S.M.A.R.T. Density

Policy Exchange

Building Dense & Building Beautiful

By Ike Ijeh

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About the Author

Ike Ijeh is Head of Policy Exchange's Housing, Architecture & Urban Space Unit. He is also a practising architect, writer and author of two books on architecture, Designing London: Understanding the Character of the city (Lund Humphries, 2020) and The 50 Greatest Architects: The People Whose Buildings Have Shaped Our World (Arcturus, 2021). He was also a co-author of Architecture Beyond Criticism: Expert Judgement and Performance Evaluation (Routledge, 2014). As well as establishing his own architecture practice and founding original London architecture walks provider London Architecture Walks, Ike has been an architecture critic for two of the UK's leading architectural trade titles and has lectured on the subject extensively in the UK and abroad. He was the winner of the 2018 International Building Press (IBP) Architecture Writer of the Year and received an IBP commendation in 2020. He was also nominated for the Professional Publishers Association (PPA) Writer of the Year Award in 2016 and has been on the judging panels of some of the UK's foremost architecture awards. He has sat on the design review panels of two London boroughs and is a former trustee of the Hackney Historic Buildings Trust.

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Cover Photograph © NOSHE - Andreas Gehrke
Cover Image: Achenbachstrasse 43/45 is a Dusseldorf housing development inspired by traditional London mansion blocks and completed in 2024.

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Endorsements

"Britain once created some of the most successful high-density neighbourhoods in the world, and then we stopped building them. Places like Marylebone, Kensington and Maida Vale are not dense because of tower blocks and high-rise, but because of mansion blocks and mid-rise streets that combine character and community.

"This welcome Policy Exchange report shows how we can revive those traditions and once again deliver high-density developments that people actually want to live in. It reminds us that beauty is not a luxury – it's the foundation of places that endure, attract investment, and win local support. If we want to build more homes, we must build them beautifully, so that good design and high density go hand in hand."

James Cleverly MP, Shadow Secretary of State for Housing, Communities and Local Government

"This new Policy Exchange paper is a useful contribution to the debate around densification and could unlock a new understanding of how high density can be delivered in a way that significantly increases urban housing supply without harming local character or alienating local communities."

David Simmonds MP, Shadow Minister for Housing, Communities and Local Government

"I welcome this work, it makes clear that the intelligent way to raise housing density is not about building high-rise towers and urban sprawl but by revisiting what worked in earlier eras, mansion-style blocks in towns and cities."

Margaret Mullane, MP for Dagenham and Rainham

"Almost all our housing problems could be solved by the gentle densification of our cities. Not sprawl; not tower blocks; but as this paper advocates, comfortable family apartments in four- or five-story mansion blocs. Grant that, and much follows."

Lord Daniel Hannan, former Advisor to the UK Board of Trade

Executive Summary

As one might expect in the middle of a housing crisis, the Government is committed to increasing residential density in England. The Government recently announced plans to maximise density around certain train stations by awarding nearby housing developments default planning approval. And changes earlier this year to the NPPF (National Planning Policy Framework) explicitly called for a "significant uplift in the average density of residential development". However, under Britain's current density model, it is difficult to see how this target can be achieved in a popular and sustainable way.

This is because Britain's current density model has failed. In its dogmatic adherence to insufficient low-rise horizontal sprawl in the suburbs and inappropriate high-rise vertical sprawl in inner cities, it has failed to meaningfully increase housing supply, failed to protect urban character, failed to promote beauty, failed to incentivise economic growth and perhaps worst of all failed to resolve the housing crisis. This paper seeks to address these shortcomings by presenting a newer, smarter approach to how we understand and implement density.

London's urban demographics reinforce these conclusions. Some of the most desirable districts in the capital are also its most dense with historic neighbourhoods like Marylebone, Chelsea, Victoria, Maida Hill and Kensington using their tree-lined avenues and ambassadorial mansion blocks to forge an emblematic ideal of civilised urban domesticity that it is foolish of us not to seek to replicate en masse.

The Government's new Neighbourhood Plan makes much of empowering local communities and listening to their preferences and priorities. What better way to do this than replicating some of our most popular neighbourhoods for future generations to enjoy? **If we want to build towers we should build high-rise. But if we want to build neighbourhoods and solve the housing crisis we should build mid-rise.**

Fewer schemes illustrate the failure of Britain's density model than London's Nine Elms. Nine Elms is a massive urban regeneration project just south-west London that was once the largest of its kind in Europe. However, it has proved hugely controversial as a result of its tall buildings, relatively low social housing provision, perceived poor design quality and its alleged pursuit of a contentious high-rise, tower block development model that has been accused of being alien not only to its surrounding neighbourhoods but to London's urban tradition and identity as a whole. Yet in both characteristics and controversy, Nine Elms is a totemic representation of countless other smaller residential developments that

have been built across Britain since the turn of the century.

Nine Elms covers approximately 227 hectares and aims to provide around 20,000 homes when complete. This broadly earns it a density ratio of just over 88 dwellings per hectare (dph). **But if we had covered Nine Elms with, for instance, mansion flats and streets instead of slabs and towers, the 200 dph mansion blocks are traditionally capable of achieving could potentially have built thousands more homes on exactly the same site. This strategy nationally could also make a significant impact on the Government's commitment to building 1.5 million homes before the end of this Parliament.**

Moreover, the homes this alternative approach provided would have been considerably more sympathetic to London's traditional scale, character and vernacular and, as **mid-rise can be up to 40% cheaper to build than high-rise**, would have also had the potential to provide significantly more social housing at a time when London, like much of the country, is experiencing an acute housing crisis. In a city whose house prices have risen by 357% in the past 25 years, these extra homes would represent a dramatic and historic amelioration of the chronic affordability constraints that bedevil first-time buyers in particular and fester at the heart of the housing crisis.

