park Innovation District.** The Park is developing into an innovation district that is home to a cluster of academic institutions and businesses engaged in research, design, development and manufacture.
- The Mayor's **Innovation Showcase**, which seeks to ensure a connected and effective finance ecosystem for tech firm growth. The Showcase is being delivered in partnership with UK Business Angels Association, the trade body for angel and early stage investing, and connects London's innovating tech businesses with key sources of investment. The Showcase brings together key leaders from the investment community including angels, VCs and equity crowdfunding platforms to meet London's cutting edge innovators from fields such as artificial intelligence, augmented reality and virtual reality, GovTech, CleanTech, digital health and MedTech.
- **Better Futures Incubator**, part funded by the European Regional Development Fund, will support over 100 London-based cleantech small businesses with leadership and management support, access to co-working space and support in areas such as marketing, supply chain and product development. Some of the start-ups will also be offered the opportunity to collaborate on research with Imperial College London, via its Centre for CleanTech Innovation. The centre aims to support the development of a new economy based on low-carbon and resilient businesses.



POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s draft London Economic Development Strategy¹⁶⁸ (EDS) aims for “London to be a global leader in innovation and creativity”. To achieve that, the Mayor proposes a series of actions to help innovation to flourish across the whole economy. These actions include, for example, working with key government agencies and departments, and business in order to put in place a supportive environment for businesses across the whole economy, from investment in skills, research and infrastructure providing finance and business support for entrepreneurs.

Relevant Sustainable Development Goals

SDG 8 (decent work and economic growth) urges countries to promote inclusive and sustainable economic growth, employment and decent work for all. This goal sets targets and metrics to, for example, achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.

SDG 9 (industry, innovation, and infrastructure) urges countries to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. This goal sets targets and metrics to, for example, enhance scientific research, upgrade the technological capabilities of industrial sectors, including, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.

SDG 17 (partnership for the goals) urges countries to revitalize the global partnership for sustainable development. This goal sets targets and metrics to, for example, enhance cooperation on and access to science, technology and innovation.

24. INCOME INEQUALITY

INDICATOR OVERVIEW

Measure	Disposable income differentials in London (AHC)
Source	DWP, Households Below Average Income (HBAI)
Link	https://www.gov.uk/government/collections/households-below-average-income-hbai--2
Year of data used for 2017 report	2013-14 to 2015-16

SUMMARY ASSESSMENT

- Income inequality data shows that London has disproportionately large numbers of people in the lowest and highest income brackets in the country.
- In 2013-14 to 2015-16, 15% of Londoners featured in the bottom tenth of the national income distribution. This figure has remained unchanged since 2009-10.
- In the same time periods, the proportion of Londoners in the top tenth of the national income distribution fell slightly from 16% to 14%.
- There are large variations in gross disposable income per head by London borough. Beyond the City of London, Lewisham has the lowest (£12,544) and Kensington and Chelsea has the highest (£59,471).

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"London has a fairer and more inclusive economy, where living standards are improving with real incomes growing year-on-year" (draft EDS ¹⁶⁹)	London continues to have disproportionately large numbers of people in the lowest and highest income brackets in the country.	

	Long-term trend	Long-term	Five-year Progress since 2009-10 / 2011-12
Change	n/a		

Why is this issue important to London's quality of life?

Significant disparity in income levels indicates that wealth and resources are not spread evenly across the population. Both within the UK and internationally there is growing evidence that suggests a narrower gap between rich and poor results in happier and healthier populations, with better levels of achievement overall. Narrowing the gap is considered crucial for long-term sustainability. For London to be sustainable, the distribution of resources must be made more equal, so that every citizen has the ability to earn a suitable wage on which to live and maintain a good quality of life.

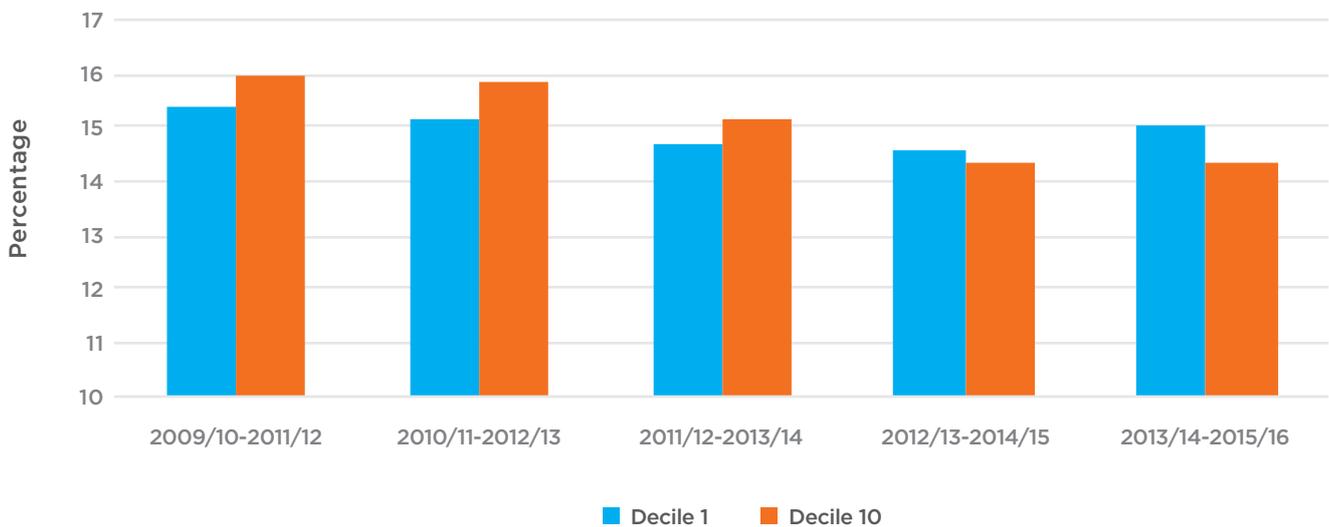
HEADLINES

Income inequality is measured by calculating the percentage of Londoners in the bottom 10% and top 10% of disposable income.

Figure 55 shows the proportion of London's population whose disposable household income after housing costs (AHC) is in the top and bottom national deciles.



Figure 55: Proportion of London’s population with disposable income (AHC) in the top and bottom national deciles



Source: DWP, Households Below Average Income (HBAI), (figures provided by GLA via email correspondence, August 2017)

It shows that London has a disproportionate amount of people with either very low or very high disposable incomes. In 2013-15 to 2015-16, 15% of Londoners were in the bottom 10% of national disposable income (AHC), and 14% of Londoners were in the top disposable income decile.

Since 2009-10 to 2011-12 the proportion of Londoners in households with AHC income among the lowest decile (Decile 1) in the country has remained stable at around 15%, while the proportion of individuals in the highest income group that live in London (Decile 10) has decreased a little.

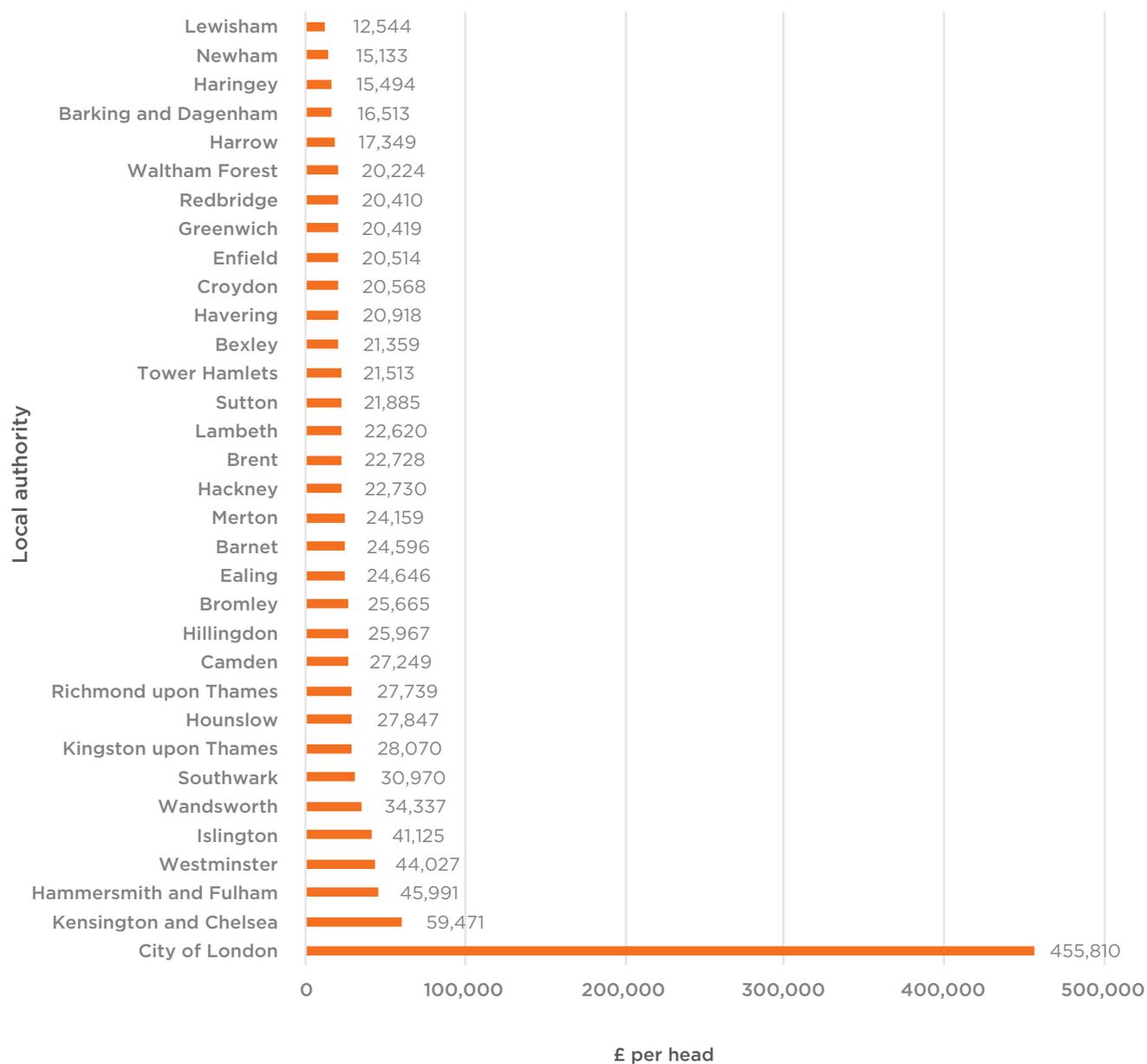
BENEATH THE HEADLINES

Gross disposable household income per head by local authority

Estimates of gross disposable household income per head are published at local authority level, although they are not comparable with the household income figures used for this indicator. They can, however, be used to give some indication of differences in income levels between local authorities. “Disposable income” in this case is income after direct and indirect taxes, but takes no account of differences in housing costs.

Figure 56 shows the City of London has by far the highest gross disposable household income per head in London. Beyond the City of London, there are large variations in gross disposable income per head by borough. Lewisham has the lowest (£12,544) and Kensington and Chelsea the highest (£59,471).

Figure 56: Gross disposable household income per head by local authority



Source: Office for National Statistics

WIDER EVIDENCE

Income is just one aspect necessary to an understanding of differences in living standards. Wealth, material deprivation and persistence of poverty are also relevant to the understanding of living standards. This is a complex area, and more detail on this topic is available elsewhere, for example the London Datastore¹⁷⁰, London Poverty Profiles¹⁷¹ and DWP publications on low income dynamics¹⁷².

Discussing income inequalities needs to also consider the wider demographic impacts in relation to gender, age and ethnicity. It has therefore been suggested that additional metrics might be used for this indicator in future (see Annex A).

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's draft Economic Development Strategy¹⁷³ (EDS) aims that "London has a fairer and more inclusive economy, where living standards are improving with real incomes growing year-on-year". To achieve that, the Mayor is proposing a series of actions to lower the high costs of living in London - including childcare, transport, housing, healthy food and energy. These actions will involve, for example, increasing the supply of affordable homes/rents; improving the accessibility and affordability of transport; and supporting access to more affordable childcare.

The Mayor's draft Health Inequalities Strategy¹⁷⁴ aims that "all Londoners benefit from a society, environment and economy that promotes good mental and physical health". To achieve that, the Mayor is proposing a series of specific actions to address the causes and effects of poverty in London, and to reduce income inequality.



