



The Density Dividend: solutions for growing and shrinking cities

Appendix

Case study: London

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About ULI

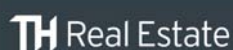
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This report

ULI Europe has identified *density* as a major theme for its content programme. This report is the second of a series of studies into the impact, implications and importance of density in today's cities.

The first report, *Density: drivers, dividends and debates (June 2015)*, examined what we mean by the term *density*, and explored the long term benefits density offers to people, the environment and on investments. This was done through consultation with ULI members, city experts, and industry leaders.

This report explores the question of density and urban change by looking more closely at the experience of six European cities. It examines how density may play a role in helping cities in cycles of growth or shrinkage to adapt, prepare and succeed in the future. The six case study cities – **Birmingham, Dresden, Istanbul, London, Stockholm and Warsaw** – cover a wide span of population trends, political frameworks and spatial evolutions. Together they offer many lessons for cities in different cycles of development.

Methodology

For this report, we initially undertook historical research on each of the six cities to understand the development path they have taken and what this means for the appetite of their residents and leaders for city living and future densification. Then, we developed detailed case studies for each of the six cities, which each identify the key drivers, enablers and attitudes to densification, and feature timelines of change. We identified and spoke with four to six specialists in each city – including city planners, academics, architects and development professionals – in order to clarify and calibrate these cases.

The case studies were used as the basis for discussion with ULI members at workshops that took place in each of the cities, except for Dresden where the workshop took place in Berlin. The feedback from the workshops was used to update and improve the case studies as well as to inform the summary report.

Authors

The authors of the report are **Prof Greg Clark**, Senior Fellow at ULI Europe, and **Dr Tim Moonen**, Director of Intelligence at The Business of Cities Ltd.



Executive Summary

London has always been a lower density city than its main world city counterparts (Paris, New York, Tokyo) through its multiple cycles of organic and incremental development. Over the last century the city has developed a mono-centric and metropolitan character, and has evolved rather uniquely from more than 100 separate towns and settlements into a 'metropolis made up of villages'.

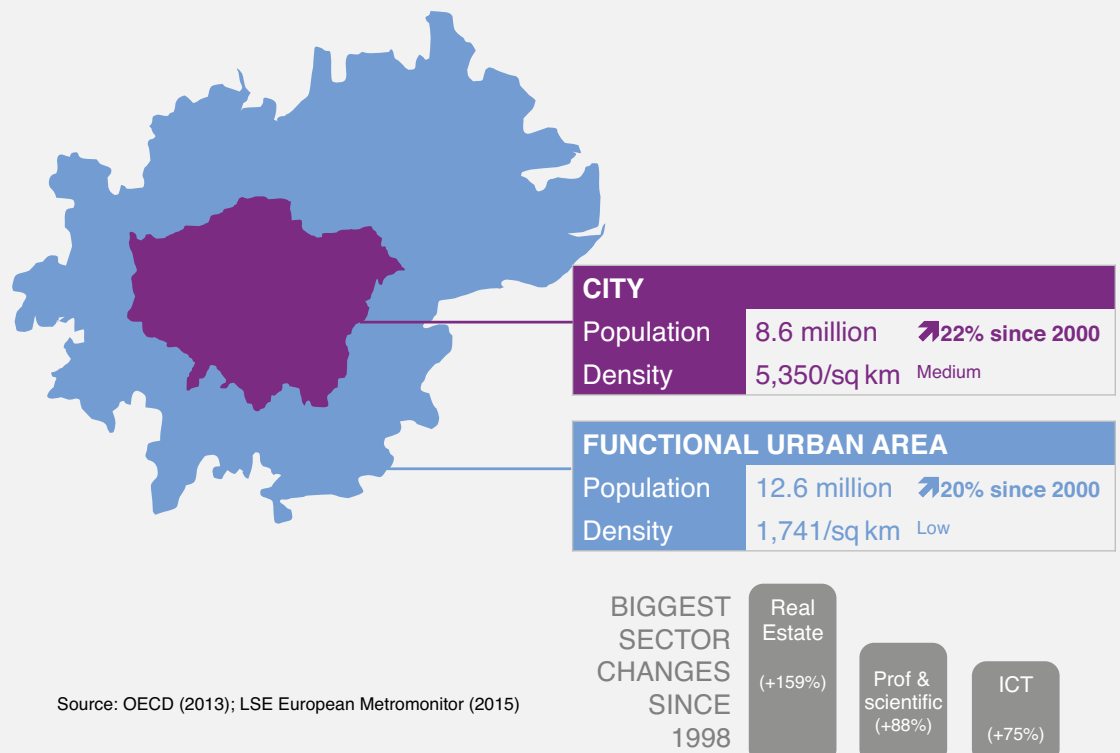
The 'regionalisation' of London since 1945, a direct result of population dispersal and green belt policies, has had a lasting effect on the appetite for density in and around the city. The atrophy of many of the regional 'New Towns', that were the main policy for accommodating London's growth in the 1950s, into 'one industry', 'narrow income', and 'single tenure' communities has now made redevelopment and densification within London a preferred solution for housing a growing population. At the same time, the 30-year experiment with high-rise 'inner city' social housing had a deeply negative impact on perceptions of high-density projects. The mixed lessons from London's post-war development did, though, teach the next

generation the value of complementing density with amenities, public space, design, maintenance and mixity.

London is now in its third cycle of re-urbanisation since population flight unexpectedly went into reverse in the mid-1980s. The protracted, and initially very challenging, experience of Canary Wharf ultimately kick-started a new emphasis on higher density, 24 hour living and mixed amenities, on former-industrial sites unlocked by transport investment. London soon became an expert at using special purpose vehicles to deliver intensive redevelopment at a scale that has added genuinely new dimensions to the city.

Decisions to license high-spec tall buildings helped absorb huge floor-space demand in the City, and added an extra dimension to London's business and visitor brands. Higher commercial densities in an ever-expanding city centre have been matched by residential and leisure facilities to serve them, resulting in big overall gains in efficiency and sustainability, whilst still preserving London's special vernacular.

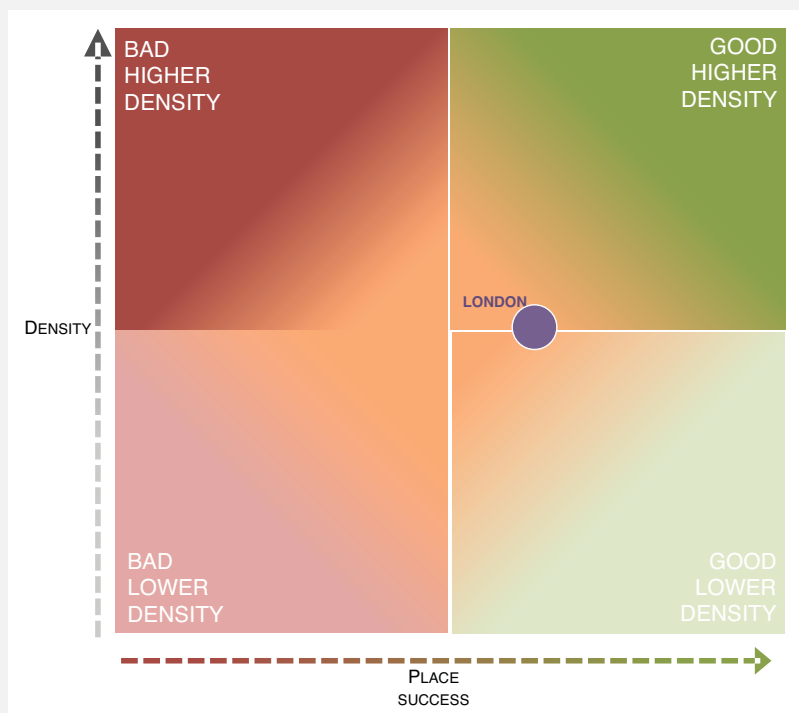
Figure 1 Population, economy and density in London's city limits and functional urban area



London has had success in upgrading large housing estates with improved densities and better social infrastructure. Average densities of newly completed housing in London are now close to 120 dwellings per hectare, double what it was in the mid-1990s.¹ The lifestyle preferences of a new generation of young professionals mean that many are now willing to trade off private space for access to high quality public space and facilities.

London has a fairly mixed balance sheet in its experiments with high density. Some of its densest inner city areas are certainly very deprived, but many others (Bayswater, Shepherds Bush, Earl's Court) are affluent and highly liveable parts of the city. The highest density London locations are often very successful places, with strong records of jobs, skills and health. London has shown an ability to deliver dense apartment living in a country where private homes were previously the norm.

Figure 2 London's current density profile

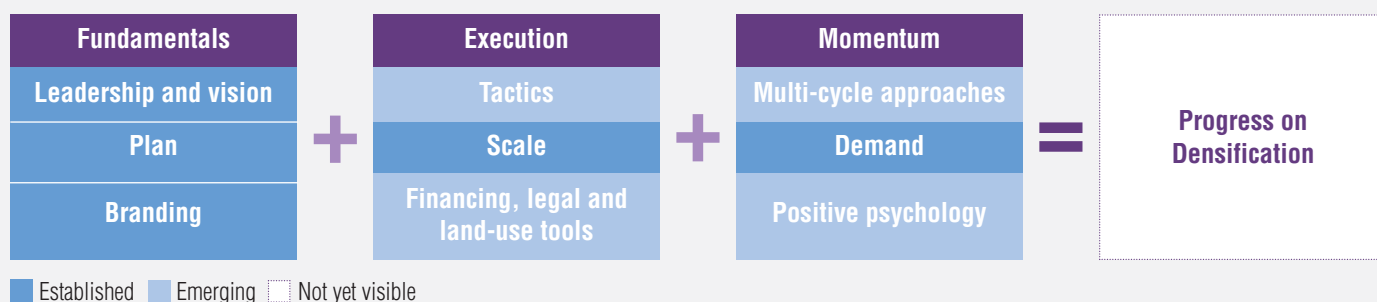


London today: the densification imperative

Greater London has surpassed its historic population peak (8.6 million in 1939) and continues to absorb an extra 100,000 people each year. Extraordinary demand from within and outside the EU to work in Europe's global city shows no sign of abating, and major improvements in education, transport and public space in the past 25 years now incentivise existing families to stay rather than move out. At the same time the growth of media, tourism, software and technology is driving a more diverse and robust mix of real estate. Together these factors present an unavoidable imperative for London to find new and bold solutions to accelerate both residential and commercial supply.

London has many of the key ingredients that are necessary to deliver good density at the necessary pace and scale. Progress in leadership, strategic planning, and place making has enabled the city to turn the corner towards good density. The planning powers of the Greater London Authority (GLA) and ongoing transport investment have helped London become much more tactical about how densification can take place. In its third edition, the London Plan remains a big enabler of a more compact city and steers development towards an ever growing number of 'Opportunity Areas'. London's powerful narrative and promotional branding about the city it wants to become has created a more positive psychology around density and the vibrant urban lifestyles it enables.

