

LONDON'S URBAN DENSIFICATION AND THE HOUSING CRISIS

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Fig 1: 1950's Mass Housing Hidden in Plain Sight, Surrounded by the Denial of the Public.

Working Title

Can Densification Solve the Surging Housing Crisis in London?

Abstract

In recent decades, major cities around the globe have been experiencing an increase in homelessness and a shortage of houses with an increase in population. As more people migrate to work and live in cities, governments have been contemplating solutions that could solve the housing crisis while simultaneously creating a sustainable option. London is among the cities in Europe grappling with the issue of a housing crisis. Densification of cities has been cited in literature as the best alternative that urban planners can tap.

Densification entails building compact structures at the cities' nuclei to prevent urban sprawl. Sometimes it may include restructuring existing buildings to increase their height without increasing land use at the surface level so that the city's outskirts are left “sleeping” for potential densification. Some cities have already embraced the idea, and this thesis will analyse case studies in London and other megacities to the City of London.

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Introduction

The increasing urban density is forcing cities to be innovative and creative in developing sustainable solutions. The housing crisis is causing many people into becoming homeless, some relying on social housing while others moving to cities cannot find affordable houses. It is forcing cities across the globe to find ways of resolving the supply and demand issue. London has been caught in this mire.

The need to study urban planning and the housing crisis

The housing crisis affects almost everyone, from surging house prices and the supply vs demand issue to mass housing and social housing. Unless the situation is tamed, scholars predict that the consequences of homelessness will likely increase beyond cure.¹ This includes the amount of U.K. residents that rely on social housing provided by local councils and benefits received by the state, which are increasing as salaries get lower and the cost of living increases. The socio-economic consequences of the housing crisis cannot be ignored when people in cities lose their homes and houses due to failing to service them. London is currently facing a major issue which will be addressed in this paper. Existing literature points to an evidence-based approach to the issue of urban density that cities like Hong Kong are already addressing. Singapore has already been cited as one of the only cities that have contained the issue of housing.²

Aims of the Study and Research Questions

The proposed research study will focus on answering research questions on the contemporary issue affecting cities today. In the process of finding answers to the issue, an evidence-based approach will be used to determine whether urban densification carries the solution to the surging problem affecting cities across the globe. Even though many European cities face a similar challenge, the focus on Central London will allow the researcher to concentrate on a smaller area and determine whether the solution can be replicated in other European cities. The aims of this study are:

1. To determine the sustainability and resiliency of urban densification using evidence from case studies.
2. To determine if London can emulate the solution of urban densification in solving the housing crisis.
3. To analyse the existing literature on urban densification.

The following research questions will guide the study. Each question has been formulated in accordance with the aim of the study, to provide evidence as to whether urban densification will solve London's perennial housing crisis.

1. What is the role of urban planning in addressing the issue of the housing crisis facing London today?

This question will guide the researcher in understanding the role that the government has had or is expected to play in resolving the housing crisis. In answering this question, the researcher will review

¹ "How urban densification shapes walking behaviours in older community dwellers: a cross-sectional analysis of potential pathways of influence." Ester Cerin. 2020. <https://ij-healthgeographics.biomedcentral.com/articles/10.1186/s12942-020-00210-8>.

² "How do you solve a housing crisis? Study the example of Singapore." Colin Cram. 2015. <https://www.theguardian.com/housing-network/2015/apr/30/how-do-you-solve-a-housing-crisis-study-the-example-of-singapore>.

existing literature from sources, including the National Planning Policy and urban planning configurating London into Boroughs.

2. Is there any evidence that the housing crisis can be solved?

This question directly relates to the study's topic and aim. In answering this question, the researcher will explore existing evidence from case studies, critically analyse the subject of urban densification, and determine whether the densification approach can apply to the case of London. The researcher will also review the proposed solution from a socio-economic point of view and environmental consequences to determine the resiliency and sustainability of the proposed solution.

3. What are the benefits of permanent housing programs in solving the housing crisis?

This question will lead the researcher to analyse the case study of Tatchbrook Estate, which has implemented a permanent solution to the housing crisis in the past. The researcher will explore the potential benefits that London can derive from implementing the benefits of the case study.

1. Concept of Density and Theoretical Limitations

Combating density is tough to do for various factors, whether it is social, political, economic, or geographically viable to do. Across the world, density has different standardisations, which further adds to the problem of combatting density “There is no one accepted measure of density between or within countries or even within metropolitan regions”³. Comparing conceptual theory and literature might be designed with different priorities and, therefore, not be a complete critical comparison. *Architectural Density* “is a planning metric that describes the spatial and physical dimensions of crowding in human settlements. It is typically described in terms of the number of dwellings that occupy a unit area of land.”⁴ Whereas *Urban Density* “is the number of people living in a particular area.”⁵ Furthermore, in the analysis of combatting density by David Levitt, density is split into four different levels determined by dwellings per hectare. “(dph): **low (35–90); medium (90–250); high (250–350+); and tall (350+)**”⁶ The use of different standardisations and categories begs the question, what makes a space dense? This complexity reveals the further issue of analysing literature and comparison from different countries as a way of combatting density in one country may not be a benefit for the location in question. In addition, it challenges the analysis of density being positive or negative and invalidates any argument of density always being a negative issue.

Urban Density can conflict with *Architectural Density* as, from a social perspective, cities depending on their function, can differ in the demographic that lives there. An example is Canary Wharf (Fig 2.), the second largest financial district in London, has a higher amount of single professional workers at a one-person-to-one household ratio in contrast to modern families, traditional nuclear families, students, or urban dwellers. As has been stated above, this would mean that many dwellings per area

would conclude that it is a dense area; however, in terms of *Urban Density*, the number of people living in the area would conclude that it is not a dense area and directly conflict with the findings of the first standardisation.

In the findings of this paper, the **Architectural Density** at dwellings per hectare mode of measure will be used as the aims are to find whether density can solve the housing crisis and provide homes for multiple social groups.



Fig 2. Canary Wharf Financial District Apartments.

³ “Disentangling the Concept of Density.” Arza Churchman. 1999.

https://www.researchgate.net/publication/235357847_Disentangling_the_Concept_of_Density.

⁴ “Density.” Stefanos Polyzoides. 2010. <https://www.mparchitects.com/site/thoughts/density>.

⁵ “Urban Density and Sustainability.” Christopher Berggren. 2014.

<https://www.smartcitiesdive.com/ex/sustainablecitiescollective/urban-density-and-sustainability/241696/>.

⁶ “The Housing Design Handbook.” David Levitt. 2019.

<https://www.bloomsburyarchitecturelibrary.com/encyclopedia-chapter?docid=b-9780203704516&tocid=b-9780203704516-chapter3>.

1.1 London's Composition

Before analysing London itself, we must understand the critical historical and technological advancements which has created the city how we know it today. Although London shares many similarities and characteristics with other European cities, it has significant differences. London as a whole is less compact than other cities in Europe as it has always been a city focusing on trade. It is important to note that **London is split into three main sectors**, The City of London (where London was initially founded in 47 AD) is still operating as a separate entity. The second sector surrounds the City of London, known as Central London, which has several different business districts with 2,682,083 companies operating, constituting 29.3% of the entire United Kingdom (96,273 of which are in the City of London).⁷

As London is ranked number one across twelve regions in the U.K., the demand for work is high, requiring more households for professional workers nearby. "London has also been fortunate throughout most of its history, it was able to dismantle its city walls much earlier than other European cities and thus could expand outwards, 'capturing' existing settlements."⁸ This utilised the space to create local households for workers, known as Greater London. Currently, Greater London is now enclosed in a circular motorway (M25) going around the region, stopping the expansion of London and forcing the city to implode in on itself. As London broke down its walls before other European cities, it *expanded quicker*, drawing in more trade and jobs.