These proposed actions include, for example, working with key governments and businesses in order to reduce the number of Londoners on low pay.

Relevant Sustainable Development Goals

SDG 10 (reduced inequalities) urges countries to reduce inequalities within and among countries. This goal sets targets and metrics to, for example, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average.

SDG 1 (no poverty) urges countries to end poverty in all its forms everywhere by 2030. This goal sets targets and metrics to, for example, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.

SDG 5 (gender equality) urges countries to achieve gender equality and empower all women and girls. This goal sets targets and metrics to, for example, end all forms of discrimination against all women and girls everywhere.

25. CHILD POVERTY

INDICATOR OVERVIEW

Measure	Percentage of children living in households with less than 60 per cent median household income before housing costs (BHC) Percentage of children living in households with less than 60 per cent median household income after housing costs (AHC)
Source	GLA, London Datastore, HBAI Poverty in London, Update 2017-06 Poverty in London 2015-16 (from Family Resources Survey (FRS) data
Link	https://data.london.gov.uk/dataset/hbai-poverty
Year of data used for 2017 report	2013-14 – 2015-16 (three-year average)

SUMMARY ASSESSMENT

- Child poverty in London is 37% after housing costs (AHC) (around 700,000 children) and 17% before housing costs (BHC).
- Child poverty has fallen significantly since the first three-year data from 1994-97.
- While the BHC figures are broadly similar for London and the UK, the AHC figures for London are significantly higher.
- The levels of child poverty within inner and outer London have shown quite different patterns since 1994-1995.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average	
“Every London child and young person have a healthy start in life” (draft LHIS ¹⁷⁵)	700,000 children remain in child poverty after housing costs, despite child poverty levels falling over time.	BHC  (United Kingdom)	AHC  (United Kingdom)

	Long-term trend 1994-16		Long-term Progress since 1994-97	Five-year Progress since 2008-11
	BHC	AHC	BHC and AHC	BHC and AHC
Change				

Why is this issue important to London’s quality of life?

Despite London having some of the highest earners in the UK, the high cost of living in London has a major impact on incomes of parents and their ability to find and retain work.

HEADLINES

Child poverty in London is 37% after housing costs (AHC) (around 700,000 children)¹⁷⁶ and 17% before housing costs (BHC). This is measured on a three-year average for the years 2013-14 to 2015-16.

As shown in Figure 57 child poverty has fallen significantly since the first three-years of data from 1994-97. The rates for London were then 41% AHC and 25% BHC.

While the BHC figures are broadly similar for London and the UK (17% and 19% respectively for the most recent data), the AHC figures for London are significantly higher (37% to 29% in the most recent data). Figure 58 shows that this difference has remained broadly similar since data was first collected.

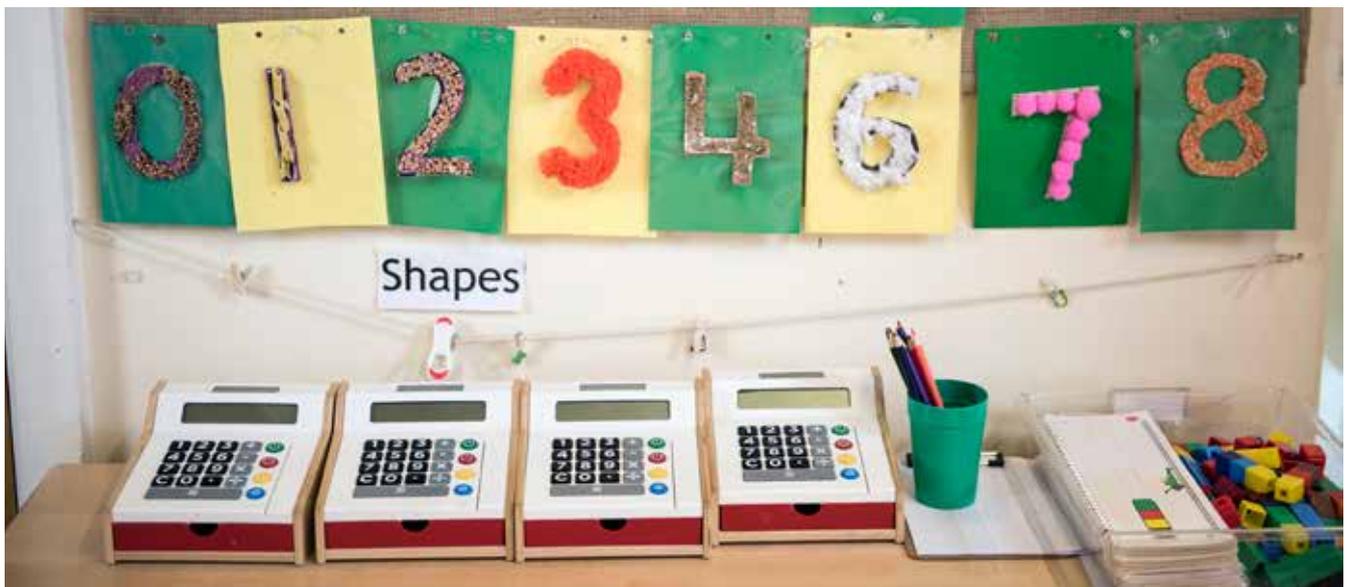
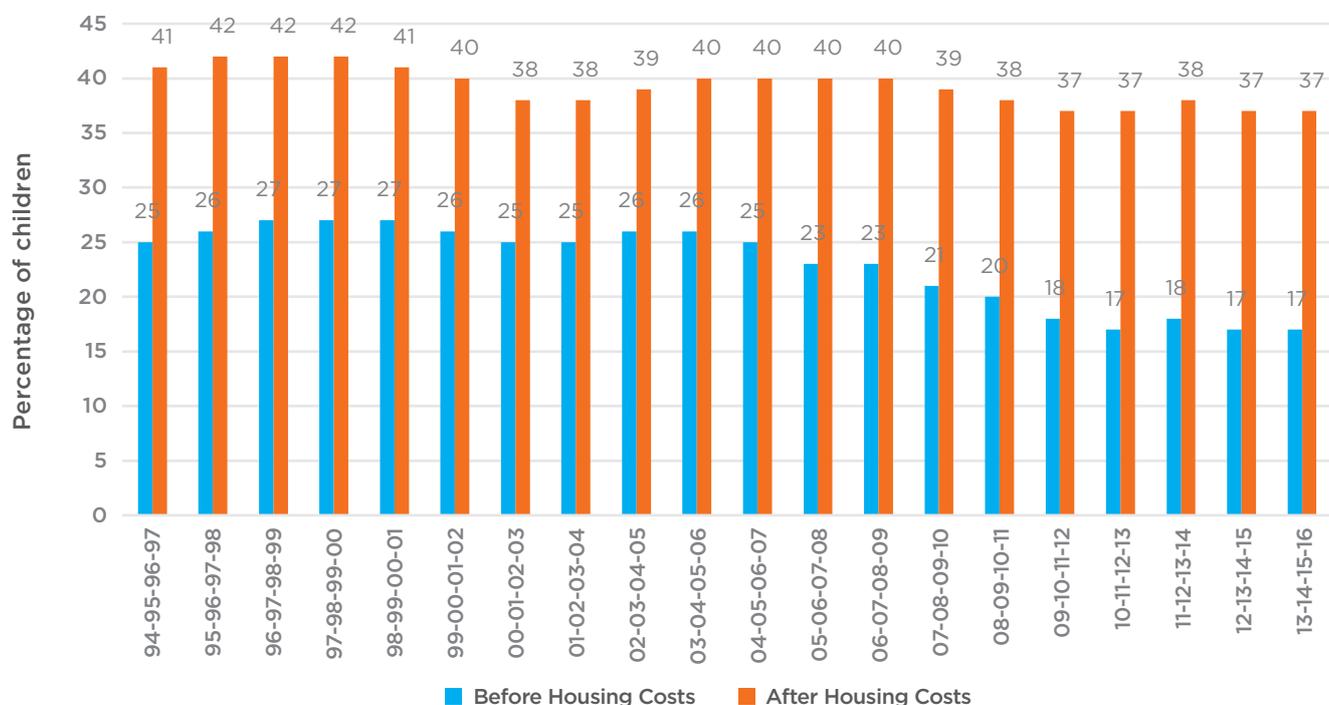
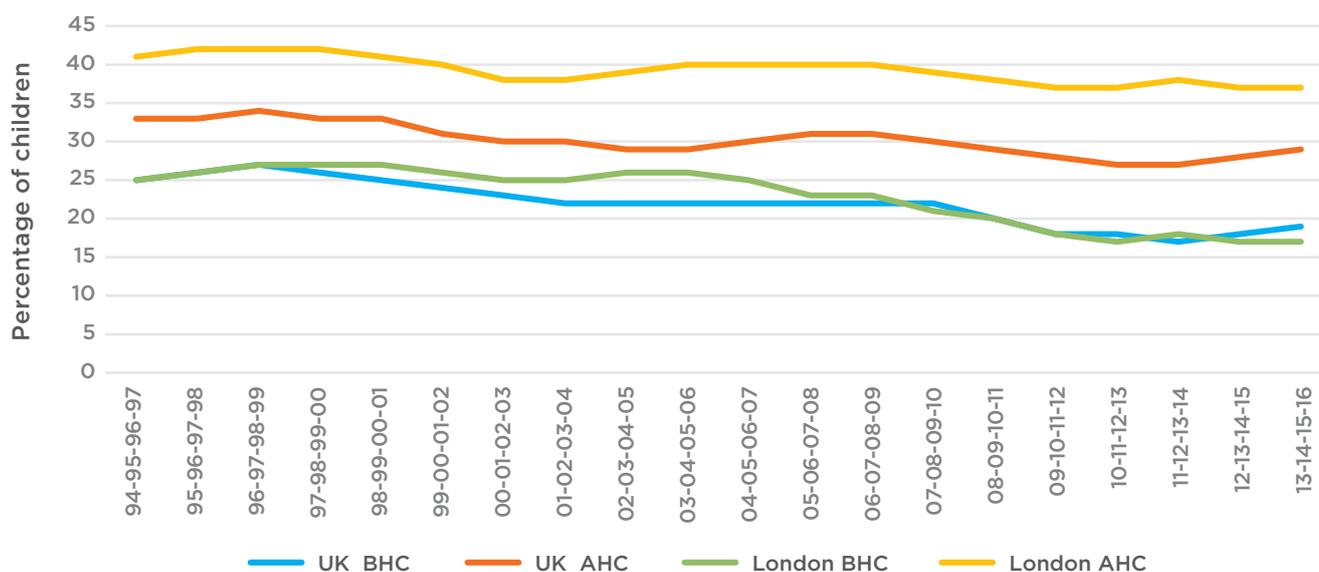


Figure 57: Change in child poverty in London: (three-year rolling averages) 1994/95 to 2015/16¹⁷