Figure 3 London's ingredients to achieving progress on density



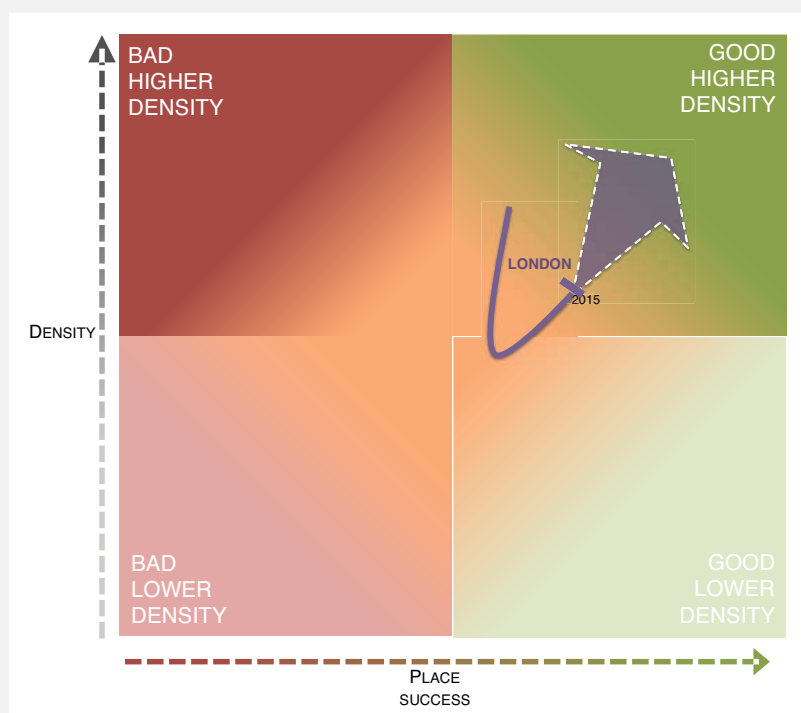
London's most recent plans envisage the next million Londoners to be accommodated on brownfield sites. This will serve around a decade of population growth. After that, how London meets its long-term demand will require harder choices and more proactive advocacy. **London now needs to focus on the tactics and the multi-cycle approaches that can maintain its momentum towards good density.**

This means a co-ordinated mix of much higher densities in the core, suburban intensification, regional city growth and even targeted releases of green belt land, may all be needed. To build an even more positive psychology around density, the city will need to prove that densification can improve opportunity and affordability in some locations without threatening home values in others.

The imperative to densify offers avenues for London to become a less mono-centric city and optimise its latent poly-centric structure. For this to happen London will need greater infrastructure capacity beyond Crossrail 1. The big challenge is how to fund it.

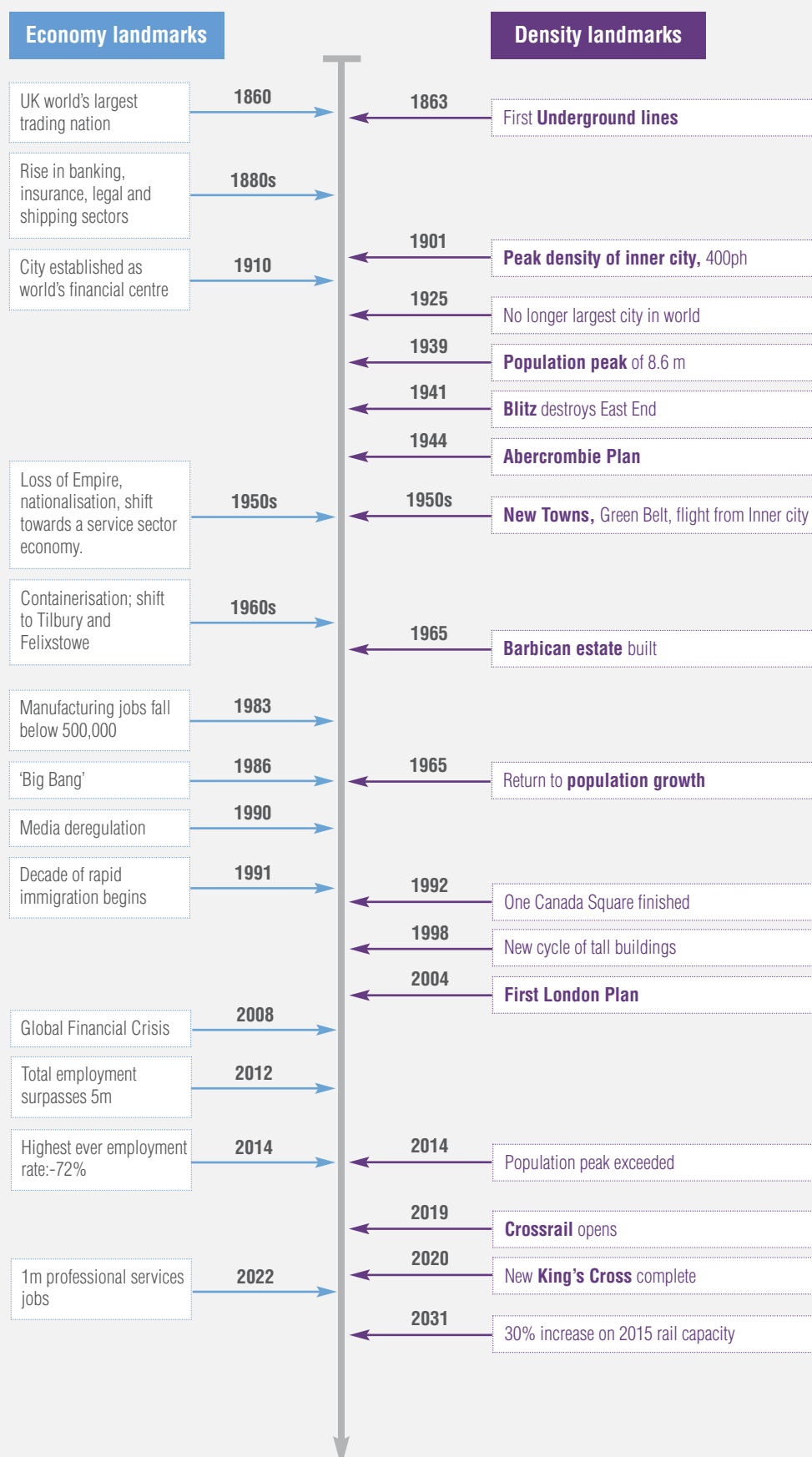
Although some innovative financing tools which capture the value of future densification to pay now for new infrastructure, are in effect (e.g. tax increment financing at Vauxhall Nine Elms Battersea) the city now needs to expand the use of value capture instruments and to achieve substantive fiscal devolution (self-financing powers). This will also provide a better system of incentives to deliver housing at the necessary pace and scale. Densification in Outer London also needs local councils to become more effective and empowered stewards of development. Fiscal reform to boost borrowing powers and the share of locally held taxes can improve accountability and joined-up decision-making.

Figure 4 London's journey towards better density



The implications if London fails to seize the densification imperative could be profound. Staying locked in to a low-medium-density model will result in unaffordable housing and commercial space, worsening air quality, more costly commuting, less adaptability to the needs of the new sectors in the innovation economy, and many suburbs that lack diversity and attractiveness. All this ultimately would add up to a less competitive and less successful city in future.

Figure 5 Timeline of economic and spatial change in London





History of urban change in London

2.1 The legacies of early approaches to density in London

London's spatial character has evolved through many cycles of partial and organic development and re-development. The legacies of Roman and Anglo-Saxon London included the City of London fortification, a network of roads such as modern day Oxford Street, Farringdon Road and Edgware Road, and later the growth of surrounding farmsteads and villages in places such as Chelsea, Enfield and Hampton.

When medieval London re-emerged as an important civil and commercial centre, its built form adopted the old Roman street layout and featured high densities and diversity of uses. Yet even as density increased above 100 people per acre, at no point did it reach the highs seen in Paris, the Italian city-states, or even ancient Rome or Alexandria.²

Medieval spillover and sprawl

The connection from Strand to the Royal and political centre in Westminster saw activity begin to spill over the medieval walls, including across the River Fleet that flowed from Hampstead to Temple. As public health improved and population grew, settlement expanded within nearby villages such as Southwark and Tower Hamlets. Elizabeth I's proclamation in 1580 against construction within three miles of City of London was widely ignored.³

London's layout was revamped in the aftermath of the Great Fire of 1666. Legislation drafted by writer John Evelyn for Charles II to establish a ring of gardens around the city was scrapped, and a succession of Rebuilding Acts specified wider road widths and a new phase of redevelopment. Over the next century, London's growth on cheap building land extended out to Soho, Shoreditch and Spitalfields, and along the southern bank of the Thames from Vauxhall to Rotherhithe. London took on the appearance of a new and, by European standards, low density city.

The character of London's density was then transformed by the industrial revolution, and the population reached a world high of 2.8 million people by 1850.⁵ What is now known as 'Inner London' increased in density well beyond its medieval centre. Although ambitious plans such as JC Loudon's 1829 concentric zones and Joseph Paxton's 1855 Great Victorian Way were rejected, London succeeded in upgrading many of its streets and squares that supported medium to high densities. By 1901, London's core supported densities of up to 400 people per hectare.⁶

Metropolitan growth and the 'city of villages'

In the second half of the 19th century London began to expand outwards at an unprecedented pace. The creation of a Metropolitan Board of Works, and later the London County Council, enabled the construction of critical infrastructure (sewers, bridges, streets, parks) that could support suburban living. The growth of the railways, and the expansion of the Underground network from 1863, allowed people to live further out and commute to the city along radial transport lines.⁷

This period of transport-led suburban development, with the rail providers playing an active role, saw the city reach more or less its maximum spatial extent by the early 20th century. In the process, London swallowed up numerous towns and villages that would later become part of its identity as 'a City of 100 Villages'.⁸ Densities in suburban areas declined as whole independent estates of detached and semi-detached villas began to be constructed for the first time. Such low density neighbourhoods proved popular because of widespread opposition to high density, which was associated with slum housing and crime.⁹

Figure 6 'London on the Thames' 19th century engraving⁴



2.2 London's dispersion: interdependence with the South East

In the inter-war era, new ideas about regional towns and Garden Cities really took hold.

The concepts first floated by Sir Ebenezer Howard in the late 19th century, including the benefits of suburban life and dispersed industry, gained traction in national policy as increasing evidence appeared that poorer communities favoured suburban homes.¹⁰ The 1938 *Commission into the Redistribution of the Industrial Population* cited the perceived social ills of higher densities and concentrated industrial activity as a key reason to disperse populations.¹¹

The Second World War ravaged large parts of London, especially the East End and the Docks, and the post-war reconstruction drive gave planners a chance to implement these ideas. Population dispersal from the centre, then perceived as unsanitary and overcrowded, was then actively favoured.¹² This policy endorsed a regional approach that would avoid rapid and unmanageable sprawl, beginning London's deepened inter-dependency with the Greater South East.