Along with the industrial revolution, the city changed entirely by creating thousands of houses next to each other to house the city's factory workers. This was efficient at the time; however, in the modern day, it has created a more considerable complexity as the houses remain in rows, with very little space to expand and simply cannot be demolished as it still houses families and would be too costly. It is seen in the image below (Fig 3) that these houses have almost all been expanded as the homeowners try to reconfigure the house's original design and structural limitations to conform to society and modern family types by utilising the space they can create more room to occupy. The photo also shows two extensions, by different generations showing that space was sparse from the start, the primary brickwork extension, then the renovation of the primary extension with a further expansion utilising glass and a dormer loft conversion, creating an additional room for the family. If the future were considered in the creation of these houses, there would potentially be fewer structural limitations and interchangeable house designs to adapt to the ever-changing world.



Fig 3. The Line Between Old and New. Neil Dusheiko.

⁷ "Statistics of Companies in UK." HitHorizons. 2022. <https://www.hithorizons.com/uk/companies/stats-and-charts/london#:~:text=Companies%20population%20in%20London,on%2030%2F11%2F2022>.

⁸ "Design for London – Experiments in Urban Thinking." Peter Bishop. 2020. <https://discovery.ucl.ac.uk/id/eprint/10116471/1/Design-for-London.pdf>.



Fig 4. Classic 1930's Living Room



Fig 5. Repetitive Housing for Industrial Workers.

1.2 Early Politics Influence on the Composition of London Boroughs and Density

The “power in London has never been concentrated into the hands of an individual, but has instead been dispersed and shared between corporations, businesses and individuals. The early introduction of freeholds produced a class of landowners and a growth and development model that relied on private capital.”⁹ This affected the first major outward expansion in the eighteenth century, which was financed mainly by private homeowners; as a result, grand estates were created by the wealthy, which still stand today. It also created a “pattern of fragmented development and fine-grained urban form that has been able to adapt and renew itself while accommodating significant changes in social organisation and technology.”¹⁰ London’s most significant expansion in the nineteenth and twentieth century, captured in the diagram, 1943 Abercrombie Plan (Fig 6.) was polycentric and diverse.



Fig 6. The Greater London Plan. Patrick Abercrombie.

⁹ “Design for London – Experiments in Urban Thinking.”

¹⁰ “Design for London – Experiments in Urban Thinking.”

The Greater London Plan was created to reconstruct London after WWII, which Germany targeted in The Blitz. It also allowed for the reenvisioning of the city's foundations and footprint after nineteenth-century industrial development. London began to grow rapidly and expand into the city's outskirts, creating Greater London.

London would soon be one of the largest metropolises globally, therefore challenging governance and administration; the government brought forward the Metropolis Management Act of 1855, which embarked upon coordinated investment and infrastructure. As a result, the Local Government Act of 1888 established London boroughs, narrowed down to 33 to this day, dispersing power and allowing the area “to be held accountable for their actions”¹¹ in the form of a council. This was also “necessary to tackle issues of urban growth, urban renewal, postwar reconstruction, slum clearance, urban transportation and welfare provision.”¹² Due to the recovery from WWII, a weak economy created pressure on public funding, ending the era of the robust public sector in its urban development. Post War industrial restructuring and the impact of the housing generation decline left large quantities of space derelict, especially in East London, displacing the population and increasing unemployment and social deprivation.



Fig 7. London Post WW2 Reconstruction

Though the industrial sector boomed, the U.K. experienced labour shortages, therefore leading to mass immigration in the 1950-60s from commonwealth countries, housed mainly in Brixton and Notting Hill. In 1990 due to a spike in gas prices due to the Gulf War, a recession also put significant strain on London's development with rising unemployment and inflation at an all-time high. A series of overseas investors injected money into the economy and the National Lottery's funding, with a new generation of Architects for “heritage and Millenium projects triggering architecture-led interventions, including the Tate Modern, the Greenwich Dome, and the London Eye. These captured the public imagination and were undoubtedly popular”¹³. As a result of this, the people of London induced the modern era of tall standing buildings like the Foster's Swiss Re Tower (known as the ‘Gherkin’ as described by the Prince of Wales) which “became a symbol of London's new found confidence.”¹⁴ Leading to the many tall buildings that base themselves on London's landscape to this day. (Fig 8)



Fig 8. Foster's Swiss Re Tower (The Gherkin)

¹¹ “Design for London – Experiments in Urban Thinking.”

¹² “Design for London – Experiments in Urban Thinking.”

¹³ “Design for London – Experiments in Urban Thinking.”

¹⁴ “Design for London – Experiments in Urban Thinking.”

2. Historical Evolution of Density in London

Since London was built in 47 AD, the concept of a 'home' has changed significantly. Social changes, technological advancements, environmental impact and several other factors have shaped the role of a 'home'. Less than 500 years ago, the use of the home was purely to lodge whilst resting from work, a place for a family to rest, cook and interact. This, in comparison to the modern day, would have required substantially less space. Between the 1400-1600s, London was already a dense city, most of the space was already utilised due to the city being walled in, and no advanced urban planning would have been strategized until the industrial revolution, a couple of hundred years later. This was the first example of the self-implosion of density in London. London Bridge is a critical example of London combatting density by creating houses on top of the bridge, "a common solution for limited accommodation in walled cities."¹⁵ (Fig 9.)

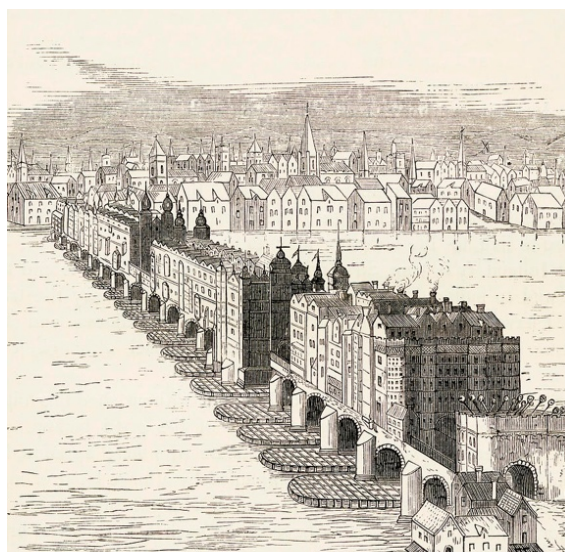


Fig 9. Old London Bridge

Urban Planners and Architects throughout the ages would have tried to combat the old city layout to develop the city to their current technological age, from creating cobblestone roads for horses and carts to travel down to further advancement with the first motor vehicles. Urban Planners would have strategically planned for houses to be in blocks and allow space for roads and interlinks to provide transportation and commuting. This would have affected space over time, especially when the industrial revolution started in 1760; London knocked down its walls, paved over farmland and expanded outward to aid the growing demand of trade through revolutionised manufacturing systems. Around the same year, London Bridge was demolished as the space through the houses was not enough to pass through; equally, the space underneath was not enough for the larger boats at the time to pass underneath.

As London expanded outwards, the foundations for modern-day Central London would be created. Housing was created in masses strategically to house factory workers. The concept and role of a 'home' became a place of more significant interaction; with technological advancements, electricity, and the invention of the T.V., households and families would come together to interact more with one another. In addition, the higher wages from the industrial revolution gave families the ability to spend less time at work and doing strenuous activity, causing a higher rate of interaction and a higher emphasis on interacting as a *Nuclear Family* (consisting of two parents and their children). As families spent longer time interacting in their homes, the spaces began changing, requiring more space to interact, not to feel isolated or as if they were constantly repeating the same interaction. In the modern day, *expansions were added* to existing houses to create more space and provide room for larger families as the traditional *Nuclear Family* transformed into the *Modern Family* (consisting of sets of parents, with increased divorce rates and their children/step-children, same-sex marriages and co-parenting relationship dynamics). Furthermore, *technological advancement* led to a *separation of social interaction*. It *required more space* in the home to be away from one another and to spend more time interacting with new innovative technology.