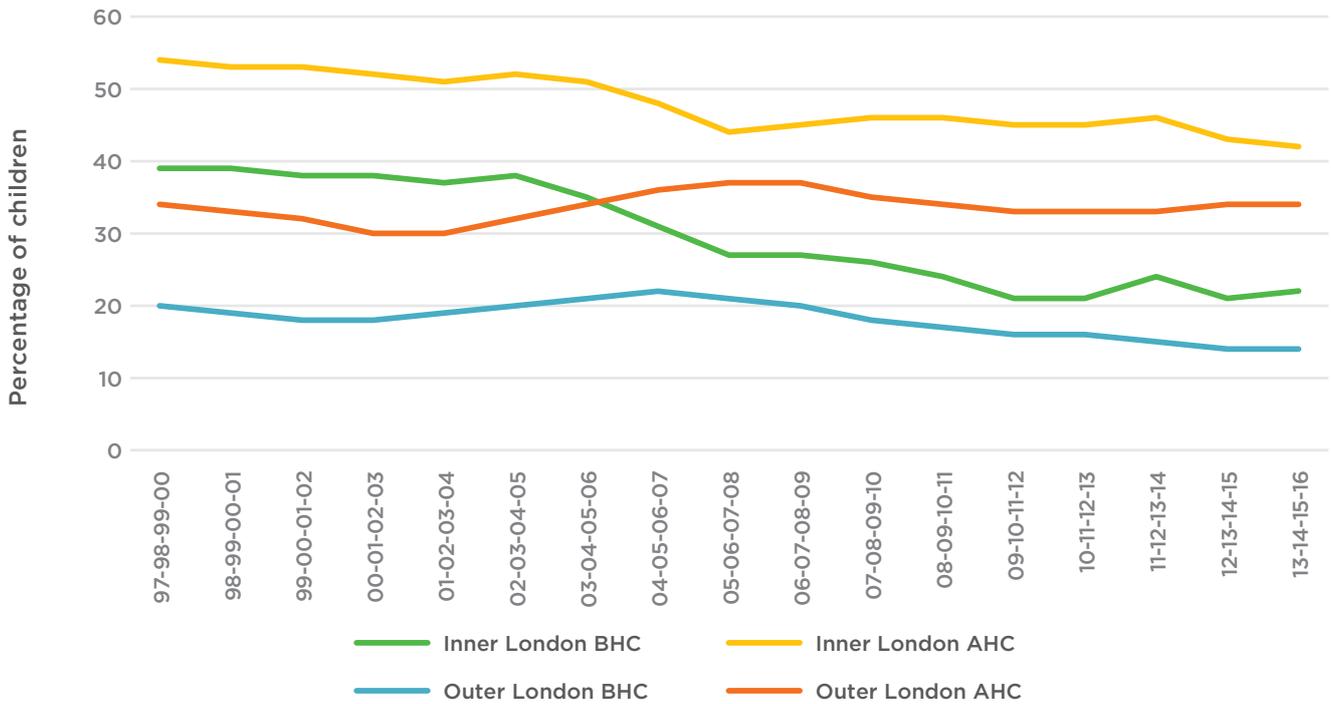
Source: GLA, London Datastore, HBAI Poverty in London, Update 2017-06 Poverty in London 2015-16 (from FRS data)

Figure 58: Change in child poverty for London and the UK: (three year rolling averages) 1994/95 to 2015/16



Source: GLA, London Datastore, HBAI Poverty in London, Update 2017-06 Poverty in London 2015-16 (from FRS data)

Figure 59: Change in child poverty for inner and outer London: (three-year rolling averages) 1997/98 to 2015/16



Source: GLA, London Datastore, HBAI Poverty in London, Update 2017-06 Poverty in London 2015-16 (from FRS data)

BENEATH THE HEADLINES

Figure 59 shows how the levels of child poverty within inner and outer London have shown quite different patterns since 1997-2000. For poverty after housing costs (AHC),

the percentage of children in poverty in inner London has been falling though it remains the case that more than four in ten children living in inner London are in poverty. In outer London, poverty rates have been stable, or even risen marginally in recent years and more

than one in three children in outer London lives in poverty. Data collated on behalf of the organisation End Child Poverty¹⁷⁸ shows that in 2015, four of the five worst local authority areas in the UK for child poverty (AHC) were in London - Tower Hamlets, Islington, Newham, and Westminster.

In contrast, before housing costs (BHC) child poverty rates have almost halved in inner London, though the decrease appears to have stalled over recent years. On the other hand, for outer London child poverty BHC started at a much lower level and has continued to fall. The gap in BHC poverty rates between inner and outer is no longer decreasing as it had been before the recession.

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor's draft Health Inequalities Strategy¹⁷⁹ aims to ensure that "every London child and young person have a healthy start in life". The draft strategy proposes a series of actions to tackle child poverty and other wider influences on child health. Some of these actions include, for example, launching support initiatives in order to support parents to better understand the health of their children and how they are developing.

The Mayor's draft Economic Development Strategy¹⁸⁰ aims to "give every London child the best start in life". To achieve this, the Mayor will work with key government agencies and departments, and other stakeholders in order to, for example, improve affordability and access to childcare so families can find childcare that meets their needs.

Relevant Sustainable Development Goals

SDG 1 (no poverty) urges countries to end poverty in all its forms everywhere by 2030. This goal sets targets and metrics to, for example, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.

26. FUEL POVERTY

INDICATOR OVERVIEW

Measure	Proportion of fuel poor households in London
Source	BEIS Fuel poverty statistics
Link	https://www.gov.uk/government/collections/fuel-poverty-statistics
Year of data used for 2017 report	2015

SUMMARY ASSESSMENT

- In 2015 there were over 335,000 households affected by fuel poverty in London, representing 10.1% of households.
- This figure is lower than the national average of 11%.
- There are major variations in fuel poverty between London boroughs. In 2009, the highest levels of fuel poverty were in Newham (15.7%) and the lowest levels of fuel poverty were in the City of London (4.8%) and Bromley (6.9%).
- Households with an unemployed head of household had the second largest proportion of households in fuel poverty.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
“Reducing emissions of London’s homes and workplaces while protecting the most vulnerable by tackling fuel poverty” (draft LES) ¹⁸¹	Fuel poverty in London remains at high levels, with more than 335,000 households affected according to the latest available data.	

	Long-term trend	Long-term	Five-year 2011-2015
Change	n/a		

Why is this issue important to London’s quality of life?

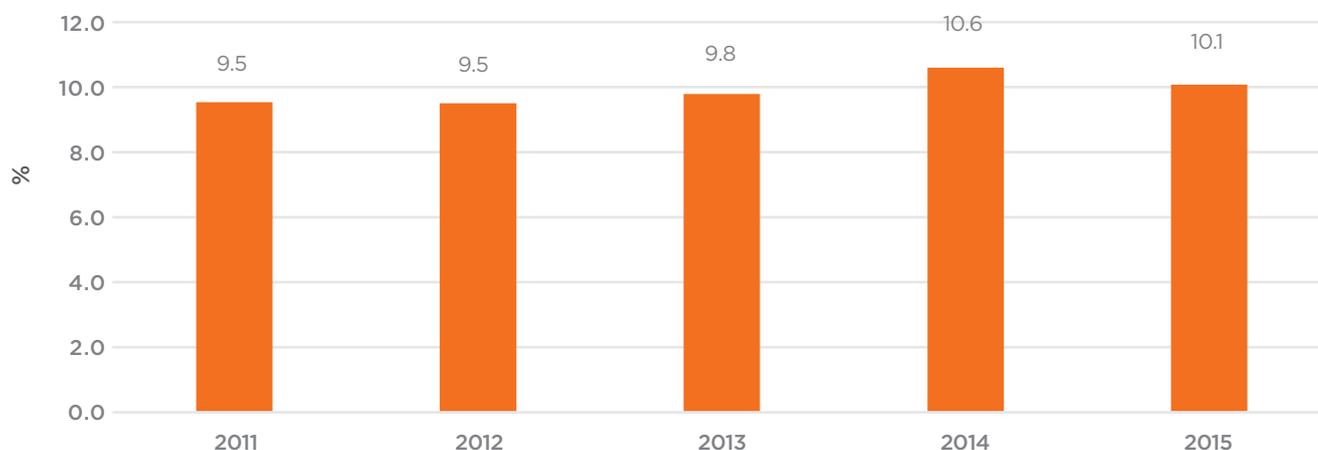
According to the Government definition¹⁸², a household is considered to be fuel poor if it has an income below the poverty line (including if meeting its required energy bill would push it below the poverty line) and has high than typical energy costs. Fuel poverty is influenced by income, the energy efficiency of homes, and energy prices. Cold, damp homes are detrimental to physical and mental health and comfort, and also waste energy. Fuel poverty is also a problem of inequality as, in practice, a fuel poor household is not being able to pay to keep a home lit and warm without cutting back on essentials such as food and/or going into debt.

HEADLINES

The methodology used for this measure has changed from that used for the previous QoL report, meaning the current data is not comparable with previous figures. Since the previous QoL Indicators were set, the definition of fuel poverty by the government has changed¹⁸³. This means that the data from the 2012 QoL report are not directly comparable to the 2017 data. In order for some comparison to be made, the state of fuel poverty in London has been assessed using the BEIS Fuel poverty statistics¹⁸⁴ from 2011 (when the Low Income High Cost definition (described above) of fuel poverty was adopted and data was first published) to 2015.

In 2011, there were 296,000 households living in fuel poverty in London representing 9.5% of all households (Figure 60). Fuel poverty experienced a year-on-year increase until 2014, when a total of around 348,000 households (10.6%) lived on incomes below the poverty line and with fuel costs above the English median. The last available data from 2015 shows a decrease of 13,000 households in fuel poverty, representing 335,000 households (10.1% of all London households). Due to the lack of long-term trend analysis, only future reports will show whether this is the start of a downward trend.

Figure 60: Estimates of fuel poverty in London by borough (2015)



Source: BEIS (2016): Sub-regional fuel poverty data 2017. Accessible: <https://www.gov.uk/government/statistics/sub-regional-fuel-poverty-data-2017> [Accessed 10 November 2017]

The London figure is still lower than the national average of 11% of households living in fuel poverty in 2015. In England (see Table 7), West Midlands is the region with the highest

proportion of households living in fuel poverty (14%). London is the English region with the third lowest proportion of households living in fuel poverty after East (8%) and South East (9%).

Table 7: Estimates of fuel poverty by region, 2015

Fuel poverty by region, 2015	Number of fuel poor households (000's)	Proportion of households fuel poor (%)
East	195	7.8
East Midlands	247	12.7
London	335	10.1
North East	152	13.3
North West	362	11.8
South East	346	9.4
South West	270	11.4
West Midlands	316	13.5
Yorkshire and the Humber	279	12.4
All households	2502	11

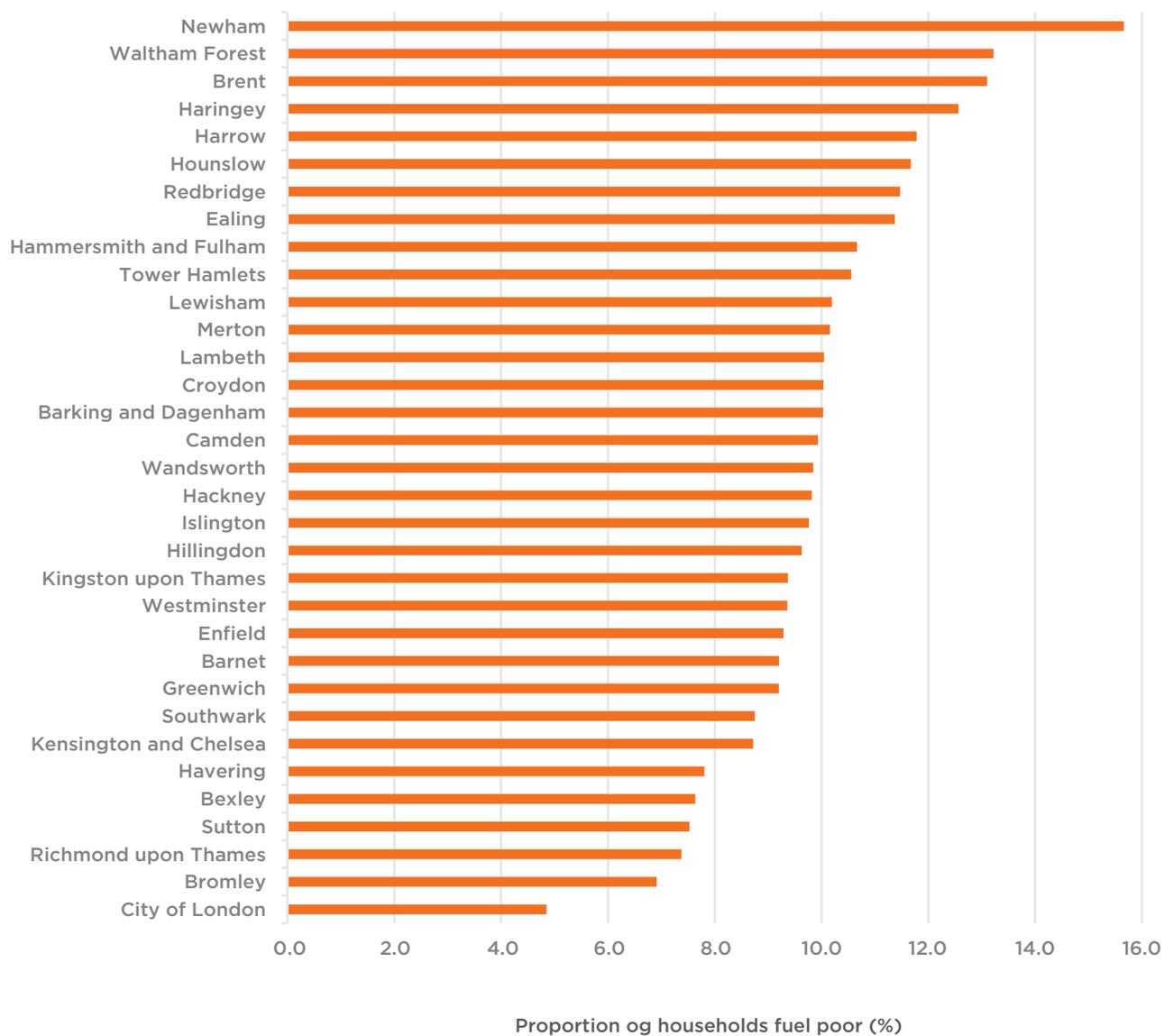
Source: BEIS (2016): Fuel poverty statistics, 2017. Accessible: <https://www.gov.uk/government/collections/fuel-poverty-statistics> [Accessed 10 November 2017]

BENEATH THE HEADLINES

Using the 2015 estimates of fuel poverty, we find major variations between London boroughs. Figure 61 shows how the highest levels of fuel

poverty were in Newham (15.7%), with levels above 13% in Brent and Waltham Forest. In contrast, the lowest levels of fuel poverty were in the City of London (4.8%), Bromley (6.9%) and Richmond (7.4%).