The 1944 **Abercrombie Plan's** recommendations – including the creation of a Green Belt and eight 'New Towns' beyond London – were enthusiastically pursued from the 1950's onwards.¹³ The low density New Towns such as Stevenage, Harlow, Welwyn Garden City and Hemel Hempstead were planned mainly for council rented housing. This saw them become working class communities in self-contained economies, often with a limited range of employers.¹⁴

Between 1939 and 1981, over two million people left the capital – with most of the loss concentrated in the inner boroughs. At their peak before World War 1, the inner London boroughs were home to five million people, a figure which had halved forty years later.¹⁵ The structural decline of British industry saw Inner London areas such as Shoreditch, Bethnal Green, Islington, the Docklands and Southwark lose their economic rationale, accelerating the out-migration to the rest of the South East. Outer London, on the other hand, stayed relatively stable. These changes led to the population distribution we see in London today, with 60 percent of Greater London residents living in the outer boroughs.¹⁶

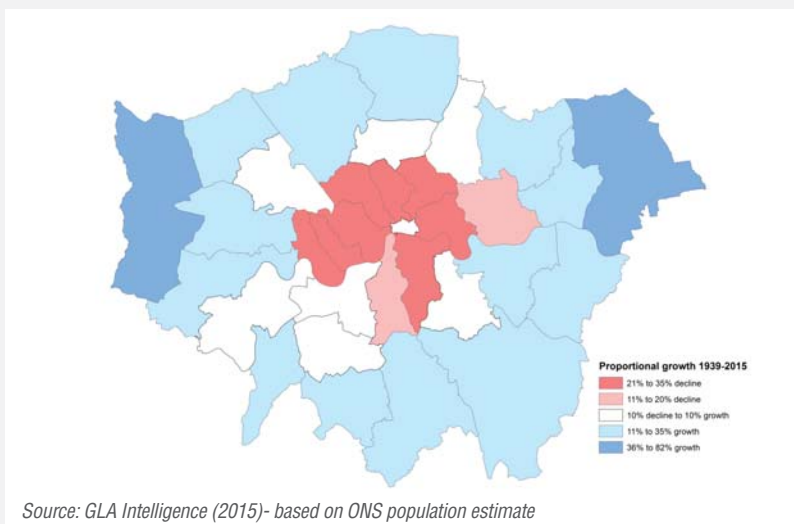
The unexpected consequences of de-concentration

The containment of growth by London's Green Belt encouraged 'leapfrog' development into towns beyond the Green Belt such as Dartford, Guildford, High Wycombe and Watford, by constraining the growth potential of Outer London boroughs such as Havering, Bromley, Kingston and Harrow.

During the half century of dispersal, London's functional population did in fact continue to grow as the city became a city region. Today's boundaries for Inner and Outer London witnessed major out-migration for decades, but the functional urban area supplying the workforce to the central business districts grew, largely through the network of New Towns. This gives rise to challenges around the precise definition of London and at what political scale strategies of densification ought to begin.

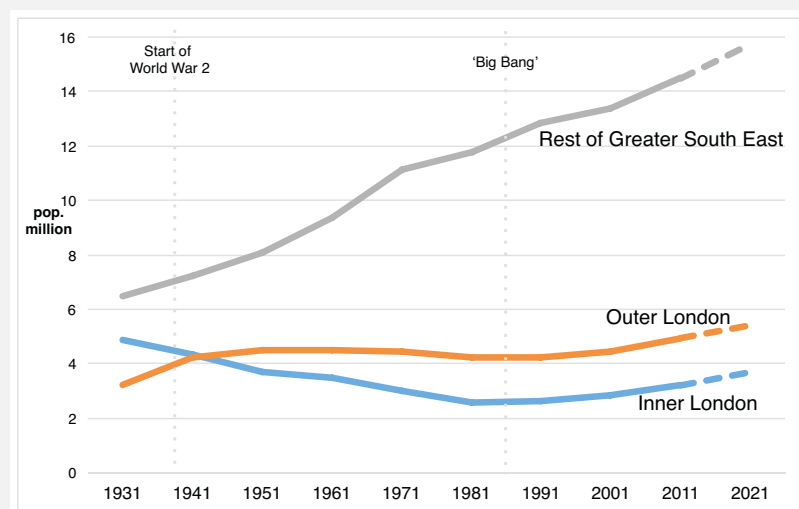
The post-1945 period also saw the rapid construction of high-rise social housing in Inner London. Built to relatively high densities (between 90 and 110 dwellings per hectare), they sometimes housed fewer people per hectare than terraced Georgian and Victorian housing in London,¹⁹ because of the large open spaces at their base. Islington's terraced housing densities reached 185 dwellings per hectare in 1965, much more than most post-war housing estates.

Figure 7 Change in population in London boroughs, 1939-2015¹⁷



Source: GLA Intelligence (2015)- based on ONS population estimate

Figure 8 Population over time in London and the Greater South East



The post-war high-density projects of London County Council and big-spending boroughs often proved to be failures. Over 300 estates were built between 1964 and 1974, including major developments in Roehampton, Peckham and Paddington, but the high-rises damaged street life. Many became inextricably linked with widespread disaffection, poverty, crime and addiction. This culminated in outbreaks of violence and rioting in the 1980s, including in Brixton and Tottenham. The high rise model was no longer seen as a workable model for London.

The perceived failures of high-rise housing and New Towns have shaped the political appetite for the type and location of future growth in London.

The New Towns rapidly became seen as 'working class ghettos'²⁰ and the political backlash against them by wealthier residents in the South East meant that redevelopment and densification within Greater London gradually became seen as a better solution. The social problems of inner-city council housing equally led to a realisation that higher density housing needed more careful design, mixed-use programmes, better maintenance and social support.²¹

2.3 Three decades of re-urbanisation in London

The mid-1980s proved to be a turning point for London's re-urbanisation. The 50-year decline in Inner London's population began to reverse. Improvements to quality of life and the 1986 'Big Bang' of financial services pushed demand for new office space and city centre living.²² Central government proactively supported regeneration schemes that could support higher value and internationally oriented clusters to replace some of the employment lost to declining industries.²³ A new financial centre on the site of derelict Docklands at the Isle of Dogs (Canary Wharf) kick-started a transformation in the approach to transport-led re-urbanisation, reversing years of under-investment (see Box).²⁴

Redevelopment of council owned housing estates

began to take place across London, with extra homes being built for private sale in order to subsidise new or refurbished social housing and community facilities (see Box on Woodberry Down below). In many cases, density is being increased on one small part of the site in order to create enough cross-subsidy to build lower and medium-rise socially rented homes. Examples include:

- **Woodbury Down** estate (see Box)
- **Heygate Estate** at Elephant and Castle (being rebuilt at c. 270 dwellings per hectare).³⁰
- **West Kensington** and **Gibbs Green** estates adjoining the Earls' Court exhibition centre (minimum 135 dwellings per hectare).³¹
- **Colville Estate** near Shoreditch (increasing from 438 to 925 dwellings).³²

The rise of tall buildings proved critical to absorbing demand in London's Central Activity Zone (CAZ).

After Canary Wharf's pipeline of tall buildings was rapidly filled, and strong demand was shown for new developments in Paddington, London Bridge and the A4/M4 Golden Mile near Brentford, office availability in central London had nearly halved in the late 1990s. But a new generation of iconic tall buildings emerged based on a high quality of craft and materials. Amongst the most illustrious included Norman Foster's 'Gherkin', the Broadgate Tower, Heron Tower, the 'Cheese Grater' and 'Walkie Talkie'. These buildings have helped cement London's leadership in banking and insurance, and have been popular with business and visitors alike.

Canary Wharf: learning the ingredients of vibrant density

Canary Wharf is an example of a demonstration project that eventually found the right ingredients for good density. Initially Canary Wharf and nearby Heron Quays had been designed to be relatively low density and single use (offices). There had been no anticipation of the demand for 24 hour living and mixed amenities, and there were just six shops when the first offices opened in 1991. Slow infrastructure progress was one reason the project went bankrupt in 1992.

After a financial rescue, the building-use guidelines diversified the development mix, planning for restaurants, hotels and entertainment. A public private financing deal for the DLR and Jubilee Line Extension was successfully negotiated. By 1998, nearly half of the development corporation LDDC's public spend of around €2.6 billion had gone into transport and access improvements. Demand then rapidly picked up.

Figure 9 Canary Wharf in 1992 (l)²⁵, and by 2006 (r)²⁶



Photo by The Lud: License: CC-BY-SA 3.0

Canary Wharf now hosts an employment density of 600,000 per square mile. Between 1988 and 2006, morning peak rail commuters increased by 700 percent, but private car commuters increased by just 50 percent. Had Canary Wharf been lower rise, longer walking times would have diminished the public transport attraction to employees, clients and visitors.²⁷

In recent years the project's owners have succeeded in shaking off the area's image as a 'financial services ghetto'. They have delivered several mixed-use extensions that include a large residential offer, including some social housing.²⁸ As well as providing incubation support for tech firms, a new medium-rise urban village is being developed next to the trademark skyscrapers, while the new shopping centre at the forthcoming Crossrail terminal features more niche retail options. The area is now home to over 60 bars, cafes and restaurants.²⁹

Densified city villages: Woodberry Down, Hackney

Woodberry Down is a housing estate located close to Finsbury Park, to the north east of Central London. It is one of several council owned estates in London which are currently being rebuilt at higher densities. The estate was constructed between 1948 and the late 1960s, and consisted of 42 blocks of local authority housing. The estate was high rise, but surprisingly low density, with just 1,981 flats in 64 acres of space. When first built, Woodberry Down was regarded as a fine example of municipal housing and was commended for its modern community facilities, including one of the UK's first comprehensive schools and the first purpose-built NHS health centre in London.

However, disinvestment in the area over subsequent decades resulted in the housing stock becoming dilapidated, to the extent the estate was used in the filming of Schindler's List, as the set for the Warsaw Ghetto. Hackney Council explored options for renovating the existing buildings but, in 2002, a structural assessment identified that repair and upgrading of existing buildings would be more expensive than redevelopment.

The Council has now embarked on an estate regeneration scheme with partners Berkeley and Genesis Housing. Construction began in 2009 and the project is expected to be completed in 2032.

Figure 10 Woodberry Down Estate



Photo by McSony, License: CC-BY-SA 3.0

The estate is being demolished in seven phases, and rebuilt as a mid-rise, mixed-tenure community at nearly three times the previous density. On completion, there will be 5,550 new homes (compared to the original 1,981), as well as three new public parks, shops, business premises, a new children's centre, an expanded primary school and a new secondary school academy. The increased housing density and proximity to public transport (Underground and Overground stations) is expected to provide the critical mass to support these new community institutions.

Five years into the programme, surveys reported that overall life satisfaction at Woodberry Down is high at 90 percent – a full 30 percent higher than the average in the UK (60 percent) and higher than the average for other similar areas (77 percent).³³

For companies in the city's expanding financial services and ICT sectors, especially given the trend for mergers and consolidation, tall buildings are desirable because they provide practical floorspace and image advantages. Tall buildings have also offered the flexibility for tenants to grow or shrink, compared to smaller buildings.

High density commercial development near to central Zone 1 train stations has reduced the need to travel and encouraged the use of public transport. Tall buildings have also released more land for public realm, conservation and environmental purposes. Higher commercial densities in an expanded City of London has also encouraged increased densities of residential and leisure facilities to serve it.

Densification and high quality high-rise is increasingly taking place beyond the historic CAZ, as Central London effectively expands.

Prior to 1991, the core London office market consisted of the The City of London (also often called The Square Mile), Mayfair and St James's and Victoria, but the success of Canary Wharf, London Bridge, Victoria, Waterloo, Paddington and now Stratford as new suppliers of high quality flexible space has been striking. These new sites offer not just affordability but Grade A buildings, a vibrant public realm and proximity to cultural and entertainment services.

Current trends and drivers for density in London



As a successful and rapidly growing city, London feels the effects of global trends first and most acutely. The demand to live and work in the city creates urgent challenges around housing supply and unaffordability and sharp divides of interest and opinion between asset-owners and asset-renters. At the same time London has also been among the first to experience new trends in the innovation economy, sharing economy, and changed corporate office space needs.

The chief impetus for re-densification in London stems from rapid and largely unforeseen population growth.