¹⁵ "Historical Development of Bridges." BridgesDB. 2022. <http://www.bridgesdb.com/bridge-history-facts/historical-development-of-bridges/>.

2.1 Modern Social Views

Through Covid, the role of home changed significantly. It became a space of work, rest, and isolation. Through the pandemic, the government put considerable pressure on employers to push towards a virtual workplace, whereby employees would not have to travel to their usual place of work and therefore work from home. This was to limit the contact and quantity of people socialising and utilising public transport to reduce virus transmission. Due to this, workplaces were forced into a revolution where they realised that most work did not need to be conducted in an office and understood that there were other means of increasing work efficiency whilst working remotely. The repercussions were fewer people commuting, especially into the capital, fewer expenditures from companies on office spaces and higher confinement to their homes which became their usual place of work. “During the Lockdown, families are spending up to 15 hours of each day together. Add to that the presence of children who would normally be at school, homes can start to feel crowded.”¹⁶ Families struggled with spending too much time together, trying to branch out into different rooms of their houses to try and create space for themselves and work efficiently. This, in particular, was mainly for the middle class and the above, whereas the working class would not have as much space in their homes to move around. Central London was significantly impacted, as office spaces sat empty. Near the end of the pandemic, employers tried to encourage their employees to return to the office. Most employees did not want to do this as they realised that it was inefficient to commute into Central London every day for many industries, especially when the same efficiency level could be created in a home environment. 84% of workers, who had to work from home in the pandemic, still work in a hybrid form to this day, according to the National Census of 2022. As a result, companies downsized their office spaces and allowed more companies to move into Central London, as one company’s previous space could now be occupied by several. The secondary repercussions were that *more people were drawn to suburban Greater London*, as there was good access to transport and commuting time was reduced to under an hour to the capital when they would work in the office. This created a *higher demand for housing* in Greater London. The government promoted investors to buy real estate with reduced stamp duty and lower deposits, fuelling a burn-up of the remaining households. “It is possible that the pandemic will reduce the attraction of inner-city areas such as Inner London, due to perceived risk of future pandemics as well as the acceleration of telecommuting and home-working trends,”¹⁷ therefore promoting higher amounts of investment in suburban London and leading to an implosion of higher density and residents within the confines of Greater London.

Covid’s impact was significantly different for the working class and who were socially housed by the local council. Many being key workers, they did not work from home, though the small percentage who did would have had to work in the same room as their family without a spare room or a study to work. For example, the London Borough of Newham was packed with “1960’s high rises and Victorian terraces – has seen *the second highest coronavirus death rate in England* since the beginning of March 2020.”¹⁸ This begged the question, how did a single London Borough have the second largest death rate in a whole country? *The Density of Newham answered that question* (Fig 10). “Newham also has the *single worst overcrowding problem* in the country. More than 25 per cent of homes in the borough do not have enough bedrooms for the families living in them.”¹⁹ Newham is also known for its notoriety, landlords utilising their investments immorally purely for financial gain, regardless of the living conditions. With families living in one single room, many sharing beds, there was *no space to isolate* if any key workers came home from work and accidentally brought the virus home with them. This is how *Density was a killer to the working class and lower-income households*. The demographic of these mass houses is the poorer class, dependent on the council to provide them

¹⁶ “How Coronavirus is affecting relationships.” Vyman. 2020. “How Coronavirus is affecting relationships.”

¹⁷ “A Compact City for the Wealthy?” CityGeographics. 2020. <https://citygeographics.org/2020/06/29/a-compact-city-for-the-wealthy-continuing-inner-london-gentrification-and-impacts-on-accessibility-inequalities/>.

¹⁸ “Bad Housing Kills: How coronavirus overwhelmed the UK’s most overcrowded community.” Adam Forrest. 2020. <https://www.independent.co.uk/news/uk/home-news/coronavirus-deaths-uk-housing-overcrowding-newham-london-a9646301.html>.

¹⁹ “Bad Housing Kills: How coronavirus overwhelmed the UK’s most overcrowded community.”

housing, mainly in the form of mass housing blocks from the 1950-60s. Economists and Urbanists suggest in the existing literature that density strengthens cities as “density encourages mixed communities, enhancing social capital and reducing social isolation.”²⁰ However, from another point of view, through understanding the recent pandemic, *density kills*. Encouragement of mixed communities in such a small area is great for social interaction until the goal shifts to the opposite of what it is trying to achieve. This led to a higher demand for housing in Greater London and a boom in business as more companies were given the space to migrate to the capital.

Though it has been proven dangerous in specific scenarios, most of the long-term *residents of the 1950-60s mass housing blocks do not want to move*, as many of them have been housed there for years or since they migrated from another country. They value the sense of *community and security*; therefore, even with developers insisting they will make a percentage of the new development affordable, there is no certainty that they will be able to relocate every family. Affordable housing may be affordable to some, yet it would still be too costly for the socially housed. In addition, this has created many uproars against developers as existing tenants do not want to move as they have a functional relationship with the area and community as well as their property; a significant development would gentrify the area and change the demographic of people who live there.



Fig 10. Newham Estate.

2.2 Modern Politics and Density

Now building tall, dense housing is a problem, as “*Londoners reject such homes... high-density housing and high-rise blocks have been associated with deprivation and crime.*”²¹ However, *immigrants migrating from countries with higher-density buildings bring the social expectations of living in similar conditions, kickstarting a social trend of investing in taller buildings in the capital.* “Current national planning policy effectively requires minimum densities in well-connected areas of cities, and the London Plan embraces density as a core principle, saying it is required to address the city’s growing need for housing.”²² In spite of this, the *planning policy requires a certain level of density for the development of housing*; it is strategic so that existing infrastructure can handle the new capacity of residents, from transport to schools and GPs. From another point of view, the London School of Economics researched the Density of London and its effects on the residents in dense developments. Surveys revealed that there is often a lag when creating developments alongside existing infrastructure, even when planning to improve essential infrastructure “many respondents

²⁰ “Living in a denser London – How residents see their homes.” Fanny Blanc. 2020.

<https://www.lse.ac.uk/geography-and-environment/research/lse-london/documents/Reports/2020-LSE-Density-Report-digital.pdf>.

²¹ “Living in a denser London – How residents see their homes.”

²² “Living in a denser London – How residents see their homes.”

said their local services were under strain, with long queues at tube stations, difficulty getting a GP appointment, and schools at total capacity.”²³

Initially, the government offered grants and schemes for new buyers; however, that has significantly decreased over the years. Modern-day London now relies on developers and urban council planners who decide where dense buildings are viable. Denser buildings make a more significant profit as they can create more properties. The Cities Urban Planners require a certain amount of the development to be affordable housing. Therefore, the larger the density of the building, the more profit can be generated, and affordable housing (which the developer is not making any profit from) is offset by the profits of the higher quantity of units to the developer. Affordable housing is sold around 80% of the standard price listed on the market with strict rules to qualify, subtly easing the housing crisis one development at a time. This still is not fast enough compared to the rate of housing decline and population increase in London. The process of creating these developments is being slowed down by old mass housing and the tenants occupying the homes, which sits on land surrounded by open space, with high opportunity for expansion and gentrification. Most councils, unfortunately, does not have the funding to relocate and rehouse the tenants in the new development. The tenants refuse to relocate because of a shortage of council houses across London and the country. For a boom in the development of dense, tall buildings, the government would need to fund the relocation of the socially housed, which were often single-tenure and create developments (mixed-tenure) for them to be rehoused as communities rather than individuals—a very costly strategy however possible in theory. In places such as New York, penthouses are considered a privilege for the ultra-wealthy. Londoners need to embrace the change as migrants shift the social change in the right direction. The inevitable unaffordable prices and *lack of housing supply will not be able to meet demand and potentially force London’s social stigma to change* for the better and embrace densification with open arms. A potential reason this *might not work is, the influence of future pandemics*. Oxfordshire Council have passed a plan to divide the city into 15-minute neighbourhoods²⁴, fining residents who travel to different sectors over their yearly allowance, potentially giving the government higher powers to use *densification as a means of control*, thus worsening the social stigma.