More broadly, London, with an average density of 24 dph, may be the densest city in the UK. But, with the exception of Oslo, Dublin, (two of Europe's smallest capitals) and Rome, (one of Europe's most archeologically sensitive urban sites) **London is the least dense major capital in western Europe.** This alone exposes the futility of the misconception that high-rise secures high density, **London has built hundreds of residential tower blocks in the last 25 years but it has a fraction of the density of cities like Barcelona and Paris.** Yet these are cities that have largely eschewed high-rise in favour of the mid-rise apartment block and, while, like most Western cities they have their share of housing issues, have nonetheless seen both their densities and housing supply benefit handsomely as a result.

Consequently, if London's density were to be increased only marginally to match the 30 dph density of Berlin – a city half its size and with just over a third of its population – this would mean an extra million dwellings in the capital with no encroachment onto greenbelt land beyond it. This would easily accommodate the over 341,000 households languishing on London's council housing waiting list and vastly outstrip the annual housing targets recently set by the Government. Similarly, if Birmingham's density was increased from its 17 dph to London's 24 dph, that would provide an extra 200,000 homes for Britain's second biggest city. Although highly hypothetical, these incremental density changes illustrate the massive potential increasing density has to systematically transform Britain's economy and productivity.

This report seeks to prove that high-rise does not mean high density and by refusing to explore more traditional mid-rise housing types that are capable of achieving high density more cheaply, more sensitively,

more sustainably and less confrontationally than tall buildings, we are not only failing to solve the housing crisis but we are potentially making it worse.

A New Density Approach

This paper therefore calls for two fundamental measures. First for a dramatic increase in the residential densities we expect new housing developments to deliver. And secondly, for a new, more intelligent policy approach to density that is capable of extracting the benefits high density living can bestow while effectively mitigating against the negative impacts that irresponsible, insensitive and inappropriate high-density developments have historically cultivated.

There are multiple provable and observable real-world benefits to increasing density and focussing these increases in city centres. **City centres are generally 21% more productive than non-urban areas and host 72% of all highly-skilled jobs,** maximising the potential densification has to promote economic growth.

The Agglomeration Effect is a spatial economic principle that recommends businesses and people cluster together in specific, concentrated geographic areas in order to maximise growth and optimise the exchange of labour, services and ideas. But yet again the failure to adequately densify British cities is stopping the benefits of the Agglomeration Effect from being fully utilised.

In 2022 The Centre for Cities calculated that despite being broadly the same size, **in Marseille 87% of residents could reach the city centre in 30 minutes by public transport, compared with only 38% in Leeds.**

Failing to densify is preventing cities from making the economic gains that would both justify and finance the new infrastructure that would in turn make the city wealthier and more economically attractive. This is a vicious density circle repeated constantly across the UK.

The Government has promised a "devolution revolution" and made kickstarting economic growth, particularly in Northern regions, one of its key electoral pledges. These are also some of the central motivational impetuses behind the proposals contained in the revised Planning & Infrastructure bill. What better way to demonstrate the Government's commitment to these outcomes than not only using high density targets to create tens of thousands of new homes in our cities but to help deliver the public transport improvements it and similar regions so sorely need?

On the other side of the coin, there is a prodigious assortment of popular arguments against high density. Overcrowding, overdevelopment, overstretched infrastructure, social isolation, dislocated communities, contextual insensitivity, substandard accommodation and bad design have all in the past been associated with high density development.

No meaningful new programme of densification can be embarked upon unless these potential drawbacks are directly addressed. Which is why, as well as calling for increased densification, this paper also calls for a brand new density approach, one that will ensure the highest

standards of placemaking, urban and architectural design, promote the mid-rise housing types best placed to sensitively yet determinedly densify our cities, facilitate the mixed uses that will lead to vibrant and attractive neighbourhoods, underwrite the viability of infrastructure expansion and ward against the mistakes and misconceptions that have often left communities, especially in suburban areas, wary of new housing and hostile to increasing density.

S.M.A.R.T. Density

This new approach is called S.M.A.R.T. Density. S.M.A.R.T. is an acronym that updates our understanding of the popular term "Gentle Density" by forging a more granular understanding of what density means and how high density can be responsibly and sustainably achieved in order to increase housing supply and improve our built environment and social wellbeing.

S.M.A.R.T. Density comprises the headings below and is diagrammatically illustrated on p.11.

S. stands for **STREETS & SPACES**

Ensuring high density does not impoverish public realm or placemaking and ensuring that increased housing supply does not come at the expense of human scale, urban quality or contextual empathy. Optimising the role of the natural environment in softening the urban condition.

M. *stands for* **MID-RISE & MANSION BLOCKS**

Establishing mid-rise as the new default residential scale for all new city centre and inner-city developments. Direct promotion of contemporary reinventions of the mansion block as a preferable residential model to high-rise and a revived English high-density residential typology.

A. *stands for* **ACTIVTY (Economic & Urban) & AESTHETICS**

A new settlement for suburbia that will encourage the sensitive and piecemeal densification of suburban contexts, using mixed-uses to assist social integration and increasing urban activity in suburban areas and economic activity across towns and cities as a whole. Also, a strategic commitment to ensure that high density maintains high architectural quality and does not come at the expense of protecting and enhancing design, character and place.

R. *stands for* **RESIDENTS & REGULATING DEVLEOPMENT**

Safeguarding social wellbeing within a high-density environment and using community empowerment and engagement to militate against social isolation. Prioritising brownfield over greenbelt land and using density to secure more assiduous planning determination of the type and location of housing.

T. *stands for* **TRANSPORT**

Ensuring the high density is only achieved with the infrastructure improvements, especially to public transport, necessary to efficiently and sustainably maintain it.