Figure 61: Estimates of fuel poverty in London by borough (2015)



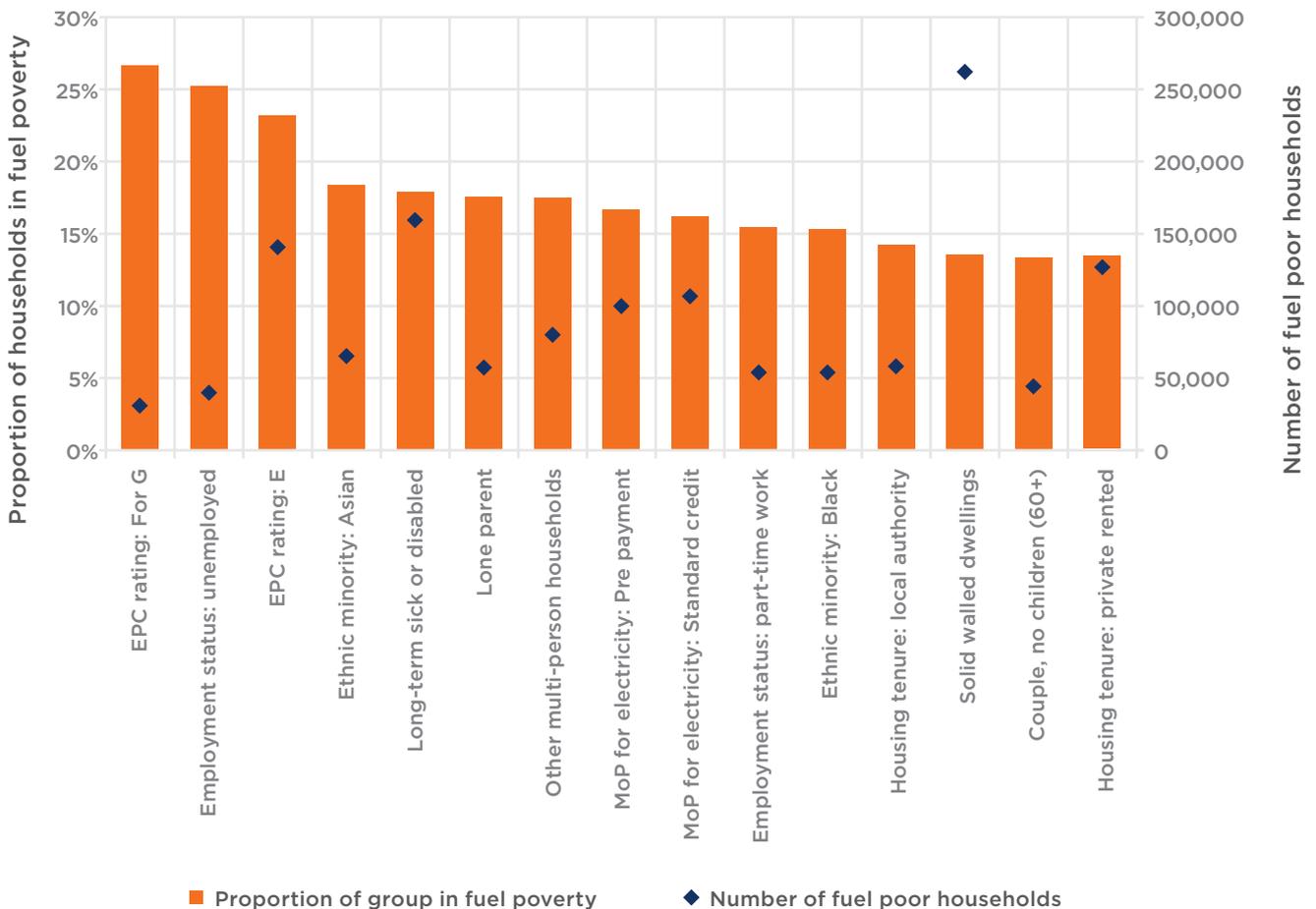
Source: BEIS (2016): Sub-regional fuel poverty data 2017. Accessible: <https://www.gov.uk/government/statistics/sub-regional-fuel-poverty-data-2017> [Accessed 10 November 2017]

WIDER EVIDENCE

Data from 2014 in Figure 62 shows the types of households or dwellings that were most affected by fuel poverty in London (as measured by the proportion of each group that are fuel poor), and the number of fuel poor households in each group. The data set shows how energy efficiency ratings of dwellings have a significant impact on the likelihood of a household to be

living with high energy costs and thus to be in fuel poverty; households with an EPC rating of F and G had the highest proportion of households affected by fuel poverty. And households with an EPC rating of E had the third highest proportion of fuel poor. The figure also shows that households with an unemployed head of household had the second largest proportion of households in fuel poverty.

Figure 62: Households/dwellings most affected by fuel poverty (2014)



Source: GLA (2016): Fuel poverty in London: Research and Policy Report (unpublished). Original data from English Housing Survey data sets 2014

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The 2014 fuel poverty target for England sets an ambition that as many fuel poor homes as reasonably practicable achieve an Energy Performance Certificate Band C energy efficiency by 2030¹⁸⁵. The UK Government's 2015 fuel poverty strategy¹⁸⁶ presents a roadmap for achieving this target with the objective of achieving:

- As many fuel poor homes in England as is reasonably practicable to band E by 2020. In 2016, approximately 10% of fuel poor homes in London were rated in EPC bands of F and G¹⁸⁷; and
- As many fuel poor homes in England as is reasonably practicable to band D by 2025. In 2016, 52% of fuel poor households in London live in E-rated homes¹⁸⁸.

The Mayor's draft London Fuel Poverty Action Plan¹⁸⁹ aims to support the national fuel poverty targets. To achieve that, the Mayor is proposing a series of actions to alleviate fuel poverty and reduce the fuel poverty gap. These proposed actions include, for example, supporting existing borough services in place, helping improve energy efficiency of homes, and securing more Energy Company Obligation (ECO) programme funding for Londoners.

Fuel poverty in London remains at high levels, with more than 335,000 households affected according to the latest available data. Although the 2015 figures show some improvement, it has been estimated that if homes do not reach the government's fuel poverty target of Energy Performance Certificate Band C by 2030, the cost to the health service in treating associated illness in London's homes could be more than £4bn over the next 14 years¹⁹⁰.

Relevant Sustainable Development Goals

SDG 1 (no poverty) urges countries to end poverty in all its forms everywhere by 2030. This goal sets targets and metrics to, for example, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

SDG 10 (reduced inequalities) urges countries to reduce inequalities within and among countries. This goal sets targets and metrics to, for example, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average.



27. HOUSING AFFORDABILITY

INDICATOR OVERVIEW

Measure	Ratio of lower quartile house prices to lower quartile earnings
Source	Office for National Statistics
Link	www.ons.gov.uk
Year of data used for 2017 report	2016

SUMMARY ASSESSMENT

- Housing affordability in London has worsened since the 2012 QoL report.
- Buying a house in London has become 40% more unaffordable over the last five years.
- Private renting has also become less affordable, with the ‘unaffordability index’ rising from 103 in 2012 to 115 in 2016 (2005=100).
- More than half of Londoners say they are stressed by housing costs, rising to three quarters of private tenants.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
“Every Londoner to have access to a good quality home that meets their needs and at a price they can afford” (draft LHS ¹⁹¹)		 (England)

	Long-term trend	Long-term Progress since 2002	Five-year Progress since 2011
Change			

Why is this issue important to London’s quality of life?

Whilst home ownership is not a vital component of a more sustainable city, the ability of Londoners to purchase their own home nevertheless provides an indication of income equality and access to the housing market. The housing market and housing affordability impacts on the economy, on poverty, on social and geographical mobility, and on wellbeing.

HEADLINES

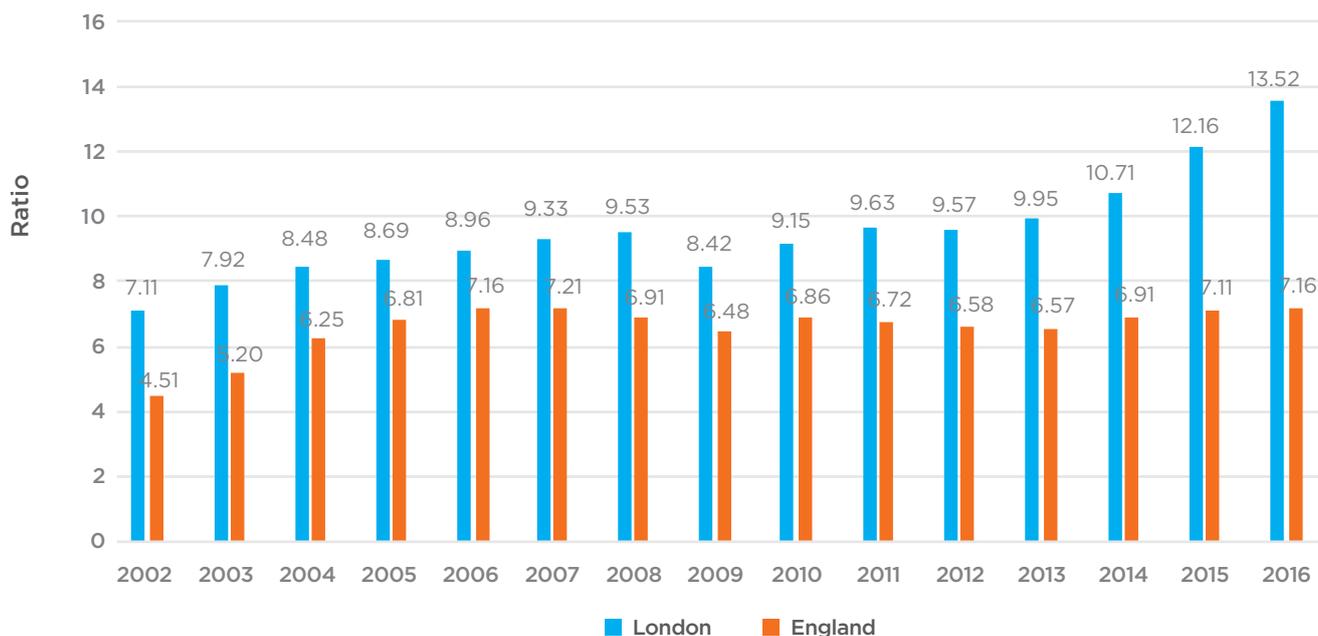
This report uses the government’s preferred indicator of affordability, the ratio of lower quartile house prices to lower quartile earnings. The ratio is calculated by combining data on house prices from HM Land Registry with data on gross annual pay by place of work from the Annual Survey of Hours and Earnings.

Housing affordability in London has worsened since the 2012 QoL report. The ratio of lower quartile house prices to lower quartile earnings has risen from 9.63 in 2011 to 13.52

in 2016. In other words, buying a home in London has become 40% more unaffordable over the last five years by this measure.