The Impact of Density Towards the Demographic

3.1 Speculative Effects of Investors

A key factor determining the trends of investors is land cost. This is generally estimated by analysing nearby developments and subtracting construction costs and the developers' profit margins from the total cost. The remainder is the total figure that can be spent on land alone. It also depends on what can be built on it. Developers will propose different development ideas to the seller, and the development with the highest density generally succeeds over lower-dense projects as the value to the landowner is greater. This acts as an incentive for denser-built towers by the developers. Generally, in Central London, high-density developments are proposed, which end up largely privately rented due to the buy-to-let scheme, increasing the privately rented sector and decreasing the percentage of homeowners living in the development. Market conditions also affect the construction of these projects as developers cannot afford to leave the projects half-finished, drawing in international investors who often finance the project. Financing from Banks is rare as it is too large of a risk to provide funding for a development unless more than half of the building's units are sold in advance. This is very rare as home buyers cannot afford to buy a property that is not even built due to mortgage offers lasting for a maximum of six months and the risks of buying into a project that did not have sufficient funding at the start. This leads to foreign investors, particularly from the Middle East, buying in bulk, worsening the housing crisis further by owning the majority of new developments and renting it to the people of London as an asset.

²³ “Living in a denser London – How residents see their homes.”

²⁴ “Traffic filters will divide city into six 15-minute neighbourhoods.” Miranda Norris. 2022.

<https://www.oxfordmail.co.uk/news/23073992.traffic-filters-will-divide-city-15-minute-neighbourhoods/>.

As for the effects of Investors on urban developments, particularly in Greater London, they create mass communities as “volume house builders answer to shareholders who want an instant return on investment; they are, therefore, motivated to build, sell and move on to the next project.”²⁵ Due to investors answering to their shareholders, they produce large communities of repetitive house designs, creating a generic effect. This creates dense neighbourhoods to house families mainly for profit over quality of life and functional design.

3.2 Impact of Gentrification

Urban outmigration (the process of people moving further from the city centre due to lack of space) has been a trend in an attempt to fix the housing crisis, “in the 20th century, rising living standards, mass motor transport and relatively cheap building land have fuelled the growth of suburban patterns of development.”²⁶ This was further fuelled by pressure from the Town and Country Planning Act 1947, which triggered the gentrification of the countryside. Gentrification of inner London has been “argued to have stalled because there are few neighbourhoods left to gentrify or has entered a different phase such as super-gentrification and new-build gentrification.”²⁷ Therefore, existing literature suggests urban outmigration is one of the only ways left to find land to create houses. This leads to the inevitable gentrification of suburban areas. “South and South-West London, with Croydon, Sutton and Richmond’s (Outer Greater London Authority, Outer GLA)”²⁸ data suggest that they are gentrifying with increases in the working population and professional occupational classes. In addition, Reading, Wycombe, and Wokingham (Outer Metropolitan Area, OMA) are showing signs of gentrification with a growing population and quantity of professional occupations. Other OMA regions, such as Luton and Harlow, notably lower-income towns, are not showing any signs of potential gentrification.

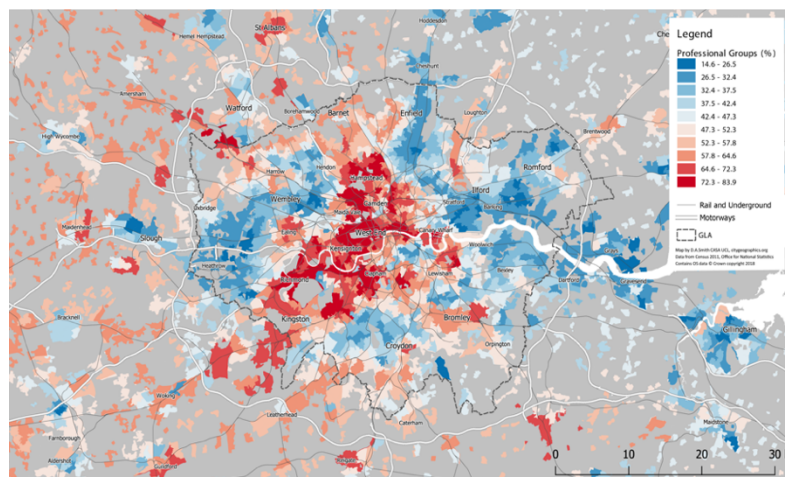


Fig 11. Percentage of Professional Workers Across Regions of London

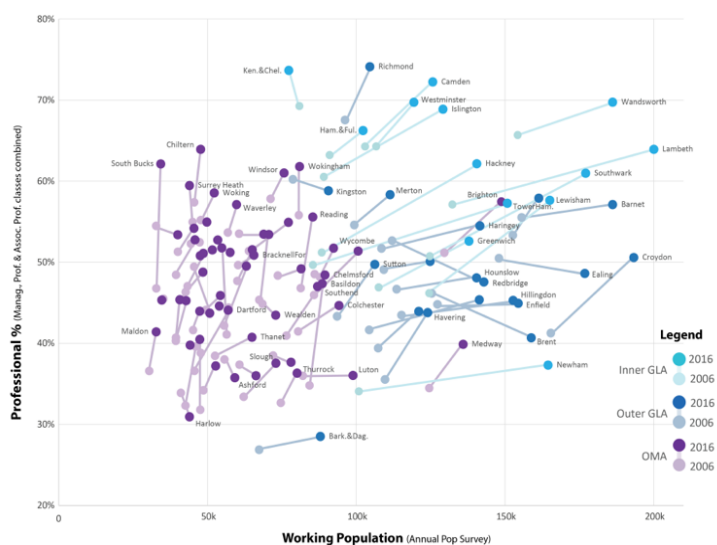


Fig 12. Demographic of Professional Workers to Working Population across regions of London

²⁵ “Why is most new-build housing in Britain is awful — and why it doesn’t have to be this way.” Clive Aslet. 2021. <https://www.countrylife.co.uk/property/why-is-most-new-build-housing-in-britain-is-awful-and-why-it-doesnt-have-to-be-this-way-230843>.

²⁶ “Proposed Urban White Paper.” The Environment, Transport and Regional Affairs Committee. 2000. <https://publications.parliament.uk/pa/cm199900/cmselect/cmenvtra/185/18507.htm>.

²⁷ “A Compact City for the Wealthy?”

²⁸ “A Compact City for the Wealthy?”

3.3 Challenges of a Growing Population

Today, the world's population is growing exponentially, from two billion in 1928 to eight billion in 2022. Due to the unpredictable increase in population growth, the housing crisis soared further, polluting capital cities with a number of inhabitants that it was never designed to accommodate.

Possible ways of providing a living to the population of London is by *Super Gentrification* (where space is so sparse, the only area to regenerate and expand is an area which has already been gentrified) across generations. This is one potential solution to stop rural gentrification, protecting the countryside by building upon existing developments in Central London until developments can only flow outward towards Greater London. However, though this could potentially protect the rural countryside, it would have dire effects on the space and living conditions in London and Greater London. Equally, this would also exacerbate the housing and wealth inequalities of the city centre and urban-rural continuum by increasing the value of properties in Central London and, eventually, the developments in Greater London. A way of reaching an equilibrium between the two would be to expand in rural areas of the country with access to high-speed travel links to access the capital within an hour of travel time. This would decrease the need for further developments in Greater London and the *super gentrification* of Central London. It would, however, gentrify countryside areas, and the construction would have several impacts, from ecological damage, environmental damage to *new-build gentrification* (completely changing the dynamic of the existing area and surrounding inhabitants by creating new-build villages in large quantities). An example of this would be “HS2, which has faced criticism because of cost overruns, environmental damage and its impact on house prices along the route,”²⁹ a fast-speed train line from London to Birmingham, which has been cancelled and revised several times whilst also using double the original £56 Bn.