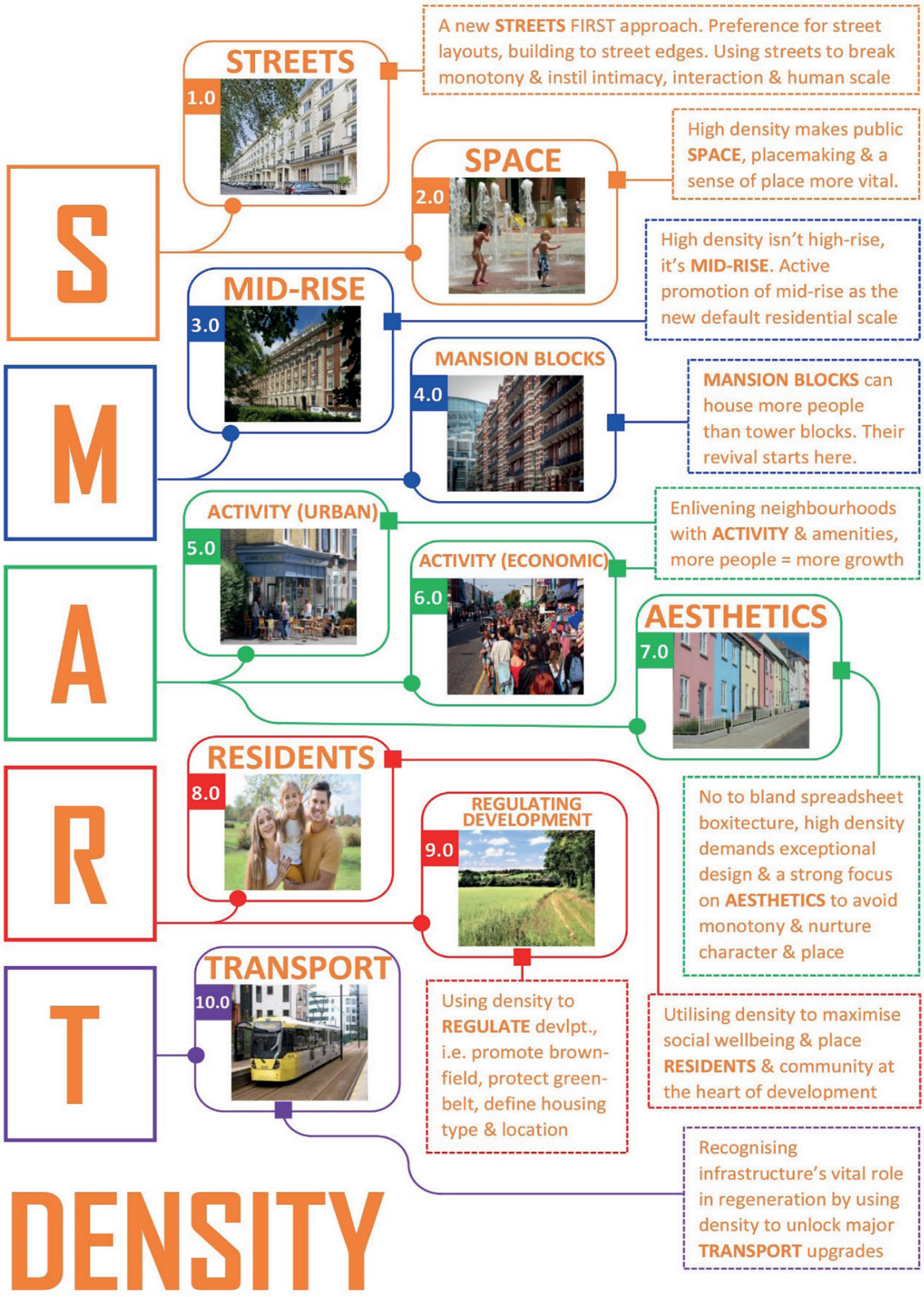
*

It is the intention of this paper that this new S.M.A.R.T. Density approach will ensure that the next generation of Nine Elms will not subscribe to an outdated, identikit, internationalist version of how high-density can be delivered and unilaterally impose alien design and development patterns onto an established urban grain and vernacular. Instead, it will reinvent

and reinstall the mansion block as our archetypal English high-density housing model and reassert our built environment as a high-density mid-rise fabric rather than a highly performative high-rise one.

In short, it is this paper's contention that it will be considerably easier to sell new housing to an often sceptical public and thereby help solve the housing crisis by pitching new, high-density developments to them not as isolated, incongruous towers turned inwards from the city and frequently reserved for a luxury clientele physically, socially and economically severed from the surrounding local community.

But rather as egalitarian extensions of the tree-lined avenues, red-brick mansion flats and human scale that proliferates in irrepressibly popular London neighbourhoods like Marylebone, Maida Vale and Kensington and that have charmed Londoners and visitors alike for centuries. The new S.M.A.R.T Density approach outlined in this paper will seek to summarise how this transformative presentation pitch can be delivered.


S
M
A
R
T
DENSITY
STREETS
1.0
A new STREETS FIRST approach. Preference for street layouts, building to street edges. Using streets to break monotony & instil intimacy, interaction & human scale
SPACE
2.0
High density makes public SPACE, placemaking & a sense of place more vital.
MID-RISE
3.0
High density isn't high-rise, it's MID-RISE. Active promotion of mid-rise as the new default residential scale
MANSION BLOCKS
4.0
MANSION BLOCKS can house more people than tower blocks. Their revival starts here.
ACTIVITY (URBAN)
5.0
Enlivening neighbourhoods with ACTIVITY & amenities, more people = more growth
ACTIVITY (ECONOMIC)
6.0
AESTHETICS
7.0
No to bland spreadsheet boxitecture, high density demands exceptional design & a strong focus on AESTHETICS to avoid monotony & nurture character & place
RESIDENTS
8.0
Utilising density to maximise social wellbeing & place RESIDENTS & community at the heart of development
REGULATING DEVELOPMENT
9.0
Using density to REGULATE devlpt., i.e. promote brown-field, protect green-belt, define housing type & location
TRANSPORT
10.0
Recognising infrastructure's vital role in regeneration by using density to unlock major TRANSPORT upgrades

Recommendations

1. The Government should launch a targeted national programme of residential densification, prioritising brownfield land.

2. All density targets and thresholds set by local authorities are to be accompanied by the anticipated nature of density output with regard to desired housing types, accommodation, mix and tenure.

3. In the spirit of the National Model Design Code, the Government should publish a new National Density Code, which will articulate the principles of S.M.A.R.T. Density and encourage a wider understanding of how density can be applied.

4. As part of the Spatial Development Strategy the Government's Planning & Infrastructure Bill now requires metro mayors to prepare, councils and combined authorities should be required to identify low-rise sites in inner-areas and target these as part of a coordinated mid-rise densification strategy incorporated into Local Plans.