Figure 63 shows that in London the ratio of lower quartile house prices to lower quartile earnings increased year on year between 2002 and 2016 from 7.11 to 13.5, an increase of 90.15%. This means buying a house in London has become less affordable than in 2002. In 2009 the ratio decreased, most likely due to the economic slowdown but has been rising since.

Figure 63: Ratio of lower quartile house prices to lower quartile earnings, London and England, 2002-2016



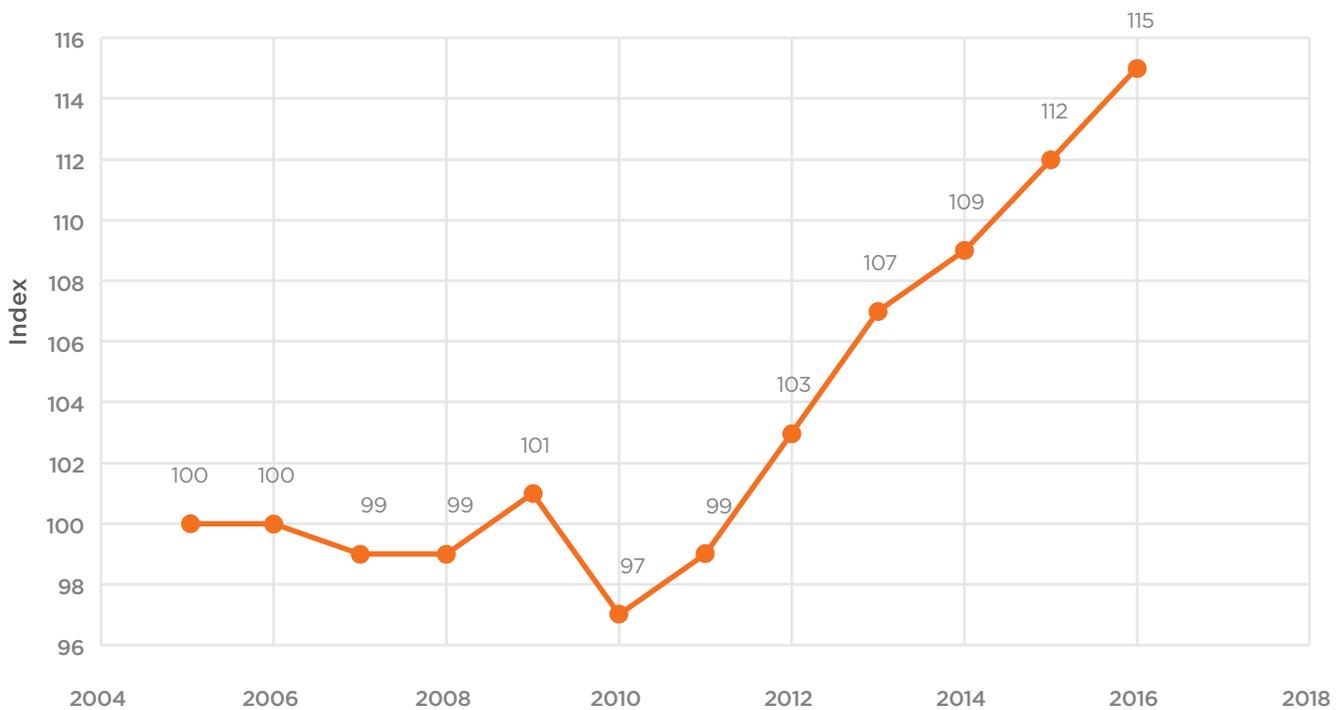
Source: Office for National Statistics

Figure 63 also indicates that by this measure homes are far less affordable in London than they are for England as a whole. In 2016 the ratio for England was 7.16, meaning that London homes are 88.82% more unaffordable than homes in England as a whole.

WIDER EVIDENCE

Private renting has also become less affordable in London. Figure 64 shows rental affordability in London over time. This ‘unaffordability index’ tracks changes in private rents and earnings. The base year for the index is 2005.

Figure 64: Index of cumulative change in private rents, earnings and implied affordability in London (2005 to 2016, 2005=100)



Source: *Housing in London tables 2017, London Datastorea*

The ‘unaffordability index’ shows that rental unaffordability has risen sharply since 2010, with unaffordability now 18 percentage points higher in 2016 than it was six years ago.

The Mayor’s draft London Housing Strategy¹⁹² (LHS) says that housing shortage and affordability issues are making it increasingly difficult for the capital’s key workers to live within the city. It reports that more than half of London’s main ‘blue light’ (police, fire brigade, and ambulance) emergency services’ workers already live outside the capital¹⁹³. 40% of nurses¹⁹⁴ and a similar proportion of young teachers¹⁹⁵ in London say they expect to leave in the next five years because of high housing costs. It also reports that more than half of Londoners say they are stressed by housing costs, an issue of particular relevance for private tenants¹⁹⁶.



POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s draft London Housing Strategy¹⁹⁷ (LHS) aims for “every Londoner to be able to have a good quality home that is right for them and that they can afford” and, specifically, “to make half of all new homes in London affordable”. To achieve that, the Mayor is proposing a series of specific actions to ensure new affordable homes are genuinely affordable to Londoners. These proposed actions include working with London councils and government in order to, for example, promote the delivery of low cost rented homes as well as boosting shared affordable ownership through investment and planning policies.

The Mayor’s aim for every Londoner to be able to afford a good home is a highly ambitious one. This will require a dramatic shift in the current housing affordability situation and will need targeted and determined action at all levels of government.

Relevant Sustainable Development Goals

SDG 11 (sustainable cities) urges countries to make cities inclusive, safe, resilient and sustainable. This goal sets targets and metrics to, for example, ensure access for all to adequate, safe and affordable housing.

28. LONDON LIVING WAGE

INDICATOR OVERVIEW

Measure	Proportion of people earning less than the London Living Wage (LLW) per hour in London
Source	Annual Survey of Hours and Earnings (ASHE), ONS
Link	https://data.london.gov.uk/dataset/percentage-people-low-income-borough
Year of data used for 2017 report	2015

SUMMARY ASSESSMENT

- In 2015, 22.4% of those who were working earned less than the London Living Wage (LLW), which was then £9.40 per hour.
- This has risen significantly since 2005, when only 13.3% were earning less than the LLW.
- The headline figures masks significant variation between boroughs. The lowest figures for 2015 are for Richmond-upon-Thames at 12.5% and Wandsworth at 13.2%. In comparison, in 2015 37.8% of respondents in Newham were earning less than the LLW and 33.5% in Brent.

SUMMARY OF CHANGE

Future key targets and ambitions	LSDC notes of caution	Performance vs national average
"London to be a Living Wage city where every working Londoner is paid at least the London Living Wage" (draft EDS ¹⁹⁸)		

	Long-term trend 2005-2015	Long-term Progress since 2005	Five-year Progress since 2010
Change			

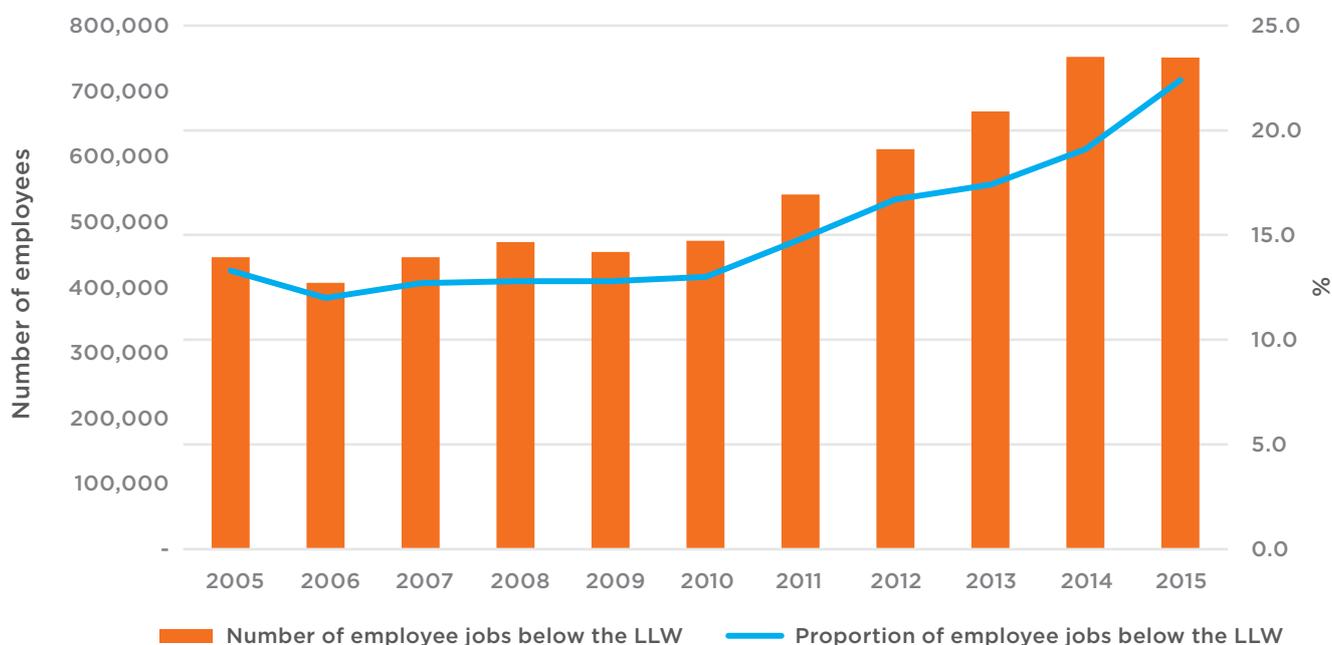
Why is this issue important to London’s quality of life?

The London Living Wage is calculated independently by the Living Wage Foundation and is based on estimates of what people need to meet their day-to-day living costs. This is different from the Government’s National Minimum Wage or the National Living Wage, which do not directly take into account the actual costs of living. At the time of writing, the London Living Wage was £10.20 for those aged 18 and over¹⁹⁹. For London to be sustainable every citizen should have the ability to earn a suitable wage which covers their living costs and allows them to maintain a good quality of life.

HEADLINES

As shown in Figure 65, 22.4% of those who were working in 2015 earned less than the London Living Wage (LLW), which was then £9.40 per hour. This has risen significantly since the first survey in 2005, when only 13.3% were earning less than the LLW.

Figure 65: Percentage of employee jobs below the London Living Wage 2005-2015



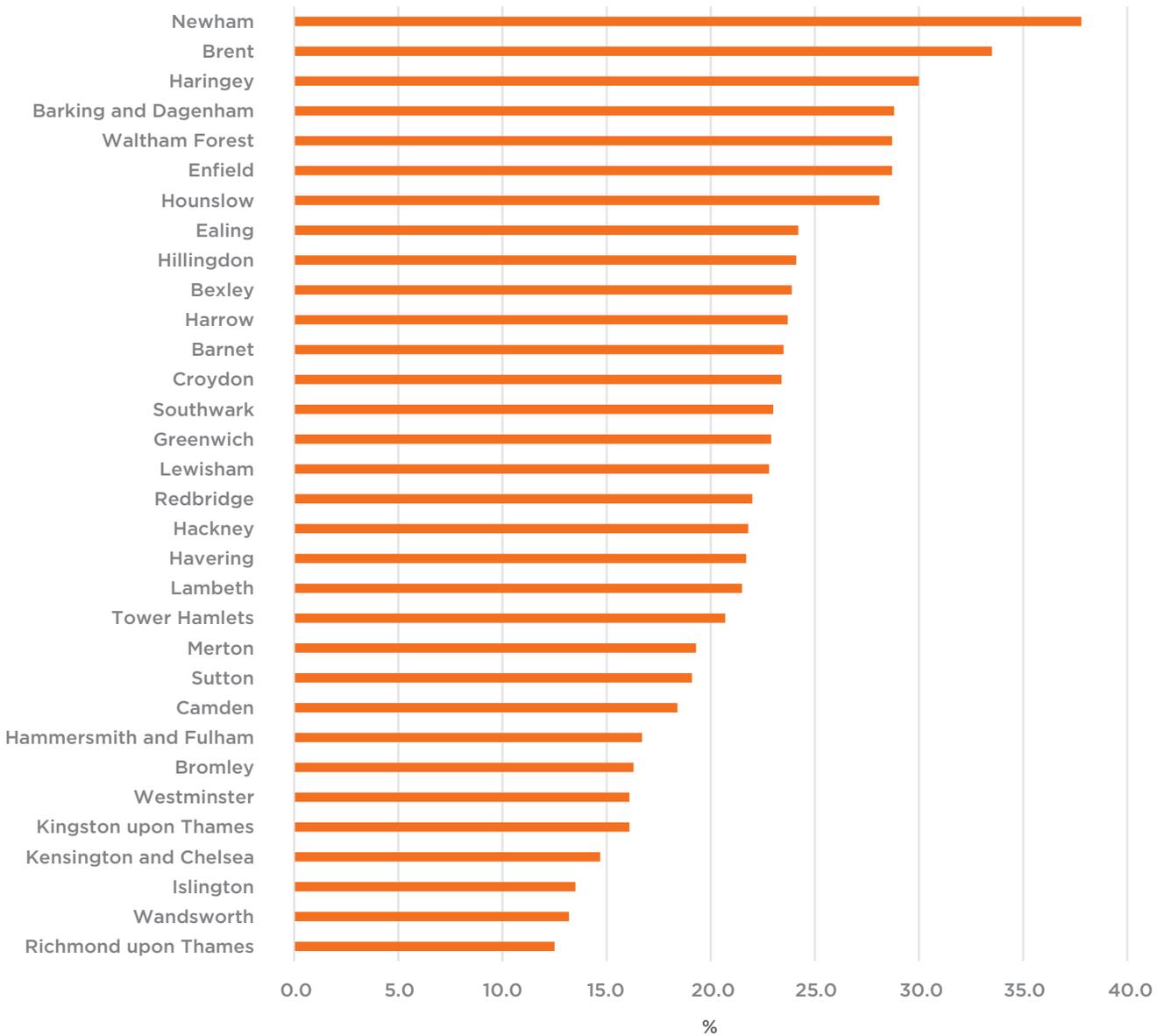
Source: Annual Survey of Hours and Earnings (ASHE), ONS