Fig 13. Tower Hamlets Estate overlooked by Canary Wharf Financial District

²⁹ “Boris Johnson Approves €126bn controversial high-speed rail.” Denis Staunton. 2020. <https://www.irishtimes.com/news/world/uk/boris-johnson-approves-126bn-controversial-high-speed-rail-1.4170821>.

4. How London has Responded, Using Densification as an Approach.

Modern-day city residents value several different aspects than historically, in the report of Living in a denser London by LSE, their survey respondents (from dense developments) address the most important aspects they look for when choosing a home. The highest voted aspect was the properties links to travel, secondly came security and third came affordability, over aspects like a long-term home, a spacious home and the opportunity to outright own their home (Fig 14). They found that, even with London’s planning policy of dense buildings to be suited with substantial travel links, respondents often said their local transport was under strain. Arguably densification will improve the city centre. “Dense cities are more environmentally, and socially sustainable”³⁰, the more people that move towards the city centre find themselves favouring public transport infrastructure rather than privately owned vehicles. Living in proximity to the essentials changes the dynamic of social life and decreases the city's physical footprint. With the implementation of congestion charges, ULEZ (Ultra Low Emissions Zone) and parking restrictions, London has managed to keep vehicles from congesting the city centre who are not primary users of the city.

Several noticeable benefits for residents in dense zones are close residency in relation to employment, shops and necessities, access to reliable public transport, given that the local council and government are contingent on the provision of adequate infrastructure not to cause a backlog. “Social sustainability also depends on the composition of the neighbourhood’s population and the degree of stability and continuity.”³¹ A range of demographics, mixed-use and mixed-tenure developments are a step in the right direction to promote dense living. Below are three case studies in Central London, all relatively close together with different circumstances, some showing potential for a future of dense living and others showing negative results due to various factors.

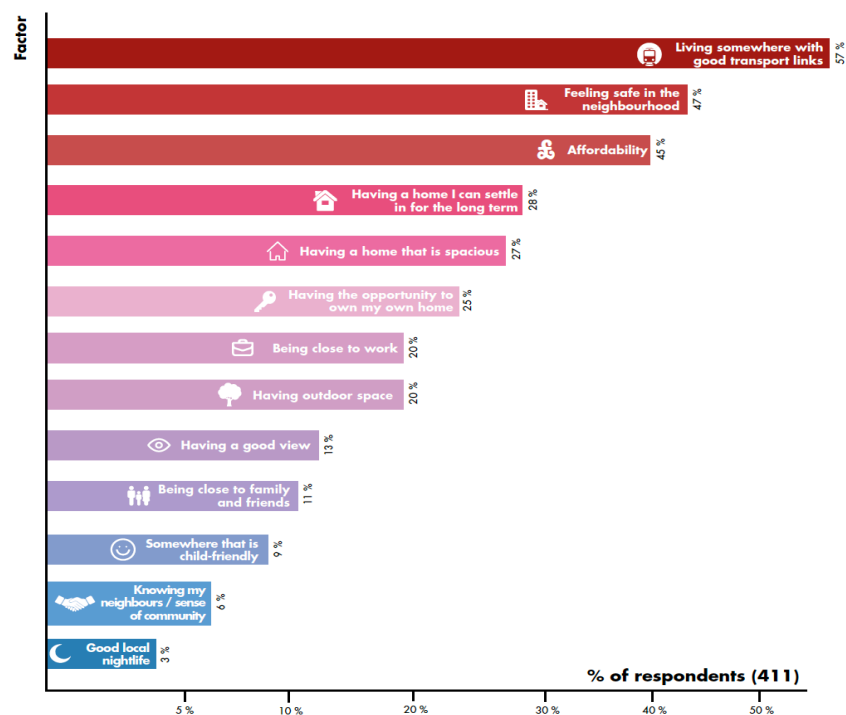


Fig 14. “Survey analysis on most important aspects of a home” LSE – Living in a denser London

³⁰ “Living in a denser London – How residents see their homes.”

³¹ “Living in a denser London – How residents see their homes.”

4.1 London as A Case Study 1 Tachbrook Estate

Tachbrook Estate is located in Westminster, in the heart of London and the home of Parliament itself. It has 427 units across 14 buildings, each between 2 and 8 storeys tall. It has a density of 225 dph, with a *medium standardisation of density* (as shown in the analysis of combatting density by David Levitt) of 90-250dph. Tachbrook Estate covers a large plane of the area as it was built in three stages between 1930s-1950s, continually owned by Westminster Housing Trust Ltd. Tachbrook Estate is a prominent case study in that *its demographic is 94% social tenants* with 0% owner occupancy and 0% private tenants. This is an example of a *historic housing scheme* that has housed many working-class people who have stayed at the estate for up to three generations. As the residents have stayed there for so long, they have an incredible sense of community and security compared to newer developments. Furthermore, this is an example of a council-owned historical development that sits right at the heart of London on valuable land that simply cannot be removed, with the rest of the area gentrifying around it whilst it sits encompassed by modern offices. Similar to Singapore and Hong Kong (See Appendix A, B), this is an example of success in London, with government introduced schemes for housing working-class citizens with subsidised rent. Densification has been proven successful in the form of social housing or affordable housing, built by the government, and let back to the people at a subsidised rent. As one of London's main issues is the social perception of density and its relation to poverty, deprivation, and crime, it is essential to address densification as an implementation strategy via social housing, affordable housing and its implications on society. To understand why Tachbrook Estate was such a success with its residents, we must understand several things about the development. The development was about the people, the same people whom the capitalist elitists ignored. They were provided council-owned, rental apartments with subsidised costs, also the first scheme with lifts introduced to an affordable/social housing development. Though there was nothing special about the apartments, they had areas of space to congregate, for children to play, and a sense of security with their relationships in the community. As they have been established in the community for so long, they do not want to move, especially when developers come and offer them a chance at social housing in the new development that would replace it. It would not be enough to rehouse the whole community of the estate. Lessons can be learnt from this development to promote dense living to be permanent households suitable for all demographics by giving facilities, open space, communal courtyards/gardens and building management to solve issues. Dense towers can work to accommodate the growing population, however, developers should discuss with previous residents of dense developments to see where they can improve and offer a better quality of life in the amenities and facilities of the development.