5. Proposed developments that can be shown to comply with the above two recommendations should be eligible for planning permission in principle.

6. The National Planning Policy Framework (NPPF) should be amended to expressly state its preference for masterplan layouts based on streets rather than blocks.

7. The National Planning Policy Framework (NPPF) should be amended to mandate provable consideration of mansion blocks as the preferred housing typology for all mid- and high-rise residential scenarios.

8. The National Planning Policy Framework (NPPF) should be amended to set mid-rise housing as the new statutory default for urban densification. While this will not lead to the unilateral exclusion of high- or low-rises, it will state a new statutory preference for mid-rise in all urban scenarios with the onus on local authorities (via their local plans) or developers (via individual applications) to present arguments to the contrary. Exclusions will

be made for normal heritage and listing protections.

9. The National Planning Policy Framework (NPPF) should be further amended to provide a new Suburban Settlement to ensure that suburbia can be responsibly densified with the protections applied by adherence to the new National Density Code. This should prevent the inappropriate development that is currently a barrier to suburban densification. The amendment should also encourage mixed uses in new suburban residential developments.

10. In the same way that parking ratios are used to determine parking quantity, tree and green space ratios are to be introduced to ensure that high-density developments are complimented with the necessary natural amenity to maintain an attractive and harmonious urban environment.

11. Build-To-Rent, self-build and co-housing are to receive direct statutory encouragement within high-density developments to help offset the risk of increased social alienation.

Introduction

Solving the housing crisis won't just be about increasing housing supply, it will be about increasing residential density too. Housing supply describes the number of residential units but density essentially helps define what kind of development, neighbourhood or community those new housing units create. It is essential therefore that we understand the huge role density can play in ensuring that new housing is designed and located to not only maximise benefits to housing supply but to also deliver a sensitive, sustainable and attractive urban environment in the most efficient and forensic way possible.

Increasing residential density essentially allows more people to be housed in a smaller area. It is therefore critical to ensure that increasing housing supply through densification does not lead to some of the negative consequences experienced in the past. These include urban sprawl, low-rise suburban overdevelopment, inappropriate greenfield development, disproportionate reliance on the car, social alienation and a systematic dilution of the human critical mass that actively promotes the jobs, growth, amenities and excitement that fundamentally sustain the urban condition.

Also, counterintuitively, the housing crisis presents a number of urban and socio-economic opportunities that failing to increase residential density would leave utilised. These include reinvigorating our high streets, repopulating our inner-cities, reinventing traditional typologies of high density urban living that were common in the past, reinstating critical, much needed urban and regional transport links, restoring a sense of architectural quality and aesthetic excellence to British high-density residential design and reclaiming Britain's exemplary heritage for domestic innovation and humane mass-housing, such as the typical London garden square, that was once exported across the world.

But if we accept that that increasing residential density must form a key component of increasing housing supply, how do we ensure this is done in the most responsible manner possible with the aforesaid pitfalls assiduously avoided? These pitfalls are all too common globally and there are countless instances, especially in cities across the developing world, where high density has housed millions but led to appalling conditions, impoverished amenities, intolerable overcrowding, creaking infrastructure, under-resourced services, contextual incongruity and crippling social isolation.

For a number of years now, planners, politicians and professionals across the built environment sector have broadly accepted that Gentle Density is the ideal demographic goal when seeking to increase housing

supply but in a manner that also creates liveable and successful housing neighbourhoods and communities. As the phrase suggests, Gentle Density is capable of achieving mid-range or occasionally even high residential densities but within a built environment framework that is sensitive to human scale and needs, embraces greenery and nature and rejects the oppressiveness and alienation that were often the toxic legacies of mass public (and high density) housing developments from the 1960s and 70s.

But what exactly does Gentle Density mean? How can it help fix the housing crisis? What are the specific processes by which it delivers its optimum housing numbers? Can it help boost growth as well as housing units? How can it reinforce communities and embellish beauty in our built environment? Is gentle density purely an aesthetic concern or can it form part of a robust planning policy that determines the type and location of new housing?

And perhaps most intriguingly of all, why must we perceive, as the term 'gently' encourages us to do, the urban condition as a solely gentle one? London's Trafalgar Square and New York City's Times Square are some of the most loved public spaces in the world and any new town or housing development would relish the prospect of hosting places with just a fraction of the popularity, renown and success. But would anyone seriously define these hulking civic plazas as "gentle" spaces? Equally, who would honestly call monumental but much-loved edifices like London's Palace of Westminster or Selfridge's department store "gentle" buildings? Is the kind of civic ambition that underpins them therefore excluded from a future where gentle density reigns?

In order to answer these questions and more accurately and intelligently determine the role and potential density has to play in increasing our housing supply and improving our built environment, this paper believes it is necessary to not only call for a meaningful and strategic increase in residential density but to adopt a newer, smarter approach to density that maximises high density's benefits while militating against any potential harmful effects high density might historically arouse.

In so doing, we shall hopefully as a nation be able to forge a more intelligent understanding of how density works and challenge some of the damaging preconceptions associated with it. We will understand that higher densities need not threaten suburbia, that it can increase the economic viability of proposed public transport improvements, that it can be achieved without sacrificing a beautiful, green and humane built environment, that it can promote the mixed-uses necessary to animate neighbourhoods, that it can fortify communities and incentivise growth and that it can often be better achieved by the mid-rise mansion blocks that embrace local vernacular rather than the high-rise tower blocks that spurn it.

Achieving higher densities creates the expanded housing supply capable of solving the housing crisis and therefore presents an obvious housing win. The fact that it also offers the opportunity to enhance our built fabric with new housing types that are innovative reinventions of old ones and

to refashion our cities as more human-scaled mid-rise, street-centred and community focussed environments, makes high-density a win for all of society too.

S.M.A.R.T Density / 1.0 Streets

Architect Francis Terry's unbuilt plans for the redevelopment of Mount Pleasant in London were centred around a new network of interconnected streets surrounded by mid-rise buildings

A new streets first approach. Preference for street layouts, building to street edges. Using streets to break monotony & instil intimacy, interaction & human scale.