BENEATH THE HEADLINES

As shown in Figure 66 the headline figures mask significant variations between boroughs, reflecting wide income disparity across the city. The lowest figures for 2014 are

for Richmond upon Thames at 12.5% and Wandsworth at 13.2%. There is a major gap between this and the worse performing boroughs. In 2015 37.8% of respondents in Newham were earning less than the LLW and 33.5% in Brent.

Figure 66: Proportion of all employee jobs of people living in the London Local Authority paid less than the London Living Wage (LLW) in 2014 by borough



Source: Annual Survey of Hours and Earnings (2014 - provisional), Office for National Statistics

POLICY CONTEXT, TARGETS AND THE SUSTAINABLE DEVELOPMENT GOALS

The Mayor’s draft Economic Development Strategy²⁰⁰ (EDS) aims for “London to be a Living Wage city where every working Londoner is paid at least the London Living Wage”. To achieve that, the Mayor is proposing a series of actions to protect lower income workers from workplace exploitation. These actions will include working with key government agencies and departments, and other stakeholders in order to incentivise business to pay their workers at least the LLW through, for example, business rate discount schemes.

The Mayor’s draft London Health Inequalities Strategy²⁰¹ (LHIS) aims for “all Londoners to benefit from a society, environment and economy that promotes good mental and physical health”. To achieve that, the Mayor is proposing a series of specific actions to ensure London’s workplaces support more Londoners into healthy, well paid and secure jobs.

These goals are challenging to meet, given that the percentage of respondents earning less than the LLW has risen steadily since 2005.

Relevant Sustainable Development Goals

SDG 8 (decent work and economic growth) urges countries to promote inclusive and sustainable economic growth, employment and decent work for all. This goal sets targets and metrics to, for example, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

SDG 10 (reduced inequalities) urges countries to reduce inequalities within and among countries. This goal sets targets and metrics to, for example, adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality.





Bermondsey
Spa
7 mins



City of
London
5 mins



Elephant
& Castle
3 mins

WATERLOO

ANNEX A. RATIONALE FOR REVISIONS TO THE 2017 QOL SET AND RECOMMENDATIONS FOR FUTURE QOL INDICATORS

RATIONALE FOR THE 2017 QoL INDICATOR SET

In agreement with the project steering group, the starting point for developing the 2017 QoL indicator set was that the set should be a continuation, where possible, of the indicators in the QoL 2012 set.

The tables below summarise the differences between the 2012 QoL set and 2017 QoL set, and the steering group's rationale for the changes that were made.

Five new indicators have been added for the 2017 set:

Table 8: New QoL indicators

New indicator	Measure	Rationale for inclusion
CO₂ emissions (Scope 3)	Total Scope 3 CO ₂ emissions for London	To replace Ecological Footprint indicator (see below). Important for London's environmental footprint to be captured within the set.
Social integration	Proportion of people who think their local area is a place where people from different backgrounds get on well together	Social integration was highlighted as a priority area for the steering group and this was selected as the most appropriate proxy.
Human capital	Full Human Capital Per Head	Selected as a good proxy for education and skills within the London economy.
London Living Wage	Proportion of people earning less than London Living Wage (LLW) per hour in London	Economic fairness was highlighted as a priority area for the steering group.

A number of indicators were amended. This was either to improve the way in which the indicator measured quality of life, or as a result of changes in data availability:

Table 9: Indicators removed from QoL set

Indicator	2012 measure	2017 measure(s)	Rationale for amendment
Air quality	Tonnes of PM ₁₀ emitted in London	Tonnes of NO _x emitted in London Tonnes of PM _{2.5} emitted in London Tonnes of PM ₁₀ emitted in London	LSDC felt air quality is a key issue for London's quality of life and that this should be reflected by an increase in the number of measures in the report.
Waste	Total household waste in London	London's performance against the greenhouse gas emissions performance standard	Considered a better, more up-to-date measure than the previous weight-based measure, which did not take account of the greenhouse gas impact of waste.
Life expectancy	Life expectancy at birth	Healthy life expectancy at birth	Healthy life expectancy considered a better measure for assessing the quality of people's lives than simply length of life.
Education	Proportion of pupils obtaining at least 5 GCSE passes at A*-C or equivalent	Proportion of pupils obtaining at least 5 GCSE passes at A*-C or equivalent, including English and Maths	Data for 2012 measure no longer available. 2017 measure was the closest alternative.
Travel	Proportion of 5-16 year-olds travelling to school by means other than car	Share of journey stages in London made by a sustainable mode	Agreed to include only one travel indicator in 2017 set as part of streamlining process (2012 report had two). 2017 indicator recommended as most appropriate measure for monitoring progress towards sustainable travel.

Several indicators were removed from the set. The main reasons for removal were either because data were no longer available or to streamline the overall set:

Table 10: Indicators removed from QoL set

Removed indicators	Rationale for removal
Traffic volumes	Streamlining. Agreed to include only one travel indicator in 2017 set as part of streamlining process (2012 report had two). 2017 indicator recommended as most appropriate measure for monitoring progress towards sustainable travel.
Bird populations	Data no longer available. No suitable alternative identified within the project timescale.
Ecological footprint	Data no longer available. CO ₂ emissions (Scope 3) selected as an alternative.
Childcare	Streamlining. Not considered enough of a priority by the steering group.
Education (primary)	Agreed to select only one education indicator as part of streamlining process. Captured in part by new human capital indicator.
Physical activity	Streamlining. Steering group felt there were other health proxies in the set (particularly healthy life expectancy, but also sustainable travel, air quality, etc.) so this was removed as part of the streamlining process.
Voting	Streamlining. Steering group felt there were other social/civic participation indicators in the set (volunteering, social integration).
Carbon efficiency	Streamlining. This was an amalgam of two existing indicators: CO ₂ emissions (Scope 1 and 2) and GVA. Decided to remove as it is still effectively represented within the set.
Low carbon and environmental jobs	Streamlining (employment, GVA and environment already considered well-represented in the set by the steering group).
Skills	Replaced with human capital.

RECOMMENDATIONS FOR FUTURE QOL INDICATOR SETS

Process

There was only a very limited consultation and development period for the 2017 QoL indicator set. We recommend that future reports are proceeded with a longer, more considered, indicator development period.

FUTURE QoL INDICATORS

Long-list of suggestions for future QoL indicators

Throughout the project, there have been a range of suggestions for indicators to be included in the QoL set. These have come from the steering group, Commissioners, GLA staff and

external stakeholders. It has not been possible to accommodate all of these requests within. However, we have logged suggestions made in the table below. The table could be used as a starting point for the development of future QoL sets.

Table 11: List of suggested indicators

Suggested indicator area	Comments and suggestions
Flood risk	The Environment Agency plan to collect data on public awareness of flood risk in the future. The LSDC suggest this is used as at least one measure of flood risk in future reports.
Climate change adaptation & climate resilience	<p>The issue was not considered sufficiently covered in the 2012 set, although flooding, access to nature and water consumption all have relevance.</p> <p>A new climate resilience indicator was therefore proposed for the 2017 QoL set. In consultation with the London Climate Change Partnership, it was suggested that the indicator be based on the presence / absence of extant local authority Climate Change Adaptation plans. The rationale was that this would provide a simple, measurable indicator that allows for coverage of all aspects of climate change, i.e. not simply focused on one aspect of climate resilience such as flooding, heat waves or tree canopy cover.</p> <p>However, there were insufficient data to be able to accurately assess performance, so no assessment was made for this report.</p> <p>It would therefore be prudent to review alternative options for future reports. Climate resilience is a multi-faceted issue and therefore difficult to address via one over-arching indicator. The indicator could be addressed by adopting a basket of sub-indicators, although this would not be in-keeping with how other indicator areas are measured in the QoL set. An alternative would be to select a single headline indicator, although to be effective, this may need to be limited to a single key aspect of climate resilience.</p> <p>At the time of writing, the London Climate Change Partnership were in the process of developing a suite of climate resilience indicators for London as part of the London Environment Strategy. We expect this to be a valuable resource for future QoL reports.</p> <p>Other suggestions made by stakeholders during this project on climate resilience include:</p> <ul style="list-style-type: none"> • Proportion of London with tree canopy cover • Loss of permeability of surface i.e. through paving over gardens etc, which is known to have an impact in terms of increasing surface water flooding. GiGL have data on garden loss and there are satellite data available • The Adaptation Sub-Committee's indicators could include suitable measures • An indicator measuring the frequency of heatwave days • Green roofs datasets i.e. number/percentage • SUDs (sustainable urban drainage schemes) provision

<p>Education</p>	<p>The benchmark of 5 A*-C GCSEs including English and Maths is changing. From 2017 the Department for Education is using a new benchmark “Progress 8” and “Attainment 8” to indicate how well schools are doing to improve pupil outcomes. In addition, the GCSE grades are changing from A*-C and the equivalent is numerical from 9 to 4. These changes will need to be reflected within the QoL set in future years.</p> <p>Whilst there is variation between borough level data there is also variation between schools and between different cohorts within the population. Future QoL sets could therefore seek to measure differences in educational achievement within boroughs.</p>
<p>Biodiversity and the natural environment</p>	<p>The bird populations indicator was removed for the 2017 QoL report because the data were no longer available. The indicator had been used in past reports as a proxy for measuring London’s biodiversity. It would be useful for an alternative measure to be identified before the next QoL report.</p> <p>Although the AoD in access to nature indicator is a useful overarching measure for identifying whether Londoners have sufficient experience of the natural environment, it measures relative accessibility to designated Sites of Importance for Nature Conservation rather than whether the urban fabric contains features (such as green spaces, gardens, street trees and waterways) which can provide regular contact with nature. Consequently, the draft London Environment Strategy²⁰² proposes the introduction of a greenness index which will show the relative amounts of greenery in neighbourhoods across London. In future reports, this might be a complementary QoL indicator, as it will indicate how likely Londoners will get a regular ‘dose’ of the natural environment during their daily lives. A greenness index set alongside the AoD in access to nature mapping will provide a more nuanced and meaningful assessment of likely QoL.</p> <p>The GLA will also publish the first Natural Capital Account for London’s public green spaces in 2017 (see the draft London Environment Strategy²⁰³ for further detail). A natural capital account will help us understand, and account for, a range of economic benefits that public parks provide (such as health and recreation benefits). This can help better inform decisions about the management of and investment in London’s public parks, rather than simply treating public parks as costly liabilities. This could also be considered for inclusion for future QoL reports, as an indicator, or as important supporting data.</p>
<p>Economic fairness and quality of work</p>	<p>The London Living Wage was introduced as a means of more effectively capturing economic fairness within the 2017 QoL set.</p> <p>Suggestions were also made to include indicators which measure the quality of people’s work. For example, it was suggested that:</p> <ul style="list-style-type: none"> • Job satisfaction could be more strongly emphasised. GLA well-being ward scores cite job satisfaction and economic security, which could be used as indicators. • The GLA was at the time of writing creating a framework of indicators around economic fairness for both the Mayor’s Good Work Standard and wider issues across London. We recommend that this framework be reviewed ahead of the next QoL report.