Fig 15. Inside Social Housing

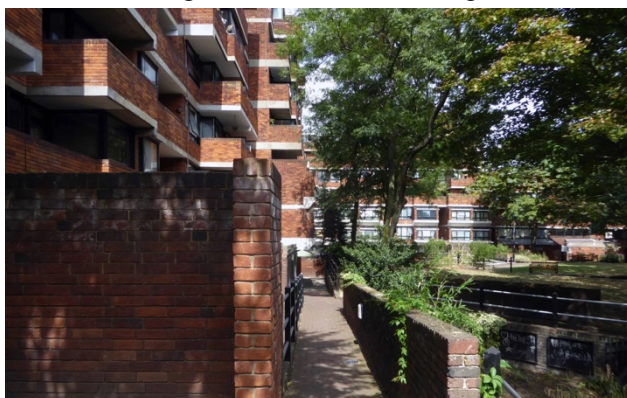


Fig 17. Tachbrook Estate



Fig 16. Tachbrook Estate

4.2 London as A Case Study 2 Strata SE1

Strata SE1 is located in Southwark, also in the heart of London, with several good travel links and multiple tube lines. It has 408 units over 43 storeys, at a density of *1,295 dph (tall density)*. It was developed by Brookfield Europe and has been occupied since 2010, however, “Aviva Real Estate owns the building's freehold”³². Strata SE1 tower sits on the land, previously a council-owned estate known as Castle House of 1960, housing many in need of social housing. This development was controversial for the “lack of social housing and poor public realm”³³ and the plan to replace the shopping centre. This is a crucial example of the council reallocating socially housed tenants elsewhere to provide the land to the highest bidder for the densest building with the most units for the largest profit. Generally, the previous tenants would have been told there would be reallocation to the new development, although it would be significantly fewer units, they would still get the chance. However, in 2010, it was not government policy to push for a percentage of units of dense developments to be social housing. Owner-occupiers in this scheme were around 38%, and private tenants at 62%. Compared to Tachbrook Estate, Strata SE1 has a different demographic, *mainly consisting of single professional workers or co-sharing*, as the tower does *not offer any outdoor space, facilities or amenities that families would benefit from*. Respondents of the LSE survey said that “it is cheaper to live here than in Central London. It is a modern new building, the only building where I do not have to lock my door. The developers are serious about who lives here. It is a good community of people.”³⁴ Alike Tachbrook Estate, the tenants who live there enjoy having the security of the community.

Furthermore, they address how it is essential to have good management, where fixing issues like lifts can be done quickly, and someone is physically there to take accountability. One issue this development does not face, unlike other new dense developments, is a conflict between demographics. Developments like Thurston Point (a high-density development in Lewisham, see Appendix C) has one of the highest rental cost, higher than the internationally accepted benchmark of 1/3 of ones salary, this causes conflict with socially housed tenants as they are living in the same building for a substantially lower price and may cause tension between each other, one way this can be avoided is to reduce rent costs and to put an end to building facility split (where socially housed tenants are not allowed to use the same facilities as other homeowners in the building). Singapore’s dense housing has shown success in social integration and merging different demographics to live together in the same building to create a healthy community (see Appendix A). Strata SE1 tower is an excellent example of using density to house the growing population in many units with a low amount of land surface area used up. It also proves funding building services promotes a higher quality of life, like the developments in Singapore (Appendix A). One limitation preventing this development from promoting further dense buildings in the capital is the lack of social integration of different demographics, mixed-tenure and mixed-uses, preventing families from inhabiting the building.



Fig 18. Castle House (Demolished)

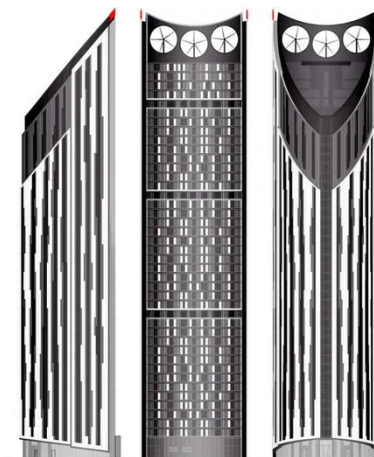


Fig 19. Strata SE1 Tower

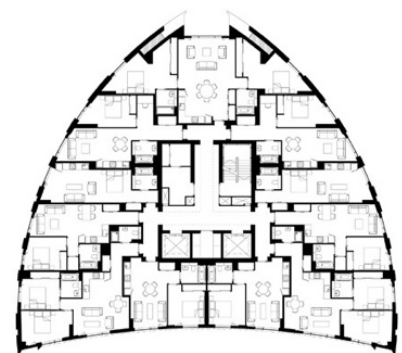


Fig 19.1 Strata SE1 Tower Plan

³² “Living in a denser London – How residents see their homes.”

³³ “Living in a denser London – How residents see their homes.”

³⁴ “Living in a denser London – How residents see their homes.”

Looking at the floor plan of Strata, it is apparent that it was designed for single to dual tenants as a pose to East Village, where analysis of demographic shows their floor plan encompasses a more extensive range of demographics (including families) with open space, services and multiple bedrooms. Strata is still a critical case study to analyse its benefits and its negative implications, such as a lack of space and no sign of multifunctional, interchangeable design with spaces that can be altered to its demographic.



Fig 20. Inside Strata SE1 Tower Apartment

4.3 London as A Case Study 3 East Village

East Village was built in development of the 2012 Olympic Park to house athletes. As a development that was created to an unmoveable deadline, they hired several architectural and engineering firms to work together to create the master plan. It has 2,818 units, 63 buildings between 8 and 12 storeys, with a density of *147dph (medium density)*. It had been converted from athlete's accommodation to apartments shortly after the Olympics ended, with the units previously not having kitchens and other necessities for permanent living. The ownership was passed onto two large landlords and three housing associations marketing to single professionals. This created a demographic of *29% owner-occupied units, 57% private tenants, 12% social tenants and 2 % other*.

As this development was built as a village, surrounded by services, transport, open space and the rest of the Olympic park, the units ended up being primarily family-occupied due to the promotion of communal '*pocket parks*' and services along with the unit sizes and multiple bedrooms. This development has *significantly higher accomplishments in promoting dense living* over Strata, as *several firms worked with the community to design the units, creating better homes and a higher quality of life*. In addition to this, like appendix A, B East Village also introduced *commercial retail spaces on the ground floor for the community*, and eventually a further introduction of high-rise residential blocks, hotels, offices and student accommodation.



Fig 21. East Village Apartment Floor Plan



Fig 22. East Village



Fig 23. East Village and Proposed New Builds

5. Design Speculations for the Future

Unfortunately, interchangeable design is still not noticeable in dense developments. Multi-generational Living is a step in the right direction for the future of design. Multi-generational house design consists of interchangeable, manoeuvrable and flexible designs to accommodate the different use of space. It is designed for three different generations, and it is inevitable that across an average of 100 years, the social and family dynamic will shift. The design embraces density by promoting different generations of families to live within the same space. The house is strategically planned to allow several different combinations of floor plans to be used. This is critical as it can transform, regardless of the demographic that utilises the space, its floorplan would suit either party. Additionally, it will allow the incorporation of technological advancements and shifts in trends by decreasing the limitations of tweaking the space around structural limitations and load-bearing walls. This is the future of living and a potential solution to accommodating the growing population and the housing crisis. Alternatively, this could also provide a solution to preparing cities across the globe for pandemic congregation prevention by creating a space that can transform to the party's desire and state of the world. The below image (Fig 24) highlights a floorplan design embracing a multi-generational household by the NHBC Foundation. This concept could be replicated in dense tower blocks by giving the tenant (end-user) different configurations to suit their lifestyle, social dynamic and future advancements. The allowal of removable partition walls shown to the homeowner pre-purchase of the property will give them the extra certainty that the property will suit their dynamic, no matter their demographic. If these are government-owned properties like the HDB blocks in Singapore (see Appendix A), then a cost-benefit analysis would prove to be cheaper to the landlord (government) to promote a better quality of life for dense tower tenants. It would promote dense tower blocks to the city and change the stigma of Londoners and tall, dense buildings to a positive stigma like in New York.