YES to prioritising streets, defined edges, fine urban grain and increased legibility.

NO to poorly defined spaces, indistinct edges and discordant streetscapes.

Streets are inhabited urban signatures that summarise, project and consolidate the wider character and identity traits of the city, town or village in which they happen to be located. They are also highly-efficient horizontal skyscrapers capable of housing a large number of people within an accessible, animated and inclusive organisational framework.

When one thinks of London, Paris or New York, one is less likely to think of 33 boroughs, 20 arrondissements or 9 million and far more likely to think of Oxford Street, Broadway or the Champs-Élysées. Consequently, streets are the human lens through which we view the city and they are thereby essential for diluting the scale and anonymity of mass urbanism into digestible, relatable, human-sized chunks.

It is for this particular reason that their use is so important within the context of increased density. When handled poorly, increased density has the potential to make cities more chaotic, monotonous and overcrowded, undermining wayfinding legibility and forcing a disproportionate emphasis on larger, autonomous residential 'object' buildings rather than the spaces between them or the role both play as threaded, interwoven fragments of a unified urban composition. Streets challenge this propensity, fortifying the city with spines of legibility that allow residents to make sense of their surroundings, forcing direct, physical interaction with ground level and encouraging immersion in horizontal streetscapes that stich the city together rather than vertical views that seek to transcend it. Streets therefore offer an eminently humanising influence that is absolutely critical to making any programme of increased housing and density legible, liveable and lasting.

Fig. 1: In a perverse corruption of streets' traditional role, Corbusier's absurd 1920s proposals to rebuild Paris viewed streets as exposed machine circuitry separating totalitarian high-density blocks rather than unifying conduits designed to humanise rather than subdivide mass urbanism.

Streets also provide a dizzying array of urban benefits that are of immense value in ensuring that high density remains grounded in human intimacy. They allow new developments to be better integrated into existing street networks, they frame views and focal points, they provide a strong sense of enclosure, they reinforce human scale and, if so

desired, can be instinctively domestic in nature. They also provide copious opportunities for greening the urban environment with soft landscaping and tree-lined avenues being common and popular examples of how nature can soften and humanise public realm and ensure that high density is positively projected through a rich, natural filter.

Streets also provide another hugely important urban role in relation to high density, they can help frame spaces by providing a clear, strongly defined edge. Housing generally responds well to a distinct, front-facing relationship with the street and all the best residential streets, from London's Georgian terraces to Paris's Haussmann boulevards, tend to conform to this simple, time-honoured template. By giving housing the opportunity to form this spatial 'edge', streets provide a reassuring firmness and clarity to our urban surroundings and also help establish a clear threshold between public and private space, essential duties in any high-density context.

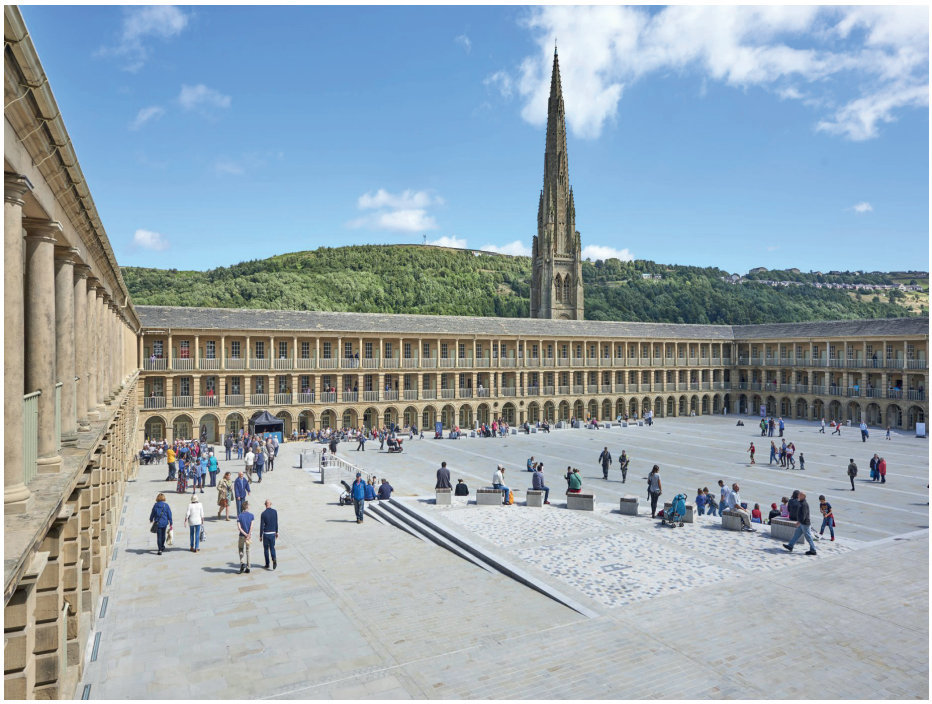
Fig. 2: The redevelopment of this north London site shows the visual and psychological benefits of embellishing streets with a firm built edge.

Streets also play a final, critical high-density role, the help establish variety and spatial hierarchy. Both are critical in dilating the potential monotony badly handled high density can instil. Because it is rare for two streets to look exactly the same, streets provide an innate opportunity to personalise neighbourhoods and project key characteristics unique to their context, omitting ripples of variety throughout the urban fabric and ensuring that more people mean less rather than more homogeneity. This tendency is exponentially increased by the sheer variety of street types in existence – mews, high streets, crescents, boulevards, circuses – fulsomely deploying as many of these as possible will deliver a rich architectural variety that will inevitably encourage not one sense of place, but several.

For all these reasons, masterplans and developments should be encouraged to adopt a 'Streets First' approach, using all the manifest humanising benefits streets provide as the default spatial anchor around which high-density is sensitively dispersed throughout our urban environment.

Fig. 3: Masterplans that place blocks around voids should be discouraged in favour of a clear delineation of streets

S.M.A.R.T Density / 2.0 Spaces



The Piece Hall in Halifax (1779) is not a residential building but it provides a thrilling example of how high quality public space can he used to temper large scale and potentially high density.