<p>Social integration and civic engagement</p>	<p>The voting turnout indicator was removed from the QoL set for 2017. Voter turnout, or voter registration, is often used as a measure of civic participation. It was suggested that this be reintroduced to the QoL set in future years.</p>
<p>Income inequalities</p>	<p>Discussing income inequalities needs to also consider the wider demographic impacts in relation to gender, age and ethnicity. The current income inequality measure does not allow for this kind of analysis, although we do look at other aspects of income on different demographics throughout the report (e.g. wider evidence section in income inequality, fuel poverty, child poverty, etc). It was suggested that future QoL sets assess how income inequality might disproportionately affect different social groups regardless of educational attainment.</p>
<p>Health outcomes and life expectancy</p>	<p>Life expectancy was felt to be a good overarching indicator of health. But stakeholders involved in the project also recognised that it masks key risks such as obesity and inactivity which are growing, and people in more deprived populations typically having higher rates of disease.</p> <ul style="list-style-type: none"> • Measuring health in later years, so that future reports can monitor the health of London's older population • Reintroducing the Physical Activity indicator. This could use TfL's London Travel Demand Survey (LTDS which records the proportion of Londoners achieving two sessions of 10 minutes of walking or cycling per day. This would link to the target in the MTS: "by 2041, for all Londoners to do at least the 20 minutes of active travel they need to stay healthy each day" • Other suggestions included: obesity, cancer rates, alcohol consumption, mental health, health inequalities and access to health services • It was also noted that there are proven links between green space and health outcomes
<p>Infrastructure and population growth</p>	<p>London's population will continue to grow in future years, placing even greater demands on London's infrastructure e.g. public services, water supply, public services, energy generation, water supply, transport and waste treatment.</p> <p>Future QoL sets could therefore seek to measure the ability of London's infrastructure to meet the demands of its growing, dynamic population.</p>
<p>Resource efficiency and circular economy</p>	<p>The project steering group highlighted these two related areas as ones that are not sufficiently addressed within the current QoL set. Future QoL sets could therefore be bolstered better to reflect these two important sustainability issues.</p> <p>LSDC commissioners noted that the current set does not address the circular economy sufficiently. It was suggested therefore that future reports move towards a reporting model that enables the LSDC to look at areas such as material footprint, material footprint per capita, and material footprint per GDP for London, as well as the proportion of materials consumed that come from sustainable / recycled sources etc.</p>

Energy security, renewable energy and energy efficiency	<p>Similarly, the current QoL set does not explicitly measure the extent to which London is self-sufficient in meeting its energy needs, how much of London's energy usage is met from renewable sources, or how energy efficient London is.</p> <p>Energy is a critical sustainability issue. Future reports could therefore include an explicit energy measure.</p>
Low carbon and environmental jobs	<p>As above, this indicator was dropped from the 2017 QoL set. It remains an important issue and there were suggestions by several stakeholders that it should be reintroduced.</p>
Noise	<p>Noise is part of the Mayor's statutory environmental strategies and also impacts on quality of life. It was therefore suggested that a noise indicator be included in future QoL sets.</p>
Food security and food poverty	<p>It was suggested during the project that the QoL set includes a measure or measures on food security/food poverty. There is a shortage of existing data on these issues for London, but they could be considered for inclusion in future sets if appropriate data become available.</p>
Digital inclusion	<p>Suggested by the steering group as a possible issue to measure in the QoL set but not considered a key priority for 2017.</p>
Smart cities	<p>Suggested by the steering group as a possible issue to measure in the QoL set but not considered a key priority for 2017.</p>

WEIGHTING

Finally, one suggestion was made during this project to weight indicators in future sets. We have not had time to review the merits of this proposal in-depth but it is an idea that could be explored for future QoL sets.

ANNEX B. INTERNATIONAL COMPARISON FINDINGS

As part of the report's assessment of policy context and targets, a mapping exercise was conducted to assess the relevance of the QoL indicators in comparison to specific SDG targets and metrics. This mapping exercise illustrated how all 32 QoL Indicators are directly or indirectly linked to specific SDG indicators and metrics. It also demonstrated that all 17 SDGs are somehow informed by at least one QoL Indicator. At the end of each of the 32 QoL indicators' detailed assessment in this Evidence Report, a section on policy context illustrates the key SDG indicators and metrics linked to the specific QoL indicator. The tables below show the summary of the mapping exercise.

The London Sustainable Development Commission wanted to be able to compare London's progress on sustainable development with other similar cities internationally.

CAG undertook a rapid review of possible options for doing this for the 2017 report. Two options were investigated:

1. The Global Cities Registry. The World Council on City Data (WCCD) Global Cities Registry²⁰⁴ is an internationally recognised list of cities that are certified against ISO 37120 - Sustainable development of communities -- Indicators for city services and quality of life. London is one of 61 cities that have achieved certification against this standard. Some of the indicators used as part of this standard are similar to those used in this report, such as air quality,

employment rates, water consumption and waste. Whilst a number of big cities have signed up to this (e.g. Shanghai, Amsterdam, Los Angeles), none were felt to be comparable to London. Previous work for LSDC completed by CAG Consultants identified New York, Tokyo and Paris as being the most comparable to London on the basis of a combination of population, economic activity, political power, knowledge and influence, and quality of life²⁰⁵.

2. The Sustainable Development Goals (SDGs). In January 2016, the 17 Sustainable Development Goals of the 2030 Agenda for Sustainable Development — adopted by world leaders in September 2015 at a UN Summit — officially came into force. These goals are underpinned by 169 global targets and 231 global indicators. Countries are responsible for collecting their own data on their own set of indicators. For the United States, a report has been produced providing comparative data for different US cities²⁰⁶ — including New York (a city which has been identified as a potential comparator to London), but there is not a similar analysis for London with which this could be compared.

This is an area that should be explored further for the next report, with consideration given to how best London should engage with the SDGs in order to enable some international comparisons to be made.

QoL 2017 Indicators/ UN SDGs with relevant targets-metrics	1 No poverty	2 Zero hunger	3 Good health and well- being	4 Quality educa- tion	5 Gender equality	6 Clean water and sanita- tion	7 Afford- able and clean energy	8 Decent work and economic growth	9 Industry, innovation and infra- structure	10 Reduced inequal- ities	11 Sustainable cities and communities	12 Responsible consumption and production	13 Climate action	14 Life below water	15 Life on land	16 Peace, justice and strong institutions	17 Partnership for the goals
CO ₂ emissions (S1&2)							X				X		X				
CO ₂ emissions (S3)							X				X		X				
Access to nature											X				X		
NO _x emissions											X				X		
PM emissions											X						
Household recycling											X	X					
Waste											X	X		X			
Flooding											X				X		
Water consumption						X					X				X		
Healthy life expectancy		X	X														
Education				X													
Travel											X						
Crime											X					X	
Decent housing											X						
Happiness			X														
Satisfaction with London																X	
Volunteering											X						X
Social integration					X						X						
Gross value added								X									
Employment					X			X									
Business survival								X									
Human capital				X													
Innovation								X	X								X
Income inequality	X				X					X							
Child poverty	X																
Fuel poverty	X									X							
Housing affordability											X						
London living wage								X		X							

The table below shows how each QoL Indicator maps with relevant SDG indicators and metrics, London/GLA Strategies, and other national/international policies. The LSDC has highlighted that local authorities have an important role to play in ensuring quality of life for London's population. Therefore, we have also highlighted below which headline measures have local authority level data.

QoL Indicator		Measure	Local authority data available for headline measure?	SDG relevant targets and metrics	London / GLA Strategies	Other National/ International
1	CO₂ Scope 1 and 2	Total scope 1 and 2 CO ₂ e emissions in London.	Yes	SDG 13 (climate action): foster low greenhouse gas emissions development. SDG 11 (sustainable cities): reduce the adverse per capita environmental impact of cities.	The Mayor's draft London Environment Strategy (LES) includes the aim that "London will be a zero carbon city by 2050".	UK Targets: Climate Change Act 2008 Internationally, the European Union Targets: Paris Agreement. EU's 2030 climate and energy framework targets.
		Scope 3 CO ₂ emissions for London (consumption-based methodology).	No	SDG 7 (affordable and clean energy): increase substantially the share of renewable energy in the global energy mix.		
3	Access to nature	Proportion of Greater London in Areas of Deficiency in access to nature.	No	SDG 11 (sustainable cities): provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities. SDG 15 (life on land): mobilise and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.	The Mayor's draft London Environment Strategy (LES) includes the aim that "more than half of London's area to be green and for tree canopy cover to increase by ten per cent by 2050".	
4	NO_x emissions	Tonnes of NO _x emitted in London.	Yes	SDG 11 (sustainable cities): reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality.	The Mayor's draft London Environment Strategy (LES) includes the aim that "London will have the best air quality of any major world city by 2050".	At the EU level, 2008 ambient air quality directive (2008/50/EC) legally binding limits.

5	PM emissions	a. Tonnes of PM _{2.5} emitted in London. b. Tonnes of PM ₁₀ emitted in London.	Yes (for a and b)	SDG 11 (sustainable cities): reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality.	The Mayor's draft London Environment Strategy (LES) includes the aim that "London will have the best air quality of any major world city by 2050".	At the EU level, 2008 ambient air quality directive (2008/50/EC) legally binding limits.
6	Recycling	Percentage of household waste recycled or composted in London.	Yes	SDG 12 (responsible production and consumption): Substantially reduce waste generation through prevention, reduction, recycling and reuse. SDG 11 (sustainable cities): reduce the adverse per capita environmental impact of cities, including by paying special attention to waste management.	The Mayor's draft London Environment Strategy (LES) includes the aim that "65% of London's municipal waste will be recycled by 2030".	The European Commission has adopted ambitious Circular Economy Package recycling targets: 65% of municipal waste by 2030; 75% of packaging waste by 2030. The UK has a statutory recycling target of 57% for plastic packaging and 80% for glass by 2020 (total recycling 75.4% by 2020).
7	Waste	London's performance against the greenhouse gas emissions performance standard (EPS).	Yes	SDG 12 (responsible production and consumption): substantially reduce waste generation through prevention, reduction, recycling and reuse, and to achieve the environmentally sound management of chemicals and all wastes throughout their life cycle. SDG 11 (sustainable cities): reduce the adverse per capita environmental impact of cities, including by paying special attention to waste management. SDG 14 (life below water): prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities.	The Mayor's draft London Environment Strategy (LES) includes the aim that "London will be a zero waste city".	The European Commission has adopted ambitious Circular Economy Package recycling targets: reduce landfill to maximum of 10% of municipal waste by 2030; ban on landfilling of separately collected waste; etc.

QoL Indicator	Measure	Local authority data available for headline measure?	SDGs relevant targets and metrics	London / GLA Strategies	Other National/ International	
8	Flood risk	(a) tidal and fluvial flooding. (b) surface flooding.	Yes (for a) No (for b)	SDG 11 (sustainable cities): adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies. SDG 15 (life on land): restore degraded land and soil, including land affected by floods, and strive to achieve a land degradation-neutral world.	The Mayor's draft London Environment Strategy (LES) includes the aim that "London and Londoners will be resilient to severe weather and longer-term climate change impacts. This will include flooding, heat risk and drought".	The European Commission's Directive 2007/60/EC on the assessment and management of flood risks requires Member States to assess and mitigate potential risks from flooding. Following the EU requirement, the Environment Agency developed the Flood Risk Management Plan for the Thames river basin district.
9	Water	Water per capita consumption (household, Thames Water region), annual.	No	SDG 6 (clean water and sanitation): substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity. SDG 11 (sustainable cities): adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies. SDG 15 (life on land); restore degraded land and soil, including land affected by floods, and strive to achieve a land degradation-neutral world.	The Mayor's draft London Environment Strategy (LES) includes the aim that "London and Londoners will be resilient to severe weather and longer-term climate change impacts. This will include flooding, heat risk and drought".	The European Commission's Water Scarcity & Droughts (WS&D) policy aims to ensure "access to good quality water in sufficient quantity for all Europeans, and to ensure the good status of all water bodies across Europe".