While the city has taken 75 years to recover from its 1939 peak of 8.6 million, with more than 1 percent growth a year it is now well on its way to reach 11 million people by the 2030s.³⁴ Domestic and foreign migration increasing has been sustained by a relatively open migration regime. Today, more than a third of Londoners are foreign born, twice the level of 1991.³⁵ The original London Plan had underestimated annual population growth by half, and now foresees the need for 400,000 homes within the boundaries of the green belt.³⁶

The rise in population is driven by high rates of immigration, declining rates of domestic out-migration as families choose to stay, and among the highest birth rates in the UK (and Europe).³⁷ 20 percent of all births in the UK are now in London. As a result of these severe population pressures, residential land values increased by 20 percent in 2014 alone, signaling to policy makers the urgent need to re-prioritise the expansion of the residential building stock.³⁸

The rise of London's international knowledge economy

has been a major impetus for urban regeneration.³⁹ The "Big Bang" of 1986 – which deregulated London's financial markets – opened up vast new opportunities in professional and innovation sectors. The number of foreign banks tripled by 1991, and the financial and business sector grew at a rate of 6 percent per year until the financial crisis.

Today, as a result of the huge expansion in financial, legal, accounting, consultancy and other professional services, London can boast the highest concentration of such activities of any world city.⁴⁰ The professional services alone employ up to 1.5 million people, again more than any of its global city peers. The rise of these sectors was later matched by concentrations of media, telecoms, tourism, software and technology employment.

This changing sector mix has allowed occupational densities to increase. The occupancy ratio in office property has fallen from around 15 sq m per employee to 12 sq m per employee (net internal area) since the turn of the century, with sectors such as professional services, media and IT sectors operating at close to 10 sq m per employee.⁴¹ Developers are even moving towards a ratio of 8 sq m per employee in response to occupier demand.

The drivers of re-population and economic globalisation have spatially transformed London. Numerous locations have been densified and re-modelled. Following Canary Wharf's emergence in the late 1990s as a second high-density CBD, recent projects have paid more attention to integrating lifestyle, employment and retail opportunities.⁴²

- **Stratford and the Olympic Site** – London's largest Opportunity Area – has emerged as a higher-density retail, commercial and cultural district. As well as benefiting from its improved connectivity and green space, Stratford's growth has been catalysed by the arrival of the University of East London, Birkbeck, the Financial Conduct Authority, and Westfield, one of Europe's largest retail centres.
- **The South Bank**, stretching from Bankside to Bermondsey and Greenwich, has densified as a result of central government investment in riverfront improvements and cultural venues, including the Tate Modern gallery, the Millennium Bridge, the Millennium Dome and Borough Market. Their proximity to the CAZ has unlocked these sites as new areas for densification. The opening of the Shard in 2013, the upgrade of London Bridge rail station, and housing densification nearby, stand out as key outcomes.⁴³

The re-intensification of King's Cross

King's Cross is a major railway terminus on the northern edge of Central London, that is at the heart the largest city centre redevelopment scheme in Europe. It illustrates how London is optimising its brownfield sites on the city centre fringes.

In the 1980s King's Cross offices commanded the lowest rents in Central London.⁴⁴ The decision in 1996 to relocate the Channel Tunnel Rail Link from Waterloo to nearby St Pancras station proved the development catalyst for the owners of 67 acres of disused industrial land nearby (London and Continental Railways and Excel).

The 2004 London Plan identified King's Cross as one of six key Opportunity Areas in Central London, with highest densities to be closest to the rail termini. The site developers, Argent, produced a proposal for a mixed-use scheme of old and new buildings, 10 new public squares and 20 new streets. Its vision had a strong focus on art, culture, and heritage and the creation of a new '24 hour' city district. The vision was for high density without being high rise. Preservation of Victorian buildings and strategic views was as much a priority as the intensification of land use.

Figure 11 Intensification of Uses of Former Industrial Buildings in King's Cross

Building	Former Use	New / Intensified Use
The Granary	Warehouse for wheat storage	Home to Central Saint Martins art college, as well as restaurants
The German Gymnasium	Gymnasium (pre war)	Restaurant
The Coal Drops	Storage of coal (and later other goods)	Boutiques, restaurants, galleries, and music venues.
Midland Goods Shed	Carriage shed and space to unload potatoes	Supermarket, café, cookery school, and public cultural space.
The Great Northern Hotel	Originally a 100 bedroom hotel, derelict for 12 yrs	Luxury hotel

Figure 12 The Granary Building and surrounding public spaces



Photo by Matt Kieffer. Licence: CC BY-SA 2.0

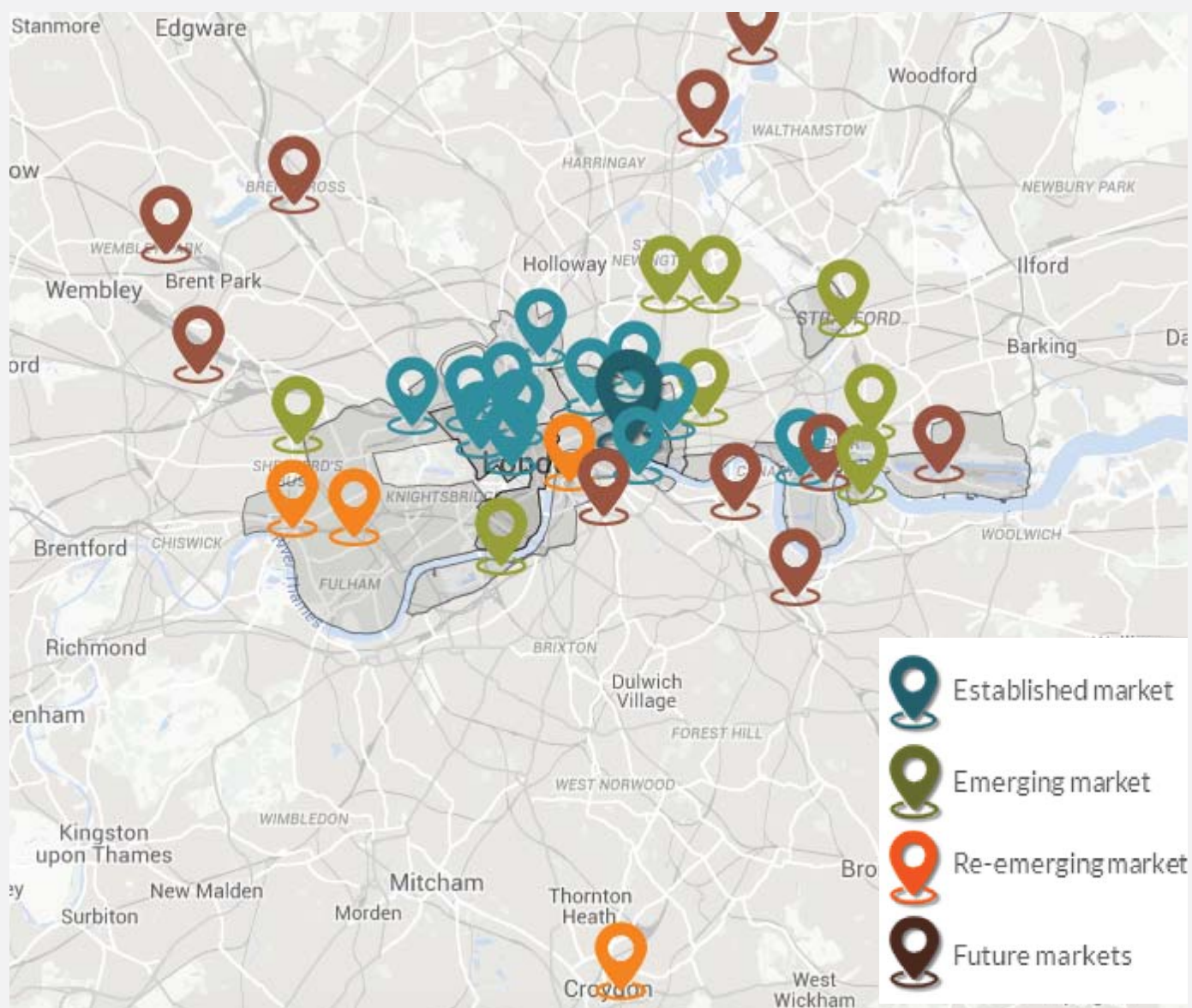
The regeneration project was granted planning permission in 2006 and the first parts of the development were completed in 2011. In addition to the 50 new buildings which are being constructed on the site, 20 former industrial buildings are being creatively converted and restored, intensifying land use, as Figure 11 illustrates. The development has already been named "One of England's 20 Best Heritage-Led Developments" by English Heritage.

When the scheme is completed in 2020, 45,000 people a day will benefit from the 3.4 million square feet of office space, 500,000 square feet of retail and leisure space, and close to 2,000 homes.⁴⁵ This represents a major feat of densification. More than half of the site will be occupied by buildings, and a third will be landscaping / open space. Open spaces are being designed to enable a high density of interactions. Temporary uses of the streetscape, such as markets, public artistic performances, giant screens for sports events, and festivals also take place regularly, attracting more people to visit and make use of the area.

- The Eastern City fringe, has seen rapid intensification with Shoreditch and Old Street drawing transport, residential and digital sector investments. This has also extended to King's Cross (see Box). Retail-based densification around transport hubs is also visible at the fringes of Inner London, including Westfield shopping centre next to Shepherd's Bush station, and more recently the regeneration of Brent and Cricklewood's town centre.

Corporate demand is also driving the creation of many new markets at the edge of the CAZ and beyond (see map).

Figure 13 London's cycles of office market development as detailed by GROW LONDON⁴⁶

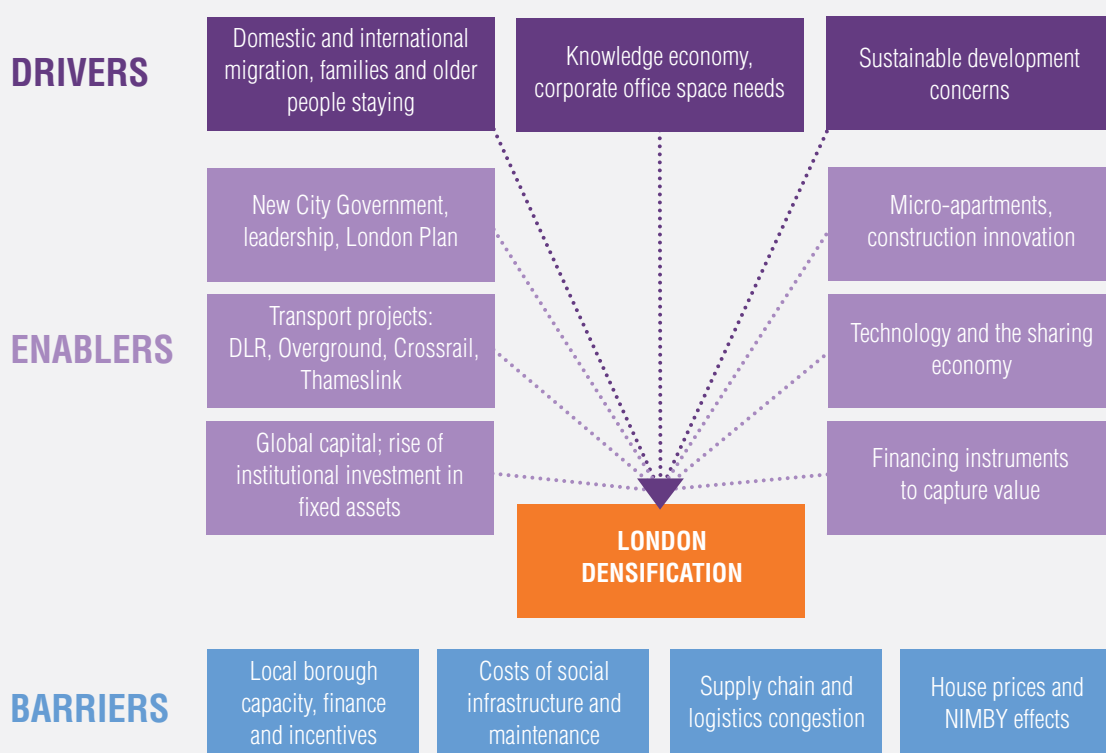


Source: JLL and London & Partners (2015)