High density makes public space, placemaking & a sense of place more vital.

YES to a vibrant public realm, strong placemaking, green spaces & rich soft & hard landscaping.

NO to poor quality street furniture, a hostile public realm & spatial anonymity.

Public, green or open spaces are the lungs that enable high-density environments to breathe. Within a high-density environment, it becomes all the more important to ensure that high quality parks, public realm

and public spaces provide essential spatial relief from the additional emphasis on intensified residential accumulation. Few cities exemplify the importance of this critical civic contract as memorably as London. The English capital was the world's first megalopolis, in the 19th century it was one of the world's densest cities, from 1831 to 1925 it was the world's largest city (assuming a title Paris had held for almost 600 years previously) and today London remains by far the largest city in western Europe.

And yet, this dynamic expression of physical urbanism has been consistently tempered by a natural landscape of extraordinary generosity. One-third of London's land is allocated to public green space[1] and 47% to green space of all kinds, including private gardens. This compares to 27% in New York and just 9% in Paris, comparisons that help give London the highest proportion of green to built space of any comparable city in the world.

Additionally, in London there is 27m² of green space for every resident compared to 6.4m² in Istanbul, 27m² in Tokyo and just 27m² in Buenos Aries[2]. The density lesson of London therefore is a powerful one and it is that in order to make big cities and high densities liveable, there must be a prodigious simultaneous provision of green and public spaces in order to soften and humanise not only the impact of the built environment but the experience of living within it.

Fig. 4: London's conspicuous tradition of parks and tree-lined residential streets is an intrinsic part of the capital's enduing domestic charm and appeal.

But simply providing spaces is in itself not enough. In order to ensure that new, high-density environments remain walkable, liveable and attractive, the spaces themselves must be of the highest quality possible.

1. https://www.gigl.org.uk/our-data-holdings/keyfigures/#:~:text=Roughly%2047%25%20of%20Greater%20London,domestic%20garden%20land%20(2).
2. www.worldcitiesscultureform.com

Excellent placemaking standards therefore are central to this ambition. By installing coordinated street furniture, avoiding street clutter, ensuring spaces are well-lit, framing views and vistas, minimising the impact of traffic and parking and of course, providing greenery and landscaping are all the placemaking ingredients that will and help nourish a palpable and distinctive sense of place.

As with streets, variety is important too in establishing a strong spatial hierarchy that keeps individual places distinctive and unique. Squares, courtyards, plazas, parks, gardens, commons, crescents and circuses should all be used to consistently challenge the oppression and monotony poorly-executed high density could induce.

Many of these strategies are applicable on all development scales and are universal applications of good placemaking applications and techniques. However, they are especially relevant to a high-density context where the humanising, tempering role undertaken by the spaces between buildings becomes all the more important.

S.M.A.R.T Density / 3.0 Mid-Rise

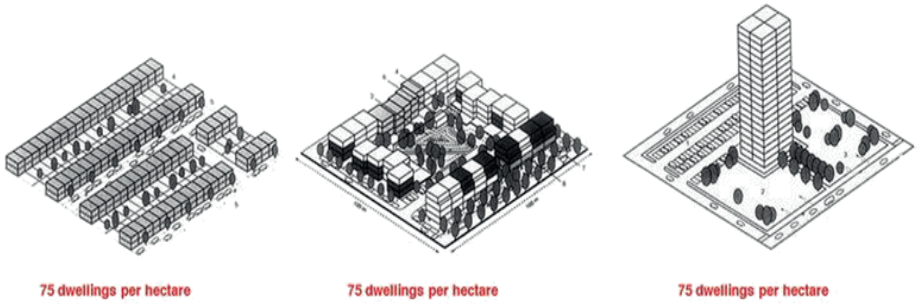
Albert Court (1889) in London's Kensington reaches an impressive height of nine storeys and represents a mid-rise super-high density typological template we should be seeking to replicate fulsomely elsewhere.

High density isn't high-rise, it's mid-rise. Active promotion of mid-rise as the new default residential scale.

One of the most stubborn built environment myths is that high-rises provide the highest densities. In theory this can sometimes be true, a 70-storey building occupying a plot of land will obviously provide more residential units than would be the case if that same building were halved

in height. But cities rarely consistently conform to theory and in practice for a whole host of reasons, it is mid-rise that is capable of providing high densities in the most practicable, sustainable and sensitive manner possible. As the King's (formerly Prince's) Foundation observed in its 2014 report, Housing London: A Mid-Rise Solution:

Fig. 5: Due to the onerous servicing, spatial and sustainability requirements of tall buildings, a tall building does not necessarily provide more units than either its low or mid-rise equivalents on the same-sized plot of land, thereby exposing the myth of high-rise density efficacy. But of the three conditions shown above, it is the mid-rise option that offers the most efficient use of land, the most equitable balance between built and open space and the greatest capacity to responsibly and economically increase the amount of dwellings provided.



> *"It is crucial in the response of developers and policy-makers to the housing shortage, that density is not approached solely as the domain of high-rise towers."*[3]

Given our aforementioned 70-storey building scenario, how is it possible that shorter mid-rise buildings achieve more density than taller high-rise ones? There are a number of objective observations that confirm mid-rise as a preferable density solution. Mid-rise buildings tend to be significantly less contentious with surrounding local communities, can be more sensitively threaded into surrounding, existing urban layout and streetscapes and tend to be up to 40% cheaper than tall buildings to build[4].