10	Healthy lifestyle	Healthy life expectancy at birth for: (a) men (b) women	Yes (for both a and b)	SDG 3 (good health and wellbeing): improve maternal and child health, and to reduce deaths attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease. SDG 2 (zero hunger): ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.	The Mayor's draft Health Inequalities Strategy includes the overall aim of a "healthy London: a healthier, fairer city, where nobody's health suffers because of who they are or where they live". One of the overall ambitions of the draft Strategy is to see "healthy life expectancy as well as less variation in how long men and women and different Londoners can expect to live in good health".	
11	Education	Proportion of pupils obtaining at least 5 GCSE passes at A*-C or equivalent, including English and Maths.	Yes	SDG 4 (quality education): ensure that all children complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.	The Mayor's ambition for education is "for every child in London to have the opportunities our great city has to offer". The Mayor's Vision for a Diverse and Inclusive City aims "for every child in London to have the opportunity to attend a good or outstanding local school".	The UK Government Department for Education's goal is "to provide world-class education and care that allows every child and young person to reach his or her potential, regardless of background". One of the three key objectives within DfE's plan 2015 to 2020 is to achieve "educational excellence everywhere", where every child and young person can access high-quality provision, achieving to the best of his or her ability regardless of location, attainment and background.

QoL Indicator	Measure	Local authority data available for headline measure?	SDGs relevant targets and metrics	London / GLA Strategies	Other National/ International	
12	Travel	Share of journey stages in London made by a sustainable mode.	No	<p>SDG 11 (sustainable cities): provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.</p> <p>SDG 9 (industry, innovation, and infrastructure): develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.</p>	The Mayor's draft London Transport Strategy's (LTS) aim for 2041 is "for 80 per cent of Londoners' trips to be on foot, by cycle or by using public transport".	
13	Crime	Total recorded crime in London.	No	<p>SDG 16 (peace, justice and strong institutions): reduce all forms of violence and related death rates everywhere, and to increase the percentage of the population that feel safe walking alone around the area they live.</p> <p>SDG 11 (sustainable cities): provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.</p>	The Mayor's new Police and Crime Plan for London 2017-2021 aims for "a safer city for all Londoners".	
14	Decent Housing	Percentage of decent housing stock in London.	No	SDG 11 (sustainable cities): reduce the proportion of urban population living in inadequate housing.	The Mayor's draft London Housing Strategy (LHS) aims for "every Londoner to be able to have a good quality home that is right for them and that they can afford".	

15	Happiness	Self-reported levels of happiness.	No	SDG 3 (good health and wellbeing): reduce suicide mortality rate and substance abuse by promoting mental health and well-being.	The Mayor's draft London Health Inequality Strategy (LHIS) aims that "all Londoners share in a city with the best mental health in the world".	
16	Satisfaction with London	Percentage of Londoners satisfied with the capital as a place to live.	No	SDG 11 (sustainable cities): enhance inclusive and sustainable urbanisation and capacity for participatory, integrated and sustainable human settlement planning and management in all countries. SDG 17 (partnership for the goals): encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.	The Mayor's draft Vision for a Diverse and Inclusive City aims for London to be "a healthy, green, safe and enjoyable city".	
17	Volunteering	Participation in formal or informal volunteering over previous 12 months.	Yes	SDG 11 (sustainable cities): enhance inclusive and sustainable urbanisation and capacity for participatory, integrated and sustainable human settlement planning and management in all countries. SDG 5 (gender equality): ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.	The Mayor's draft Vision for a Diverse and Inclusive City sets social integration as one of the Mayor's top priorities, aiming "for all people from different backgrounds to be able to lead inter-connected lives.[...] This includes through volunteering, sport, voting and taking part in public and political life".	
18	Social integration	Proportion of people who think their local area is a place where people from different backgrounds get on well together.	Yes	SDG 11 (sustainable cities): enhance inclusive and sustainable urbanisation and capacity for participatory, integrated and sustainable human settlement planning and management in all countries. SDG 5 (gender equality): ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.	The Mayor's draft Vision for a Diverse and Inclusive City sets social integration as one of the Mayor's top priorities. In the consultation document, the Mayor sets his vision for London as the city where "all Londoners can lead interconnected lives and play an active part in their city and the decisions that affect them".	

QoL Indicator		Measure	Local authority data available for headline measure?	SDGs relevant targets and metrics	London / GLA Strategies	Other National/ International
19	GVA	Gross Value Added (GVA) per head (£) in London.	Yes	SDG 8 (decent work and economic growth): sustain per capita economic growth in accordance with national circumstances, and to achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.	The Mayor's draft Economic Development Strategy (EDS) aims for "London to be the world's greatest city for business - a world capital for trade and investment".	
20	Employment	Employment rate in London.	Yes	SDG 8 (decent work and economic growth): achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value. SDG 5 (gender equality): ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life (e.g. proportion of women in managerial positions).	The Mayor's draft Economic Development Strategy (EDS) aims for "all Londoners who want to work, and are able to, have access to quality employment". The Mayor's draft Health Inequalities Strategy (LHIS) aims for "all Londoners to benefit from a society, environment and economy that promotes good mental and physical health".	
21	Business survival	Survival of London businesses after one year of trading.	No	SDG 8 (decent work and economic growth): promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalisation and growth of micro-, small- and medium-sized enterprises, including through access to financial services.	The Mayor's draft Economic Development Strategy (EDS) aims for "all businesses of all sizes and stages in their development to grow".	
22	Human capital	Full Human Capital per head (£, 2015 prices).	No	SDG 4 (quality education): substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.	The Mayor's draft Vision for a Diverse and Inclusive City aims for "a skilled future workforce in London".	

<p>23</p>	<p>Innovation</p>	<p>a. Proportion of firms reporting introducing product innovations b. Proportion of firms reporting introducing process innovations.</p>	<p>No (for both a and b)</p>	<p>SDG 8 (decent work and economic growth): achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors. SDG 9 (industry, innovation, and infrastructure): enhance scientific research, upgrade the technological capabilities of industrial sectors, including, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending. SDG 17 (partnership for the goals): enhance cooperation on and access to science, technology and innovation.</p>	<p>The Mayor's draft London Economic Development Strategy (EDS) aims for "London to be a global leader in innovation and creativity".</p>	
<p>24</p>	<p>Income inequality</p>	<p>Disposable income differentials in London.</p>	<p>No</p>	<p>SDG 10 (reduced inequalities): progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average. SDG 1 (no poverty): reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.</p>	<p>The Mayor's draft Economic Development Strategy (EDS) aims that "London has a fairer and more inclusive economy, where living standards are improving with real incomes growing year-on-year". The Mayor's draft Health Inequalities Strategy (LHIS) aims that "all Londoners benefit from a society, environment and economy that promotes good mental and physical health".</p>	
<p>25</p>	<p>Child poverty</p>	<p>Children living in households below 60% median income. Before Housing Costs (BHC) & After Housing Costs (AHC).</p>	<p>Yes</p>	<p>SDG 1 (no poverty): reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.</p>	<p>The Mayor's draft Health Inequalities Strategy aims that "every London child and young person have a healthy start in life". The Mayor's draft Economic Development Strategy (EDS) also aims to "give every London child the best start in life".</p>	

QoL Indicator	Measure	Local authority data available for headline measure?	SDGs relevant targets and metrics	London / GLA Strategies	Other National/ International
26	Fuel Poverty	Proportion of fuel poor households in London.	Yes	<p>SDG 1 (no poverty): build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.</p> <p>SDG 10 (reduced inequalities): progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average.</p>	<p>The Mayor's draft Environment Strategy aims to "Reduce emissions of London's homes and workplaces while protecting the most vulnerable by tackling fuel poverty" (draft LES).</p> <p>2014 fuel poverty target for England (band C energy efficiency standard by 2030). UK Government's 2015 fuel poverty strategy (targets for bands E and D by 2020 and 2025, respectively).</p>
27	Housing affordability	Ratio of lower quartile house prices to lower quartile earnings.	No	SDG 11 (sustainable cities): ensure access for all to adequate, safe and affordable housing.	<p>The Mayor's draft London Housing Strategy (LHS) aims for "every Londoner to be able to have a good quality home that is right for them and that they can afford" and, specifically, "to make half of all new homes in London affordable".</p>
28	London Living Wage	Proportion of people earning less than London Living Wage (LLW) per hour in London.	Yes	<p>SDG 8 (decent work and economic growth): achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.</p> <p>SDG 10 (reduced inequalities): adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality.</p>	<p>The Mayor's draft Economic Development Strategy (EDS) aims for "London to be a Living Wage city where every working Londoner is paid at least the London Living Wage".</p>

GLOSSARY

Term	Definition
AHC	After Housing Costs
AoD	Area of Deficiency
BAME	Black, Asian and minority ethnic
BEIS	Department for Business, Energy and Industrial Strategy
BHC	Before Housing Costs
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DCMS	Department for Digital, Culture, Media and Sport
DEFRA	Department for Environment, Food and Rural Affairs
DfE	Department for Education
DHS	Decent Home Standard
DPSC	Direct Plus Supply Chain
DWP	Department for Work and Pensions
EDS	Economic Development Strategy
EPS	Emissions Performance Standard
EU	European Union
FRMP	Flood Risk Management Plan
FRS	Family Resources Survey
GLA	Greater London Authority
GHG	Greenhouse gas
GiGL	Greenspace Information for Greater London
GVA	Gross Value Added
HBAI	Households Below Average Income
HLE	Healthy Life Expectancy

Term	Definition
LAEI	London Atmospheric Emission Inventory
LEGGI	London Energy and Greenhouse Gas Inventory
LES	London Environment Strategy
LHIS	London Health Inequalities Strategy
LHS	London Housing Strategy
LLW	London Living Wage
LSDC	London Sustainable Development Commission
LSOAs	Lower Layer Super Output Areas
LTS	London Transport Strategy
MOPAC	Mayor's Office for Police and Crime
MPS	Metropolitan Police Service
NEET	Not in Education, Employment or Training
NO ₂	Nitrogen dioxide
NO _x	Nitrogen Oxides
ONS	Office for National Statistics
PCC	Per Capita Consumption
PM	Particulate Matter
QoL	Quality of Life
SDG	Sustainable Development Goals
SINC	Site of Importance for Nature Conservation
TfL	Transport for London
UFP	Ultrafine particles
WHO	World Health Organization
ZHC	Zero Hour Contract

NOTES AND REFERENCES

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4. For example the Collins English Dictionary defines it as “the general well-being of a person or society, defined in terms of health and happiness, rather than wealth” (<https://www.collinsdictionary.com/dictionary/english/quality-of-life>).
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21. The data records CO₂ figures up to 2009 and CO₂e figures from 2010; we have been advised by the GLA that they are effectively comparable as there is negligible difference between the two.
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26. Gross value added (GVA) is the measure of the value of goods and services produced in an area, industry or sector of an economy, in economics.
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36. Data for 2012 are not available.
37. Mayor of London, 2017, Draft Environment Strategy (accessed 8 November 2017).
38. There are two methods of assessing scope 3 emissions: consumption-based or Direct Plus Supply Chain. The two are not directly comparable – see Figure 4. For simplicity, we have chosen just to include the former within this report. The Consumption Based methodology measures the greenhouse gas emissions from the products and services that London consumes. Therefore greenhouse gases emitted as a result of products and services that are produced in London, but not consumed in London, are not included. GLA, 2015, Assessing London's Indirect Carbon Emissions <https://www.london.gov.uk/what-we-do/environment/assessing-londons-indirect-carbon-emissions>
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43. GiGL curates the best available picture for AoD in access to nature for the Greater London area. Working closely with the London boroughs, data are updated on an ongoing basis to reflect changes to sites and their designations. There is sometimes an unavoidable time-lag between changes being implemented on the ground, boroughs formally documenting the change and GiGL being informed of the update. GiGL are also only able to report on changes that have been submitted to them. For this reason, change statistics are more accurate over longer time periods than annual figures.
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