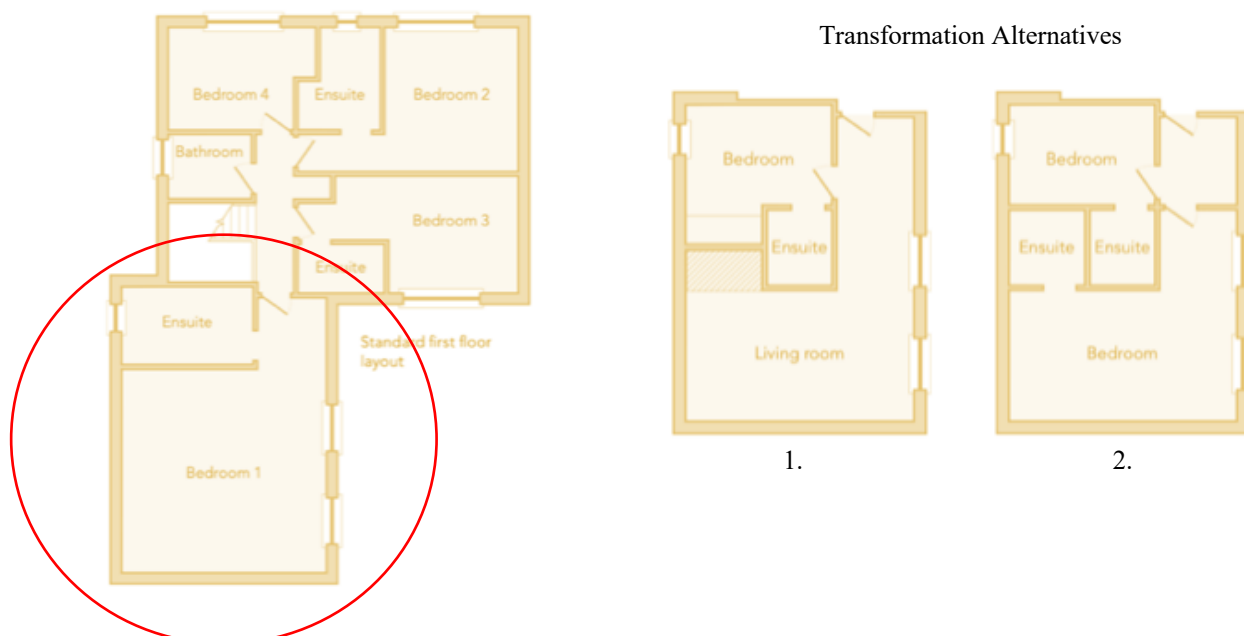


Fig 24 Multi-generational Household Design by NHBC Foundation

Conclusion

In conclusion, traditional low-rise housing is no longer a viable option. Densification has proven to be a solution to the housing crisis in several countries, therefore, it should be considered in the future building policies of London. Though it has proven effective in various case studies, other case studies have shown the negative impacts of dense developments when it has not been planned out properly. Equally, when given circumstances have allowed foreign investors to step in to fund the project, further exacerbating wealth inequalities across the city. Densification increases the overall housing supply and reduces the pressure on existing housing stock. Foreign governments have created divisions to target the housing crisis and provide low-cost affordable housing for their people, such as the HDB in Singapore and the densification of Hong Kong (Appendix A, B). This would suggest that it could be replicated in London and other European cities, given that the government provides sufficient resources to create a dedicated team to tackle the crisis.

Historically, London has also had schemes for affordable living, though instead of selling their developments to the workers at a leasehold like in Singapore, they have been letting them at a subsidised price. These schemes, such as Tachbrook Estate, have proven densification works as up to three generations of families have stayed at the estate, valuing: community, security and good management of the development. London originally had the upper hand, with the industrial revolution first shaping the city and other European cities following. It also created a larger issue as they built rapidly, taking up valuable land to house factory workers without considering how it would impact future generations. Secondly, a handful of wars, recessions and the recent pandemic have caused an unending inflationary spiral. For densification to be a success, it must be accompanied by a growth in infrastructure that can accommodate the influx of population that the developments would bring. This includes expanding public transport, developing new schools, and upgrading utilities and other essential services. Furthermore, it is also crucial for policymakers and developers to take a comprehensive approach to the development of dense buildings by focusing on land use and transportation planning as well as the creation of mixed-use, diverse developments combining residential, commercial and recreational spaces with the promotion of livability, sustainability and accessibility for all members of the community.

The government must also change in several ways to promote and support these developments by revising zoning and building codes to allow for higher-density development. In addition, they need to provide incentives or subsidies to developers, such as tax credits or reduced fees, to deter foreign investors from financing the projects, thus allowing a higher influx of owner-occupied residents over private tenants. Lastly, London needs to change the social influence and attitudes towards these types of structures, with the associations of low-income housing of the past. The government must highlight the benefits and how they can improve the residents' quality of life through sustainability, affordability, communal facilities and sufficient building management. They need to take a proactive role in promoting and supporting the development of these structures by investing in infrastructure and promoting education and awareness. They could do this by showcasing successful dense projects demonstrating the potential of these structures being high-quality, livable environments, thus addressing previous issues of privacy and poor quality of life. To shift social influence and attitudes towards denser buildings, involving the community in the planning and development process is essential. This can include seeking input from residents and stakeholders about their needs and preferences and engaging with community organizations and advocacy groups. By involving the community in the decision-making process, it is possible to build support for denser buildings and ensure that they are developed sustainably, both for the environment and the people, to develop a new economic standard and better quality of life.

Possible design considerations that could benefit the implementation of dense buildings are by tackling affordable living first, whereby the government creates and funds these developments like the HDB in Singapore, also selling the properties to the working class at a leasehold rather than renting over tenure periods, therefore financing the project and providing them with almost instant returns once the units are sold. Then the focus can transition to the densification of buildings with different classes and demographics and strategic design to incorporate social changes and future technological advancements.

6. Recommendations for Future Research

Future research on the topic of densification playing a role in the solution of combatting the housing crisis should focus on several fundamental areas. More in-depth case studies of successful densification projects across the globe should be investigated to better understand the strategies used to achieve success. In addition to this, research should also examine the negative impacts of densification, such as inadequate infrastructure to uphold the demand of the new residents of the development, loss of land surface area and a higher emissions output of the immediate area, as well as to explore ways to mitigate these effects.

Research should investigate the potential of modern building technologies and sustainable materials to create more sustainable and net-zero units. In addition, more research should be completed to incorporate affordable housing options in densification projects whilst engaging and involving community members in the planning and implementation to address the conflict between demographics experienced in some of the case studies in this paper.

Overall, future research on the topic should provide a comprehensive understanding of the potential densification as a solution to the housing crisis and growing population, as well as practical design recommendations for implementing these dense developments effectively.

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Appendices:

1. Appendix A: Singapore as A Case Study
2. Appendix B: Hong Kong as A Case Study
3. Appendix C: Thurston Point – London Case Study

Appendix A: Singapore as A Case Study

A significant case study that dealt with the housing crisis is the Republic of Singapore. Alike England, Singapore too had a housing shortage in 1959. Although England had an administrative organisation to manage London's urban density and development, several significant events led to its downfall. Firstly, the weak economy from WW2, labour shortages and mass immigration in 1960, to the controversial government led by Margaret Thatcher also strained the economy. This led to the administration's dismantling as there was very little public funding for urban regeneration, creating the downfall of the public sector in housing and council resources. Singapore, in contrast, strategically set up the Housing Development Board (HDB) due to an influx of immigration, where the government and private sector struggled to keep up. Their task was to “increase the supply of affordable housing”³⁵ for the residents of Singapore. The government offered “subsidised flats for sale in 1964 that laid the foundation for Singapore’s real-estate success. Under its ‘Home Ownership for the People Scheme’ around 2,000 two- and three-bedroom apartments were sold to lower-middle-income citizens.”³⁶ They rapidly developed mass housing up to 10 stories with around 12 flats per floor to accommodate the working class, almost all at a 99-year lease. This mass housing was built in blocks, and in addition to the “meticulously planned economy, the management of the estates was integrated into policies that included everything from the design of the city’s mass transit system to racial integration.”³⁷

Like the conflict between the socially housed and private tenants in newly built dense towers in London, Singapore also battled a social issue of racial tensions. The policy of strategic racial integration of mass housing ended racial enclaves. It promoted social harmony by introducing a further policy of a minimum level of different ethnic groups in the buildings. Furthermore, in the town of Bukit Ho Swee, a fire broke out over a region of dense slums, killing four people and rendering 16,000 homeless. They managed to rehouse the survivors within a year of the HDB operating, “winning over a sceptical public.”³⁸ In addition, London experienced a similar tragedy of a dense social housing block that set fire known as Grenfell. Seventy-two people died, and it took over three years to rehouse a minimal 600 people. The fire spread faster due to cost cuts from the developers using non-fire-retardant cladding and the lack of building regulatory standards set out by the government.