The pace of London's economic growth has left the city with a long-term commercial supply shortage. CAZ boroughs have not treated the growth of commercial floorspace as an urgent priority recently, and the pipeline of office development has dried up in recent years. The City of London's most recent strategy identifies only 500,000 sq m of new office space between 2016 and 2026, based on forecast employment growth of just 27,000.⁴⁷ Tenant demand however is very high and there was 220,000 sq m of new take up in the first quarter of 2015 alone.⁴⁸ Office availability fell by 14 percent in 2014, and vacancies are at historic lows of 2-4 percent in parts of the West End and the Square Mile. One factor is the relaxation of planning rules enabling conversion to residential. Projects such as Bishopsgate Goods Yard aim to create luxury housing in a historically commercial site, but in effect are driving a rise in rents and scarcity of commercial product that may reduce affordability in a number of London's growth sectors.⁴⁹

The rise of sustainable development concerns is the other important driver of London's spatial approach since around 2000.⁵⁰ London now has a rigorous focus on environmental outcomes and the London Plan advocates high-density developments and live-work villages wherever possible to encourage cycling and pedestrianisation. The introduction of the Congestion Charge in 2003 was an important first step for sustainable and practical mobility. Concerns about the social outcomes of regeneration have also led to more integrated planning approaches that combine labour market interventions, housing accessibility, education and spatial transformation. Transport for London's (TfL) capacity for strategic modeling has been important in improving the way densification is planned on both inclusion and environmental grounds.

Figure 14 Drivers, Enablers and Barriers to Densification in London



The enablers and constraints of density in London



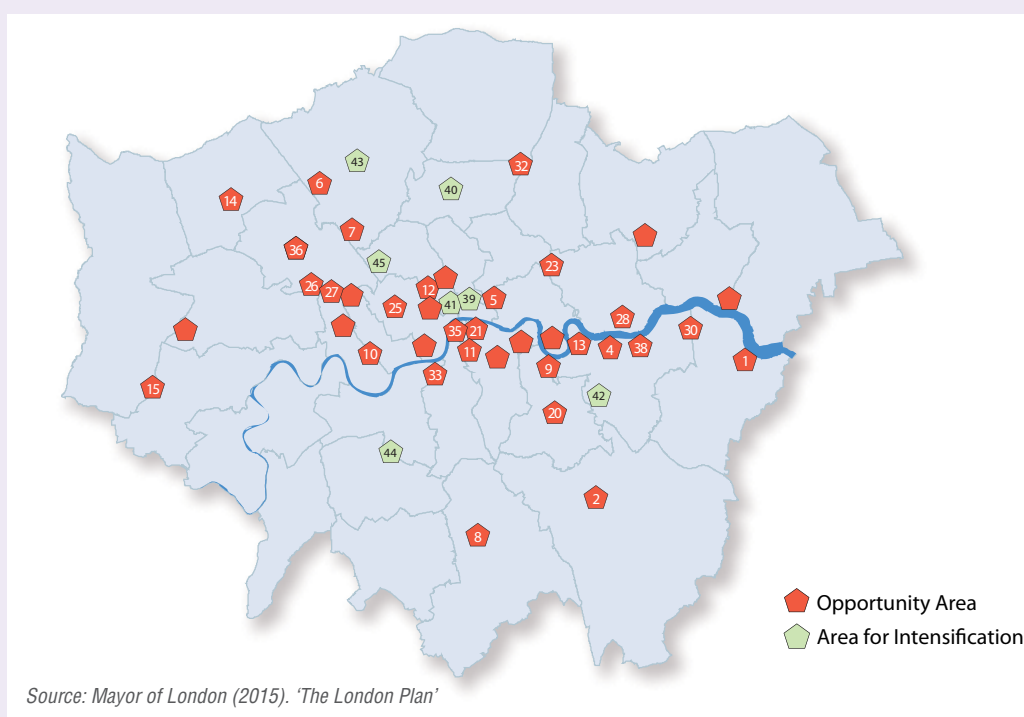
The re-introduction in 2000 of a metropolitan authority with economic development, planning and transport powers has allowed London to be much more strategic about its re-urbanisation. First published in 2004 by the Mayor of London, and revised again in 2015, the London Plan and its subsequent iterations have reacted to new population pressures and the need to sustain London's role as a global city, with a strong focus on the kind of places that appeal to talent and investment. The plan helps London move towards a more compact city approach. It rules out further sprawl in order to accommodate the extra homes and jobs required in London over the next 20 years.⁵¹

The London Plan currently identifies over 40 zones for mixed-use intensification, especially around transport interchanges.⁵² Dozens of 'Opportunity Areas' have been designated for redevelopment (see Box). They include large parts of East London, which has been given spatial priority for redevelopment (such as the Olympic site, Stratford and renewal of the Lea River Valley). Most are in Inner London, but Croydon, in South London, is one example of an Outer London centre earmarked for its intensification potential because of its transport links and need for jobs.⁵³

Over the last decade, London has identified 38 Opportunity Areas that have capacity to host new homes and jobs. They are large sites of brownfield land with potential to be high density centres enabled by improved public transport links. Between them they can potentially sustain over 550,000 new jobs and 300,000 extra homes. Local boroughs have lead responsibility for delivering these projects.

A recent evaluation of future progress for Opportunity Areas has argued that the Mayor and the Greater London Authority (GLA) need to take a more active role to support boroughs in implementation and to require boroughs to introduce simpler planning rules. Business plans for the projects are also recommended to give more confidence to investors and public bodies.⁵⁵

Figure 15 Opportunity and intensification areas according to the London Plan⁵⁴



Under the London Plan, the GLA is also steering development towards areas that can absorb further residential and commercial demand – such as Canada Water, Dalston and Wood Green.⁵⁶ Under the leadership of Mayor Boris Johnson since 2008, the more recent amendments also push to densify selected suburban town centres in Outer London, in response to a perceived over-emphasis on London's CAZ.⁵⁷ This has helped foster demand for new urban space and maintain momentum for density across political and economic cycles.

Technology and the sharing economy is an especially important new enabler of increased density in London. Tech innovation in accommodation helps make the London population even more transient as more people choose to experience the city for a short space of time. Similarly the advent of 'Boris Bikes' and carpooling services has reduced public transport commuting demand. The city has been one of the leading areas of impact for Uber, Airbnb and Zipcar, which improve the efficiency and convenience of collective usage.

The rise of interest in micro-apartments designed for young professionals is optimising the use of built assets in many parts of Inner London. A number of new landlords such as Pocket Living, The Collective and RealStar Living have made progress on refurbished blocks of studios, new tall towers, and converted students' halls of residence, in areas such as Acton, Old Oak Common, Notting Hill, Elephant & Castle and Stratford. Their fully furnished properties average 20–35 sq m in size and feature well furnished social spaces. Developers are able to offer lower prices because of density and efficient use of space.⁵⁸

London's new approach to density has been made possible by 20 years of large-scale transport project investment, including in the Docklands Light Railway (DLR) Jubilee Line, the orbital London Overground, and now Crossrail and Thameslink.⁵⁹ TfL has ensured that its plans are fully integrated with the London Plan's spatial framework in order to coordinate land-uses.⁶⁰ Improved systems mean that driving to work as a regular commute has fallen considerably from 36 percent in 2001 to 28 percent in 2011.⁶¹ TfL estimates that by 2031, current and planned upgrades to the rail network will increase peak time capacity by 30 percent, and successfully cope with the planned population rise.⁶²

London's regional commuter transport system has served a big surge in long-distance two-way travel from outside the capital. The number of people working in the city and living elsewhere has been rising by about one percent a year since 2000. One in five city workers now commute from other towns with strong links such as Watford, Slough, Southend and Dartford, as well as further afield in the Midlands where there has been substantial commuter growth.⁶³

Closing the funding gap. In light of public finance challenges, new financial mechanisms are helping to capture the property value uplift and return it to bodies charged with delivering infrastructure. Public bodies in London have found it difficult to acquire land at close to existing use value, partly because of legal precedents that entitle landowners to the 'hope value' of a given site. London has however found a number of solutions to bridge the funding gap for big schemes, including

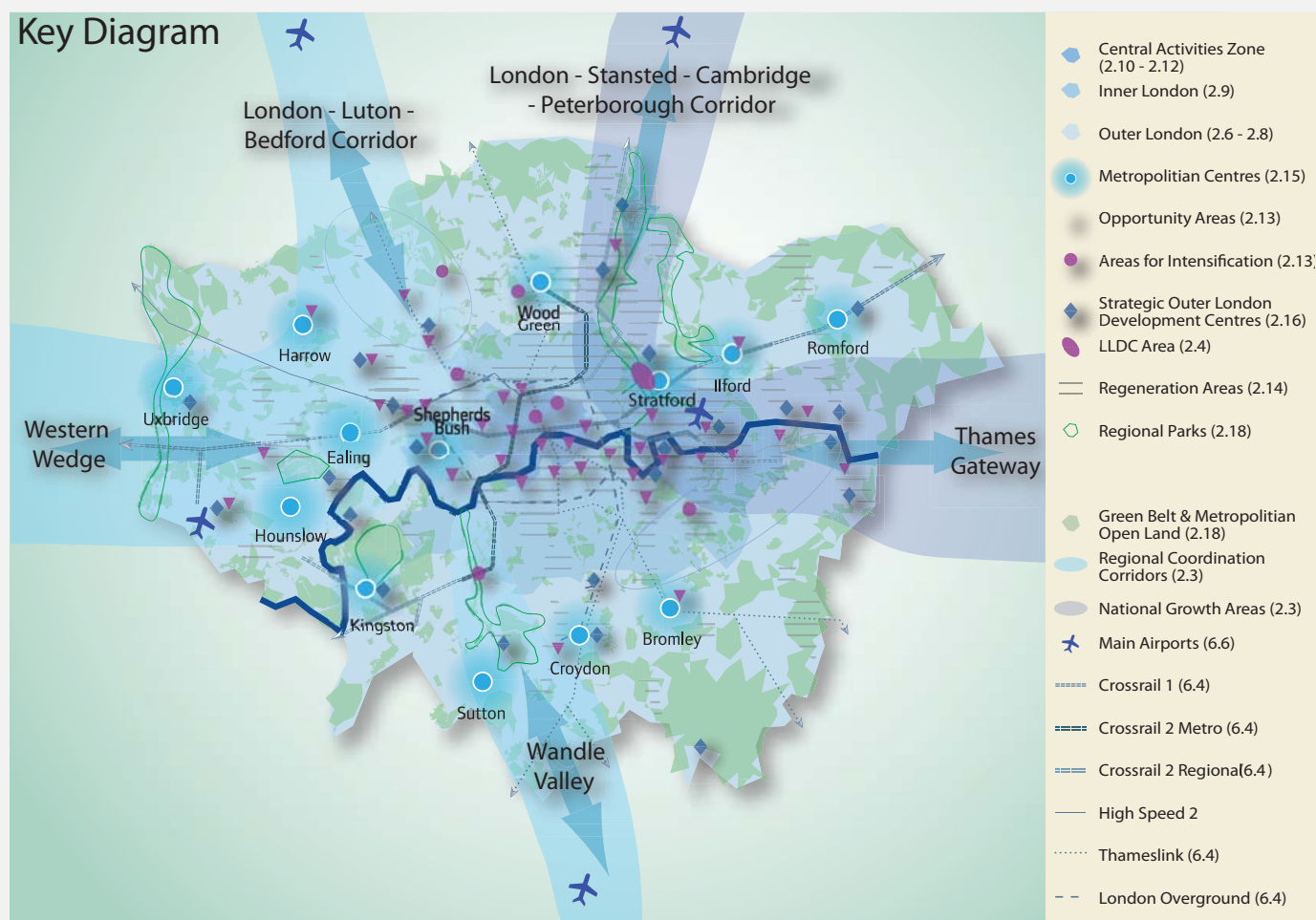
- **Tax Increment Financing (TIF)** e.g. in Vauxhall Nine Elms Battersea (see Box).
- **Business rate supplements** to raise money to pay for Crossrail.
- **Mobilising public land and property portfolios**, which TfL is looking to move forward with. This is being supported by a new London Land Commission which aims to help release the city's surplus public sector land for development.
- **Public Private Partnership (PPP)** for large station projects such as King's Cross.⁶⁵

Other mechanisms being debated include consumer bill surcharges and more use of targeted user fees. More broadly, the city has made a strong case for fiscal devolution of property tax revenue and other revenue streams, as outlined by the London Finance Commission in 2013.