Additionally, multiple urban economic studies throughout the 20th century have explained why mid-rise performs better at achieving high density that its high-rise equivalents. Depending on their context, mid-rise blocks are normally considered to be anything from approximately four to twelve storeys. In their seminal 1972 study on land use, *Urban Space & Structures*, architects Leslie Martin and Lionel March compared the density (Floor Space Index) of mid-rise streets to free-standing high-rise blocks ("pavilions") and observed the following:

> *"For streets… FSI reaches a maximum beyond which the density does not rise*

3. Prince's Foundation, *Housing London: A Mid-Rise Solution* (2014)
4. https://issuu.com/aiqs_be/docs/bee_march_2020_online/s/10308709

further despite the increase in the number of storeys. In the case of pavilions, FSI reaches a maximum then ***declines*** *as more storeys are added."*[5]

In other words, contrary to popular misconception, density actually reduces in tall buildings over a certain point because of the increasing spatial demands and limitations the high-rise typology generates as buildings get taller (i.e. bigger cores, more internal and external services infrastructure, larger gaps required between buildings). However, while mid-rise blocks will also eventually reach a height after which no additional density will be added, crucially it will not *decline* and at the height where optimum density is achieved, it will always be higher in a mid-rise block than at the same height in a high-rise one. And March and Martin calculated that optimum height to be seven storeys, right in the middle of the mid-rise classification.

Fig. 6: The only way to conclusively ensure that high-rise achieves more density than mid-rise would be to adopt the intensive, overcrowded development patterns that are common in places like Hong Kong but would be culturally untenable in the UK

Of course, if one were to blanket a site or a city with tall buildings, as is the case of the Kowloon district in Hong Kong, one of the densest residential districts in the world, then one could easily outstrip low or mid-rise buildings in the amount of residential units provided. But this would be a culturally untenable proposition for the United Kingdom and as well as being exorbitantly expensive, would lead to a whole host of regulatory, social, environmental and psychological discordances that would render the enterprise at best useless and at worst chronically detrimental.

5. Martin, Leslie; March, Lionel (1972): *"Urban Space & Structures"*, (Cambridge: Cambridge University Press), p. 37

Fig. 7: Despite being just 13 storeys high, Abell & Cleland House delivers more density than 31-storey high Trellick Tower

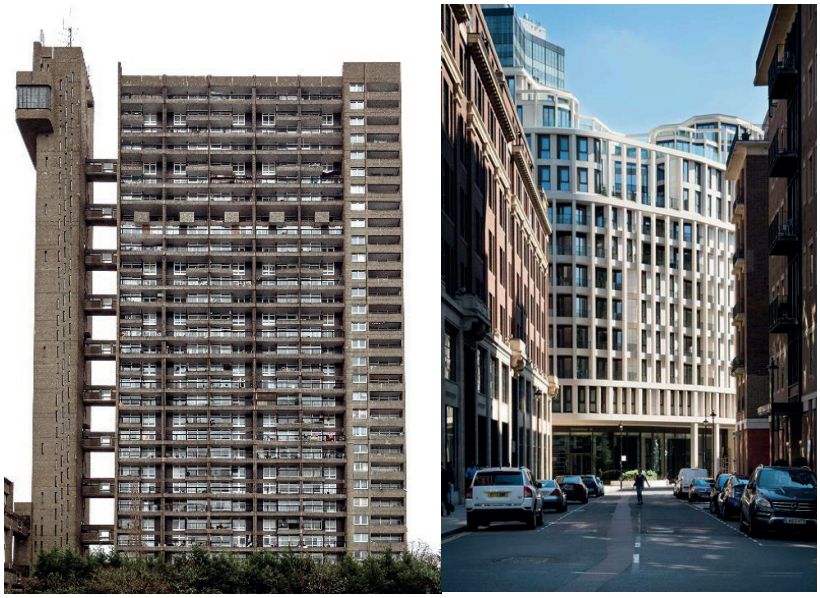


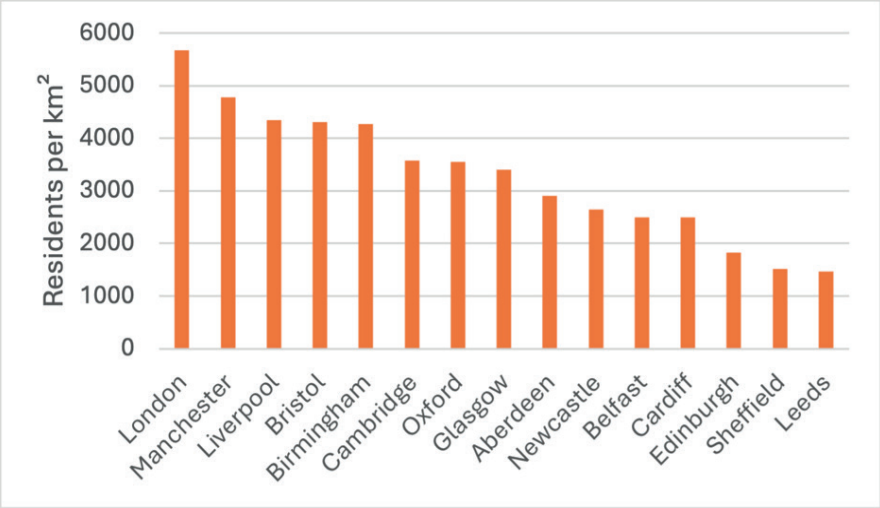
Fig. 8: Tall townhouses and Edwardian mansion blocks help genteel Maida Hill in London achieve its accolade of densest UK neighbourhood.

So, if we can establish the mid-rise is the optimum density model in theory, what examples are there in practice? Thankfully several. Abell & Cleland Houses by architects DSDHA (2018) are contemporary 13-storey mansion blocks in London's Westminster and deliver a superb and very high density of 319 dwellings per hectare. This is 2.1 times more dense than Erno Goldfinger's infamous 31-storey Trellick Tower in North Kensington[6]. Yet in order for the tower to deliver the same density as Abell & Cleland, it would need to be 66 storeys high, over twice its existing height.

6. https://architecturetoday.co.uk/abell-and-cleland/

London's residential densities also provide meaningful and significant precedents. The densest borough in London is Kensington and Chelsea, a district, (albeit a wealthy one) that assiduously preserves its historic heritage and has largely eschewed the high-rise developments that have proliferated across the capital in favour of the kind of committed, mid-rise typologies evident in the Albert Mansions photograph as the start of this chapter. Additionally, the densest neighbourhood in the entire UK is Maida Hill. Here again, high density is not procured by means of the towers and skyscrapers so evident in other parts of London but through a tightly-packed network of flats, mansion blocks, and sheltered, tree-lined avenues of tall, three and occasionally four-storey terraced houses.