Compared to Singapore, the weaker economy is not the only thing to blame. Government policy and mismanagement of planning and cost cuts leave the government and the developers to blame for the tragedy. If only the government had allocated resources effectively, it could have taken less than three years to rehouse the residents, thus potentially winning over the public and promoting the combatting of the housing crisis in London. A key factor showing the success of the embrace of dense buildings is that few HDB projects have been expanded, and with more than 1 million HDB flats, none have been destroyed. The economy has further bloomed with “an unmodernized two-bedroom unit now selling for around S\$220,000, with only 43 years left on the lease. In 2016, the total resale value of Singapore’s HDB apartments was estimated to be more than S\$400 billion.”³⁹ This shows the success

³⁵ “Why Singapore Has One of the Highest Home Ownership Rates.” Adam Majendie. 2020.

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³⁷ “Why Singapore Has One of the Highest Home Ownership Rates.”

³⁸ “Why Singapore Has One of the Highest Home Ownership Rates.”

³⁹ “Why Singapore Has One of the Highest Home Ownership Rates.”

of the HDB developments as even a flat with half the original leasehold period is still being sold for such high amounts, and the total value of the HDB developments makes a substantial contribution to the economy.

Over time, the HDB analysed and learnt from their previous developments, creating modern and further sophisticated housing. In the “last financial year, the government handed over keys to at least 16,600 new apartments and almost 70,000 more were under construction... whilst continuing to maintain its buildings and grounds carefully, periodically upgrading estates with new elevators, walkways and facelifts.”⁴⁰ The funding to keep the developments in a working condition increases the quality of life and allows the residents to alter the looks of their apartments. A potential strategy London may take on in the future, whereby government-funded dense buildings could house the surging population in a liveable manner. Doing this would change the current stigma around dense buildings in the U.K. and potentially lead to an embrace without seeing them as a centre of deprivation and crime to the contrast of affluent living in Manhattan penthouses. In addition, these administrations have positively impacted the community by creating a solution for the housing crisis. Grenfell also proves damaging for what could happen if its costs are valued higher than the quality of the build.



Fig 25. Inside HDB’s renovated flats



Fig 26. Singapore’s HDB Dense Towers

⁴⁰ “Why Singapore Has One of the Highest Home Ownership Rates.”

Appendix B: Hong Kong as A Case Study

Compact city planning has gained significant attention from scholars as a solution for sustainable development. According to Bibri et al., density is embraced for city planning due to its advantage in economic, social advantages and sustainable development in land use.⁴¹ Hong Kong equally embraced this idea as, like London and Singapore, they too had a housing shortage and population increase in the 1960s. They combatted this by increasing urban density and building more units taller than before, utilising less land surface area.

One example of their first developments is known as the ‘Monster Building’, which is comprised of five interconnected towers. This development created the foundations for the government of Hong Kong to push for more developers to build dense tall towers, creating the concrete jungle it is known for today. Like Singapore, Hong Kong created this development to offer government-subsidized affordable housing for low-income residents. The upper floors of the early developments consisted of apartments, whilst the lower floors were utilised for shops and shopping malls for its residents and surrounding neighbourhood. This has been referred to as Hong Kong's cheapest housing development, whose goal was to “cram in as many housing units as the building codes would allow.”⁴² This created small spaces that the residents of Hong Kong inhabited. They would alter “buildings



Fig 27. The Monster Building



Fig 28. Hong Kong's Dense Tower Blocks

to use every space, old apartments were subdivided, balconies were enclosed and turned into additional rooms, caged balconies were added on building facades”⁴³, giving the idea of the concept of transformable spaces with removable partition walls to meet the inhabitant's desires.

However, these composite buildings were huge at the time, and once they were completed, Hong Kong changed its “building codes to favour skinnier towers that allowed for more light and better ventilation.”⁴⁴ This put an end to the hanging air-conditioning units on the side of balconies to a flush wall of a skyscraper with the air-con units built in amongst the windowpane, giving Hong Kong the nickname of “City of Bay Windows”.

Hong Kong originally had one of the most overpopulated cities in the world, known as the Kowloon Walled City, which sadly was demolished in 1993 after the Japanese occupation of WWII. They have always been known to house their population successfully in dense buildings. How can London take inspiration and utilise dense tall towers to house their growing population? The concrete jungle of Hong Kong drove tourists to visit the dense city, though it was not their intention. Would London be able to use this to drive tourism too? The significant issues London faces are Londoner's social views and the government. With the history of tall buildings being associated with deprivation and crime, will Londoners be able to change their views? Or will they be too stubborn and proud as a city to

⁴¹ “Compact City Planning and Development: Emerging Practices and Strategies for Achieving the Goals of Sustainability.” Simon Elias Bibri. 2020.

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⁴³ “Housing in Hong Kong & Macao.” Tealida. 2011. <https://www.tealida.com/world/hongkong/#content>.

⁴⁴ “Hong Kong’s Modern Heritage – The Monster Building.”

incorporate inspiration and proven theory from another country into its urban design? Only time will tell. Overpopulation, the government, the tipping point of no more houses being available to buy, and a significant surge in London's housing prices will kick a revolution into effect.



Fig 29. Inside Hong Kong's Dense Apartments



Fig 30. Inside Hong Kong's Dense Apartments

Appendix C: London Case Studies: Thurston Point

Thurston Point is classed as a “*Tall Density*” as it has a *dph* of 390. It has 406 units, across two buildings, one a 15-storey tower and the second 8-9 storeys.

This Development has 24% owner-occupiers, 58% private tenants, 12% social tenants and 6% other. It is one of the highest costs for living in dense developments across London, with tenants spending 1/3 of their income on housing. 69% of the demographic are two-person professional workers, which shows this development is not family oriented nor does it provide services or facilities for family living. It has close access to transport however its location opposite a roundabout made it difficult for pedestrians to access. Unfortunately, even with the high costs, this development does not provide any management, and has a bleak courtyard which does not contribute to the streetscape, as the developers designed this space as rent blocks, primarily owned by the developer, renting it to tenants at market prices.

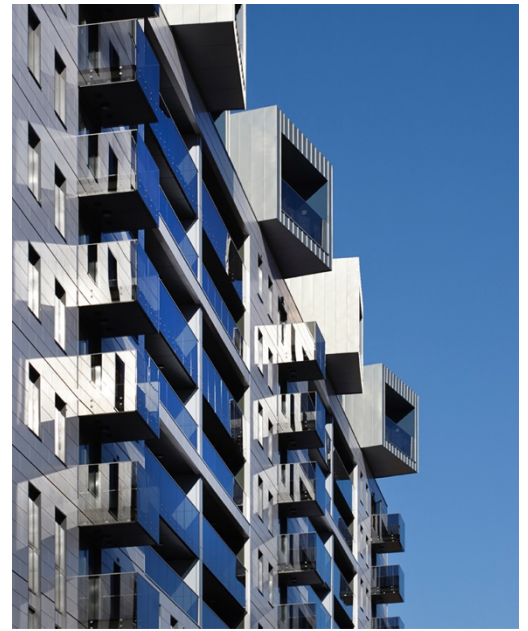


Fig 31. Thurston Point Apartment Block



Fig 32. Thurston Point Ground Floor Retail Spaces



Fig 33. Thurston Point Development