“governments come and governments go – funding comes in three or four year chunks if you are lucky. What we need is that continuity so that we can plan for the long term.”

– **Sir Edward Lister**, Deputy Mayor for Policy and Planning, London

Infrastructure Intelligence (2015). 'Interview with Anthony Oliver', Apr 13th.

Figure 16 London's spatial strategy up to 2031⁶⁴

Constraints

A key constraint on London's capacity to build higher density housing at requisite speed and scale is the performance of London boroughs. Boroughs are expected to meet annual housebuilding targets but there are few implications as yet for failing to do so. Between 2003 and 2013, less than half the boroughs met their average targets, including very low delivery rates in Kensington & Chelsea, Newham and Barnet. Boroughs require greater incentives to deliver housing and the Mayor also needs the capability to intervene where necessary. The devolution of property taxes is one widely preferred solution to create a better system of incentives.⁶⁶

The **costs of maintenance** linked to high density projects are another important constraint. The private sector currently has a big burden to co-ordinate other infrastructure in addition to the built asset. This sometimes results in the deliberate design of barren spaces that discourage use and costly maintenance.

More generally, the need for increased **social infrastructure** to support populations is a key challenge. London's lack of self-governed fiscal resources means that there is only a limited link between population growth and the resources needed to service them.

London's increasingly complex and congested **logistics supply chain** presents barriers for further population growth, especially in Inner London. The rise in courier companies operating at peak hours as a result of the e-commerce boom is exacerbating congestion in central areas. Transport authorities and logistics providers will need to find innovative solutions to re-time and consolidate deliveries, including better click and collect technology and new "urban freight centres" on the edges of London, to reduce vehicle numbers.⁶⁷

London's **housing market** presents both imperatives and constraints in the density debate. On one hand, it is clear to everyone that more housing must be constructed and if there are opportunities to do it in a compact and dense manner it is welcomed. On the other hand, many people in London view their owner-occupied homes as their main form of saving given the high percentage of monthly income that Londoners pay in mortgage payments (and indeed in rents). The consequence of this is that resident Londoners in certain locations may also resist attempts at densification if they believe it impact negatively on the value of their homes (and therefore a significant portion of their life savings). This makes it essential to demonstrate that densification can both increase housing supply and support the drive for more affordable homes in some locations, and, at the same time, increase supply without reducing the value of homes in others.

Making Density Pay: London's use of TIF

The development around Nine Elms / Battersea Power Station would not be possible without the extension of the Northern line to the area by 2020. The site is considered crucial as it is currently the largest reservoir of redevelopable land close to the CAZ. But the proposed densities and scale (16,000 new residential units and 25,000 jobs) would not have been concentrated in the 480 acre site without enhanced transport access.

The costs of the extension are approximately £1 billion – and TfL, the GLA, and Boroughs of Wandsworth and Lambeth have produced an innovative arrangement to pay for it. They have agreed a loan with the central government Treasury for the full amount of the extension, which will be partially repayed by a Tax Increment Financing scheme (TIF). In essence, the loan will be repayed by the projected increase in business rates coming from new commercial developments over a 25 year period. In effect, increased density will pay for the extension, as new activities are set to generate more than enough business rates to cover the loan.

Figure 17 The Battersea Nine Elms project¹



Source: EG Focus

In order to ensure that business rates do increase with new developments, the area has been designated an enterprise zone. A strong case had to be made that future business rates will come from new activity, not just relocations from other boroughs.

The extension of the Northern line will enable a new cluster of medium and high density. New units are expected to be around 8-10 storeys high, with permissions for taller buildings closer to stations. These include Tower One at St George Wharf reaching 180 metres, and the future One Nine Elms, which will include two mixed-use towers of 161 and 200 metres by 2016. The increases in density come with 50 acres of new green spaces and new schools.

The GLA and local authorities have worked in close partnership with developer to create a strong focus on public space and cultural identity that increases desirability, demand and value. A tariff was also negotiated to ensure developer contributions to infrastructure such as power, drainage and parks.



London's examples of 'good' and 'bad' density

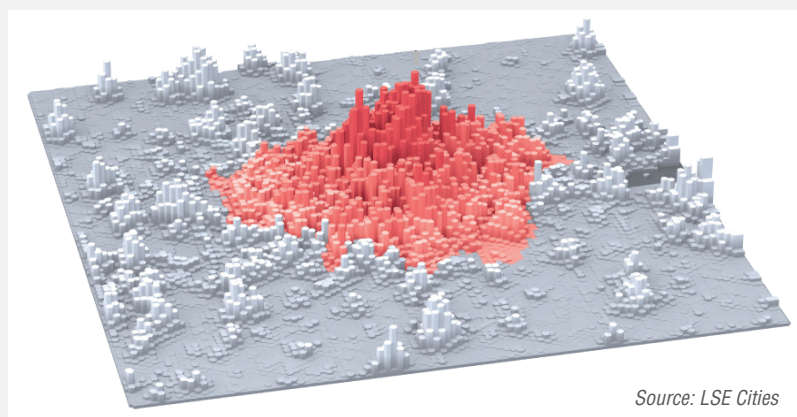
London has among the lowest densities of any global city, with a fairly even profile across the city that reflects a mix of apartment living and single family housing.⁶⁸ Its relative lack of density is visible in comparisons with its peers:

- New York City fits the same population onto just over half the land mass.
- Inner London is about half as dense as the City of Paris and Greater London is only about 65 percent as dense as metropolitan Paris (Paris plus the three surrounding départements known as the *petite couronne*).⁶⁹
- London's urbanised area is less than half the density of Tokyo, and about one third as dense as Seoul.⁷⁰

Low density cities are usually quite car dependent but London is not because its radial public transport system successfully connects the suburban town centres with the CAZ. Car use across Greater London as a whole is fairly low at just 38 percent of all transport. The 2003 Congestion Charge helped reduce further an already small share of car commuting into Central London, and enabled the overall network to promote a modal shift to rail, bikes and pedestrians.

Urban indexes that measure the effectiveness of public transport systems place London in the global top 10 thanks to its network integration and modal split.⁷² When Crossrail, Thameslink and all Overground routes come to fruition at the end of the current cycle, the proportion of London's population with 'good' public transport access or better will jump from 31 to 38 percent.⁷³

Figure 18 Current population densities (including workers, tourist, residents) over a 24 hour period⁷¹



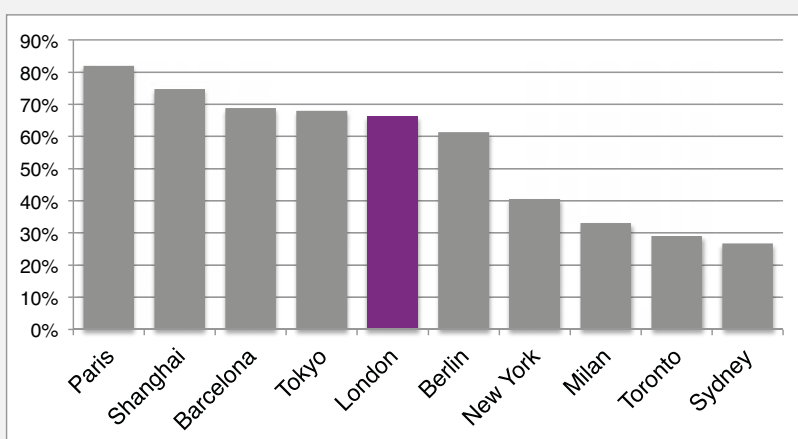
Out of 79 European cities, London has the 13th highest resident satisfaction with public transport (84 percent) and the 18th for green spaces (88 percent).

– Source: EU-Barometer (2014)

Inner London appears to have fostered many of the best elements of density. Public transport access has been significantly improved, especially in Inner East London.⁷⁵ Walkability and cycle access also have positive implications for urban lifestyles, social cohesiveness and environmental outcomes.⁷⁶ Transport improvements are at the heart of why London is now consistently ranked as one of the top five cities to work, live, play and relax in, especially for young people.⁷⁷ Inner London has also retained its reputation for abundant green space and high quality public space.⁷⁸

London's successful examples of dense city living
Of the more than 600 wards in London, just 11 have densities in excess of 20,000 per square kilometre. What is striking is that among the 10 highest density wards **there is a wide mix of positive and negative outcomes associated with high density in London.**

Figure 19 Non-car share of commuter transport in 10 metropolitan areas⁷⁴



Source: Toronto Board of Trade (2015)

49 of London's 50 highest residential density areas are in Inner London. The exception is the area around Broadwater Farm estate, in Tottenham, the site of notorious riots in 1985.

Some are very deprived, with a pattern of low employment, incomes and home ownership. This is especially the case for a cluster of wards near to the A40, north west of the city centre. Many others, however, are affluent and highly liveable parts of the city. **Bayswater, Shepherds Bush** and **Earl's Court** all feature among the highest density areas of the capital, and more than 85 percent of residents here live in flats. These areas have very positive records for economic participation and quality of life.

Areas with successful high density wards

Lancaster Gate

Shepherd's Bush/Kensington Olympia

Bayswater

Earl's Court

Notting Hill

Neighbourhoods with successful dense local areas (LSOAs)

Holloway Road

Dolphin Square, Pimlico

Arsenal

Chelsea Harbour

Paddington (Porchester Terrace)

“Look at Kensington & Chelsea, it has the highest density in London, but it also has good shops, big museums, big parks, and no high-rise. It is another myth that density equals poverty and crime.”

– Sir Terry Farrell, founder, Farrells

Homes and Property (2013). Terry Farrell: on the London housing crisis', Feb 5th.

London's density can be measured at an even more granular level, called 'lower layer super output areas' (LSOAs), of which there are nearly 5,000. The highest densities at this scale are spread all around the inner city, and range from 38,000 to over 80,000 per km². In these cases, at least 9 out of 10 people live in flats or apartments, and a clear majority do not own cars.

The data on the top 10 most dense mini-pockets of London also shows that the city **does achieve good outcomes at high density**.

- Five of the top 10 are highly successful places, with low social renting, high rates of employment, strong skills attainment, good health scores, and higher than average household income. These include areas of **Pimlico, Chelsea** and **Arsenal**.
- Two others – in Isle of Dogs and Chelsea Harbour – have very positive outcomes despite a higher than average proportion of social renting. In total seven of the top 10 have good or excellent public transport access, and eight have above average house prices. This indicates that London has been able to deliver high density apartment living without accruing social and economic costs.

Data at this level also shows that, on average, **high density** compares quite favourably with medium or low density areas of London.

- Despite a dramatically higher share of social renting in London's 100 highest density sites (46 percent versus 23 percent elsewhere), the employment rate is only slightly lower (58 percent compared to 62 percent) and household income is almost at parity.
- Skills attainment is actually higher in the most dense parts of the city.
- Dense areas on average have dramatically fewer car owners and have far superior public transport accessibility.

Figure 20 Millharbour, in Docklands(l); Dolphin Square, Pimlico (r); two of the five highest density areas in London⁷⁹



Photo by Matt S. License: CC-BY-SA 2.0.

Figure 21 Comparing London's 100 highest density LSOAs* with the rest of London

	Residential density/sq km	Employment Rate %	% Level 4 qualifications and above	Very good or Good health (%)	No cars household (%)	Average Public Transport Access	Median Annual Household Income £
Top 100 highest density areas	31,900	58	42	83	67	5.4 (Good to V Good)	34,000
The rest	9,400	62	37	84	39	3.7 (Poor to Moderate)	36,000
		X	✓	—	✓	✓	X

*lower-layer super output areas, with a population of 1,000-3,000

Source: GLA (2015). 'Ward Profiles and Atlas'

Figure 22 The World's End Estate (l); Shadwell Gardens (r)⁸¹



Photo by Phillip Perry. License: CC-BY-SA 2.0.



Photo by Ian S. License: CC-BY-SA 2.0

There are certainly examples of less successful high density in London. The World's End Estate in Chelsea is at the heart of one of the highest density areas of the city. Here 80 percent of residents rely on social housing, and less than half are in employment.⁸⁰ Similarly, in and around Shadwell Gardens in East London, health and education performance is low. Among other areas of London with densities above 25,000 sq km, locations in Isleworth, North Kensington, Barking and Norbiton all suffer from low skills, lack of jobs, poor transport links, high social renting and relatively high car use. However many of these areas have been undergoing regeneration in recent years and their prospects are better than in the past.

London's track record on density highlights that **its system of suburban town centres is still to be optimised.** Home to 60 percent of the total population, Outer London only provides 40 percent of its jobs.⁸² For those living far away from the radial transport network and

the centre of local towns, there are signs of dense projects that encourage high car usage and consist of monotonous single-use urban landscapes. In Outer London, 52 percent of all trips are taken by car.⁸³

Current transport plans aim to improve orbital connections between town centres. They have the potential to bring into being a more polycentric model that make better links between jobs and homes.⁸⁴ But transport strategists are cautious about the extent to which this will be effective. London relies on the growth of highly specialised sectors (e.g. finance, tech, media, professional services) that have traditionally been located in the CAZ, and local town centres may not be able to offer the scale or diversity to attract these knowledge economy clusters. Preference for the CAZ or a handful of other core activity zones (e.g. Stratford, Heathrow) is likely to remain strong, especially on completion of Crossrail and Thameslink.⁸⁵

Future outlook and the journey towards good density



London is moving in the right direction towards good higher density. City leaders have built a compelling story and vision for London's future growth, which has support from many residents, workers and investors. It also has a strong guiding framework within which development can proceed, and the capacity to assemble land and create effective delivery agencies for large-scale sites. The city has largely learned over the past 25 years how to do good density and has optimised density on many sites where there has been little resistance.

On paper London has capacity for much more densification. The built environment of Inner and Outer London is not as dense as most of its peers and Inner London's residential density is far below its historic peak.⁸⁶ But for London to evolve into a medium-high density city that retains its unique DNA as an open city, it will need better financial instruments and investment capacity to shape development in the desired way. In order to maintain momentum, London will also need to induce demand in some areas and create a positive psychology around density in others where there are more obstacles or resistance.

Figure 23 Fundamentals of success for good density in London

	Durable city plan	Fiscal autonomy and flexibility	Transit-oriented development strategy	Metropolitan planning approach beyond city borders	District agencies and development corporations	National planning and policy framework for cities
London	***	*	***	*	***	**

*** Established ** Partly visible * Not strongly visible or developed

London's current policies of Opportunity Areas and town centre intensification are not unanimously viewed as a sufficient long-term solution. There is a view that additional tools are required if London is to come anywhere close to meeting housing and affordability targets.⁸⁷ Equally, whether such soaring population growth will continue to follow current expectations is a matter of debate, especially as house prices reach record highs, and Britain's future in the European Union remains uncertain.⁸⁸ As a result, several options are being proposed and explored for the future.

Figure 24 Perspectives on London's Future Density

Focus more on densifying the suburbs

"Ultimately, there is no one silver bullet that can solve London's housing problems, however, and it perhaps needs the creation of a garden city outside of the M25. But the intensification of the suburbs is an interesting and necessary proposition, with new technologies potentially transforming how cars are used and an ageing population impacting on layouts and, potentially, completely transforming how we design the suburbs."

David Taylor, Editor, New London Quarterly⁸⁹

Keep pushing for a compact city

"The solution, some argue, is radically to relax planning restrictions, and in particular to abandon the green belt that has formed a foundation of town planning for more than 60 years. This would be an easy solution — and also a profoundly wrong one."

[...] Dense, well-connected, well-designed cities not only make good social sense; they also make good economic and environmental sense."

Lord Rogers of Riverside, Chairman of Rogers Stirk Harbour + Partners⁹⁰

Release land on the Green Belt for housing

"Building on greenbelt land would only have to be very modest to provide more than enough land for housing for generations to come: there is enough greenbelt land just within the confines of Greater London — 32,500 hectares — to build 1.6 million houses at average densities. Building there would also reduce pressure to build on playing fields and amenity-rich brownfield sites such as the Hoo Peninsula and improve the quality of housing."

Paul Cheshire, Professor Emeritus of Economic Geography at LSE⁹¹

Remember London's DNA!

"London's footprint within the M25 occupies a very wide area — much of it made up of gardens, parks and open spaces, as well as large, empty derelict sites. As a result it has capacity and resilience to grow, as long as new development works with — rather than against — London's historic 'urban grain' of streets, squares and terraced housing. Notting Hill and Sloane Square, for example, are the densest areas in London."

Ricky Burdett, Professor of Urban Studies and director of LSE Cities⁹²

The range of options or solutions outlined below are not exclusive and a mix of several approaches may come to be seen as the best strategy.

Figure 25 Options for London's future growth

	What would it involve	Potential benefits	Obstacles
Much higher densities in the urban core	<ul style="list-style-type: none"> • High rise development near Central London transport hubs – Vauxhall, Battersea, South Bank, Silvertown. 	<ul style="list-style-type: none"> • Would contain London's growth more effectively within existing and forthcoming transport infrastructure • Flexible and incremental approach responsive to change • Would absorb demand in new and emerging sectors • More cohesiveness. 	<ul style="list-style-type: none"> • Political resistance from some residents in local boroughs • Planning and visibility issues • Supporting infrastructure – schools, hospitals.
Suburban intensification	<ul style="list-style-type: none"> • Greater densification across the whole of Outer London – increasing the number of dwellings from 20 to 50-75 per h.a. 	<ul style="list-style-type: none"> • Could help keep upgrade costs (and thus property prices) low, and respond to London's future housing needs⁹³ • Densifying suburbs at same level as Kensington and Chelsea would allow London to house 20 million people within existing borders⁹⁴ • Help divert population and employment concentration from the centre, and reduce congestion. 	<ul style="list-style-type: none"> • Would require major infrastructure improvements to enhance both orbital and radial connections. • Crossrail 2 and extension of London Overground are politically sensitive and sources of finance have not been identified⁹⁵ • Concerns that impacts on productivity would outweigh gains in reduced congestion.⁹⁶
Green belt development	<ul style="list-style-type: none"> • A limited release of low-quality land on the green belt has been proposed as an easy way to open up large tracts of immediately developable land.⁹⁷ 	<ul style="list-style-type: none"> • Increases in developable land would check or decrease land value, making housing more affordable • Improve low quality green belt land into high quality mixed-use residential areas, with greater public access to dedicated parks • High potential demand; 60 percent of the Green Belt is already within 2km of an existing underground or rail stop. 	<ul style="list-style-type: none"> • Politically delicate subject, potential environmental costs, perceived risks in planning outcomes leading to badly managed sprawl.⁹⁸
Regional poly-centric approach	<ul style="list-style-type: none"> • A co-ordinated approach to the city-region⁹⁹ • Network of regional cities linked by orbital and radial transport • Partnerships organised in loose "corridor consortia"¹⁰⁰ • Amendments to existing urban boundaries. 	<ul style="list-style-type: none"> • Address infrastructure and economic needs of whole region • De-congestion of the centre and spread development sectors¹⁰¹ • Feasible given existing level of functional integration. 20 million people already live within a 60 minute journey of central London • Would maximise 'reach' of London • Would allow a broader policy mix.¹⁰² 	<ul style="list-style-type: none"> • Currently low political appetite¹⁰³ • Need for political and organisational vehicle to generate consensus and co-operation • Funding implications, need for greater devolution of power.

London's continued population and economic growth calls for mixed strategies and multi-cycle approaches to densification. In future cycles London will need to optimise densities in locations where it may be more difficult to gain citizen support. Locations such as suburban town centres and transport interchanges close to existing residential communities will require more advocacy and demonstration projects to generate and maintain momentum towards good medium and higher density.

Notes

¹ www.london.gov.uk/sites/default/files/Annual%20Monitoring%20Report%202011.pdf; <http://legacy.london.gov.uk/mayor/planning/docs/density-matrixre-view.pdf>

² <https://books.google.co.uk/books?id=B4P2BgAAQBAJ&pg=PA190>

³ www.rtpi.org.uk/media/882342/london_planning_history_february_2014.pdf

⁴ https://commons.wikimedia.org/wiki/File:London_Thames_copper_engraving_19th_century.jpg

⁵ www.citymetric.com/skylines/six-more-ways-visualising-londons-growth-mapping-capital-s-expansion-674

⁶ Smith, D. (2011), 'Polycentricity and Sustainable Urban Form: An Intra-Urban Study of Accessibility, Employment and Travel Sustainability for the Strategic Planning of the London Region'; www.citymetric.com/skylines/8-more-ways-visualising-londons-growth-question-density-676; www.citymetric.com/skylines/six-more-ways-visualising-londons-growth-mapping-capital-s-expansion-674

⁷ www.citymetric.com/skylines/8-more-ways-visualising-londons-growth-question-density-676; Smith, D. (2011), 'Polycentricity and Sustainable Urban Form: An Intra-Urban Study of Accessibility, Employment and Travel Sustainability for the Strategic Planning of the London Region'.

⁸ <https://files.lsecities.net/files/2012/11/LSEDensityReport.pdf>; Smith, D. (2011), 'Polycentricity and Sustainable Urban Form: An Intra-Urban Study of Accessibility, Employment and Travel Sustainability for the Strategic Planning of the London Region'

⁹ <https://files.lsecities.net/files/2012/11/LSEDensityReport.pdf>

¹⁰ https://www.westminster.ac.uk/__data/assets/pdf_file/0004/123862/MC-The-Blitz-and-the-Break-Up-of-Working-Class-London-USBack.pdf

¹¹ www.citymetric.com/skylines/week-when-londons-population-will-finally-overtake-its-previous-peak-606

¹² www.citymetric.com/skylines/10-ways-visualising-londons-growth-664; Smith, D. (2011), 'Polycentricity and Sustainable Urban Form: An Intra-Urban Study of Accessibility, Employment and Travel Sustainability for the Strategic Planning of the London Region'; GLA (2015), The London Plan: The Spatial Development Strategy for London – Consolidated with alterations since 2011; Butler, T. and Hamnett, C. in Imrie, R. et al. (eds) (2009): Regenerating London: Governance, Sustainability and Community in a Global City. Routledge: London.

¹³ Butler, T. and Hamnett, C. in Imrie, R. et al. (eds) (2009): Regenerating London: Governance, Sustainability and Community in a Global City. Routledge: London.

¹⁴ Milton Keynes, for instance, had just 17 dwelling units per hectare by 1990. Even the denser examples in Hertfordshire were built at just 64 units per hectare.

¹⁵ www.citymetric.com/skylines/8-more-ways-visualising-londons-growth-question-density-676; Butler, T. and Hamnett, C. in Imrie, R. et al. (eds) (2009): Regenerating London: Governance, Sustainability and Community in a Global City. Routledge: London.

¹⁶ www.citymetric.com/skylines/8-more-ways-visualising-londons-growth-question-density-676

¹⁷ <http://data.london.gov.uk/dataset/population-change-1939-2015/resource/0a026346-960e-49e6-b968-a386d2cfe55f/proxy>

¹⁸ 2b

¹⁹ <https://files.lsecities.net/files/2012/11/LSEDensityReport.pdf>; <http://webarchive.nationalarchives.gov.uk/20110118095356/http://www.cabe.org.uk/files/better-neighbourhoods.pdf>

²⁰ https://www.westminster.ac.uk/__data/assets/pdf_file/0004/123862/MC-The-Blitz-and-the-Break-Up-of-Working-Class-London-USBack.pdf

²¹ Butler, T. and Hamnett, C. in Imrie, R. et al. (eds) (2009): Regenerating London: Governance, Sustainability and Community in a Global City. Routledge: London.

²² Ibid.

²³ Ibid.

²⁴ Ibid.

- ²⁵ <http://s202.photobucket.com/user/SELondoner/media/CanWhf2-600w.jpg.html>
- ²⁶ https://commons.wikimedia.org/wiki/File:Reuters_Plaza.jpg
- ²⁷ www.rudi.net/system/files/file/...file/Tall+Buildings+Report+FINAL.pdf
- ²⁸ <http://group.canarywharf.com/portfolio/new-phase/>; www.standard.co.uk/business/business-news/success-for-canary-wharf-plans-to-swell-by-a-third-9620946.html; <http://group.canarywharf.com/media/press-releases/canary-wharf-group-appoints-individual-building-architects-for-wood-wharf-5/>
- ²⁹ www.standard.co.uk/news/london/canary-wharf-banking-on-bright-future-with-2bn-plan-for-shoreditch-style-shops-8218296.html
- ³⁰ https://www.london.gov.uk/sites/default/files/planning_decisions-heygate_estate_masterplan_report.pdf
- ³¹ www.myearlscourt.com/userfiles/uploads/main/Place-Making-Report.pdf
- ³² www.architectsjournal.co.uk/Journals/2015/06/29/g/y/m/KCA-book_all_low-res.pdf
- ³³ www.berkeleygroup.co.uk/media/pdf/2/4/Woodberry_Down_Social_Sustainability_study.pdf
- ³⁴ www.citymetric.com/skylines/10-ways-visualising-londons-growth-664; GLA (2015), The London Plan: The Spatial Development Strategy for London – Consolidated with alterations since 2011; New London Architecture (2014), London's Growing Up! NLA Insight Study.
- ³⁵ Ibid.
- ³⁶ GLA (2015), The London Plan: The Spatial Development Strategy for London – Consolidated with alterations since 2011
- ³⁷ New London Architecture (2014), London's Growing Up! NLA Insight Study.
- ³⁸ Ibid.
- ³⁹ Clark, G. (2014) 'The Making of a World City: London 1991 to 2012', London: Wiley-Blackwell.
- ⁴⁰ Ibid.
- ⁴¹ www.gva.co.uk/development/central-london-the-impact-of-mixed-use-development/
- ⁴² Ibid.
- ⁴³ Ibid.
- ⁴⁴ <http://uli.org/case-study/uli-case-study-kings-cross-london-united-kingdom/>
- ⁴⁵ Ibid.
- ⁴⁶ <http://grow.london/map-london/markets/>
- ⁴⁷ <https://www.cityoflondon.gov.uk/services/environment-and-planning/planning/development-and-population-information/core-strategy-monitoring-reports/Documents/core-strategy-monitoring-paper-offices-2014.pdf>
- ⁴⁸ www.standard.co.uk/business/business-news/london-sees-record-office-rents-as-demand-for-commercial-property-booms-10148848.html
- ⁴⁹ www.cityam.com/207353/london-s-new-crisis-shortage-offices-will-do-immense-damage
- ⁵⁰ Ibid.
- ⁵¹ GLA (2015), The London Plan: The Spatial Development Strategy for London – Consolidated with alterations since 2011;
- ⁵² GLA (2015), The London Plan: The Spatial Development Strategy for London – Consolidated with alterations since 2011; New London Architecture (2014), London's Growing Up! NLA Insight Study.
- ⁵³ Ibid.
- ⁵⁴ Ibid.
- ⁵⁵ http://londonfirst.co.uk/wp-content/uploads/2015/07/London-First_Opportunity-Areas_Interactive.pdf

⁵⁶ GLA (2015), The London Plan: The Spatial Development Strategy for London – Consolidated with alterations since 2011

⁵⁷ Ibid.

⁵⁸ www.ft.com/cms/s/0/09ef761c-8478-11e4-ba4f-00144feabdc0.html#axzz3kFTA1wuV

⁵⁹ Butler, T. and Hamnett, C. in Imrie, R. et al. (eds) (2009): *Regenerating London: Governance, Sustainability and Community in a Global City*. Routledge: London.

⁶⁰ GLA (2010), Mayor's Transport Strategy.

⁶¹ www.ons.gov.uk/ons/dcp171776_357812.pdf

⁶² GLA (2010), Mayor's Transport Strategy.

⁶³ www.ft.com/cms/s/0/2a3f2e50-1996-11e4-8730-00144feabdc0.html#axzz3kFTA1wuV

⁶⁴ GLA (2015), The London Plan: The Spatial Development Strategy for London – Consolidated with alterations since 2011.

⁶⁵ www.futureoflondon.org.uk/futureoflondon/wp-content/uploads/downloads/2015/04/2050-Capturing-value-web1.pdf

⁶⁶ http://londonfirst.co.uk/wp-content/uploads/2015/05/Carrots-and-Sticks-Report_Web.pdf

⁶⁷ <http://postandparcel.info/64785/news/it/delivery-firms-urged-to-re-time-london-deliveries-to-avoid-peak-hours/>

⁶⁸ www.citymetric.com/skylines/8-more-ways-visualising-londons-growth-question-density-676; Butler, T. and Hamnett, C. in Imrie, R. et al. (eds) (2009): *Regenerating London: Governance, Sustainability and Community in a Global City*. Routledge: London.

⁶⁹ www.newgeography.com/content/002970-the-evolving-urban-form-london

⁷⁰ Regions at a Glance 2013 - © OECD 2013: Chapter 1 Figure 1.4 Population density in urban areas, 2012: Asia, Europe and Oceania.

⁷¹ www.citymetric.com/skylines/8-more-ways-visualising-londons-growth-question-density-676

⁷² GLA (2010), Mayor's Transport Strategy; <https://lsecities.net/media/objects/articles/urban-age-cities-compared/en-gb/>; www.adlittle.com/future-of-urban-mobility.html; http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/urban/survey2013_en.pdf

⁷³ GLA (2010), Mayor's Transport Strategy.

⁷⁴ https://www.bot.com/portals/0/unsecure/advocacy/Scorecard_2015.pdf

⁷⁵ Butler, T. and Hamnett, C. in Imrie, R. et al. (eds) (2009): *Regenerating London: Governance, Sustainability and Community in a Global City*. Routledge: London; GLA (2010), Mayor's Transport Strategy.

⁷⁶ GLA (2010), Mayor's Transport Strategy.

⁷⁷ https://www.ipsos-mori.com/_assets/topcity/index.html; www.youthfulcities.com/#/index/c10kg

⁷⁸ http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/urban/survey2013_en.pdf

⁷⁹ <http://liladare.com/wp-content/uploads/2015/07/2-Bed-Flat-For-Sale-in-Millharbour-Canary-Wharf-E14-2.jpg>; [https://en.wikipedia.org/wiki/Dolphin_Square#/media/File:Dolphin_Square_\(171233643\).jpg](https://en.wikipedia.org/wiki/Dolphin_Square#/media/File:Dolphin_Square_(171233643).jpg)

⁸⁰ <http://data.london.gov.uk/dataset/isoa-atlas>

⁸¹ www.geograph.org.uk/photo/3495579

⁸² GLA (2015), The London Plan: The Spatial Development Strategy for London – Consolidated with alterations since 2011

⁸³ GLA (2010), Mayor's Transport Strategy.

⁸⁴ Ibid.

⁸⁵ Smith, D. (2011), 'Polycentricity and Sustainable Urban Form: An Intra-Urban Study of Accessibility, Employment and Travel Sustainability for the Strategic Planning of the London Region'.

⁸⁶ www.newgeography.com/content/002970-the-evolving-urban-form-london

⁸⁷ www.lse.ac.uk/geographyAndEnvironment/research/london/events/lenttermseminars/2014/LSE-seminar-17-3-14.ppt

⁸⁸ 6

⁸⁹ www.newlondonarchitecture.org/news/2014/february/supurbia

⁹⁰ www.standard.co.uk/comment/comment/richard-rogers-we-need-a-new-plan-to-build-an-even-greater-city-8499562.html

⁹¹ <http://blogs.lse.ac.uk/politicsandpolicy/turning-houses-into-gold-the-failure-of-british-planning/>

⁹² Butler, T. and Hamnett, C. in Imrie, R. et al. (eds) (2009): *Regenerating London: Governance, Sustainability and Community in a Global City*. Routledge: London.

⁹³ http://issuu.com/futureoflondon/docs/london_2050_-_grow_up_or_grow_out; www.lse.ac.uk/geographyAndEnvironment/research/london/events/lent-termseminars/2014/LSE-seminar-17-3-14.ppt

⁹⁴ www.newlondonarchitecture.org/news/2014/february/supurbia

⁹⁵ GLA (2010), *Mayor's Transport Strategy*; GLA (2014), *London's Infrastructure Plan 2050: Transport Supporting Paper*; <http://basecities.com/content/london/docs/14.06-4c-michele-dix.pdf>; www.newlondonarchitecture.org/news/2014/february/supurbia

⁹⁶ http://issuu.com/futureoflondon/docs/london_2050_-_grow_up_or_grow_out; GLA (2014), *London's Infrastructure Plan 2050: Transport Supporting Paper*

⁹⁷ *Ibid*; <http://londonfirst.co.uk/wp-content/uploads/2015/02/Green-Belt-Report-February-2015.pdf>

⁹⁸ www.newlondonarchitecture.org/news/2014/february/supurbia

⁹⁹ www.aecom.com/deployedfiles/Internet/Geographies/Europe/Document%20Library/AECOM%20Manifesto%20for%20the%20London%20City%20Region_low%20res.pdf

¹⁰⁰ *ibid*.

¹⁰¹ *Ibid*.

¹⁰² <http://thoughts.arup.com/post/details/301/debating-londons-options-for-growth>

¹⁰³ www.newlondonarchitecture.org/docs/stewart_murray--greater_london_authority.pdf