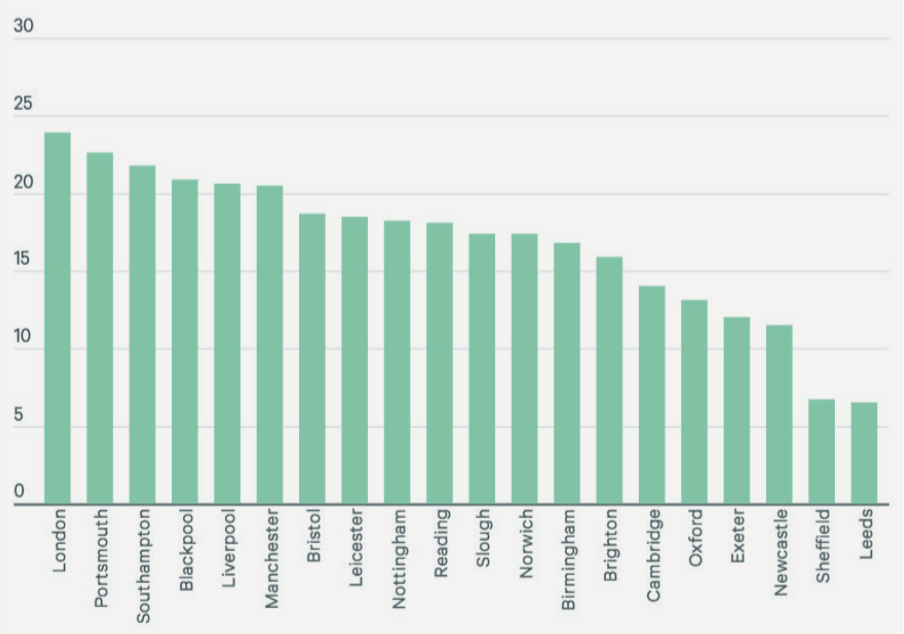
Fig. 9: UK City Population Densities A combination of inefficient high-rises and suburban and inner-city low-rises keeps the residential density of most British cities stubbornly low.



These trends are also mirrored at national and international levels. The UK city with the highest population density is London, where in recent years its rapidly rising population has enabled it to reach density levels of 5,690 people per square kilometre[7]. As Fig. 9 shows, London's density remains markedly higher than that of Britain's second biggest city Birmingham, which maintains a population density of 4,323 people per square kilometre[8]. Manchester, which has experienced exponential growth since the 1996 Arndale Centre bombing[9], has the UK's second highest residential density at 4,773 people per square kilometre[10].

7. https://trustforlondon.org.uk/data/geography-population/#:~:text=London's%20population%20is%2015%20times,%2C2334%20people%20per%20km2).
8. https://www.ons.gov.uk/visualisations/censuspopulationchange/E08000025/
9. https://www.manchester.gov.uk/directory_record/212397/manchester_bomb_1996_and_the_citys_regeneration
10. https://www.manchester.gov.uk/info/200088/statistics_and_intelligence/7583/census_and_population

Fig. 10: Average dwellings per hectare in UK City Residential Densities Residential density, the number of homes per hectare, reveals almost identical trends to population density which measures the number of people per hectare. Again, London and Leeds are the most and least dense big cities in Britain.



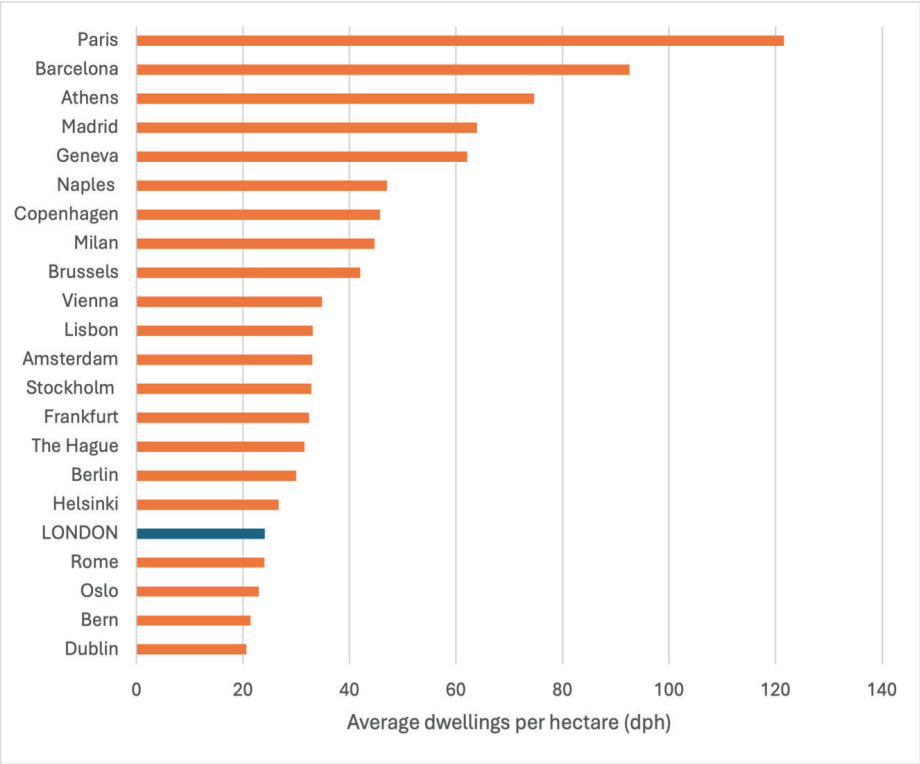
However, analysis of the densities of international cities reveals that British cities tend to be way down the list compared to their international rivals. London may be the densest UK city but it is three times less dense than Barcelona and roughly four times less dense than Paris and Athens. This is significant because it proves that despite the explosion in high rise residential

Fig 11: High-rise does not automatically mean high density. The city on the left (Athens) has more density than the city on the right (London)

towers London and a number of British cities have experienced in recent years, they still house significantly smaller densities than cities that have largely rejected tall buildings from at least their historic cores and have instead manifestly adopted the mid-rise European apartment block as

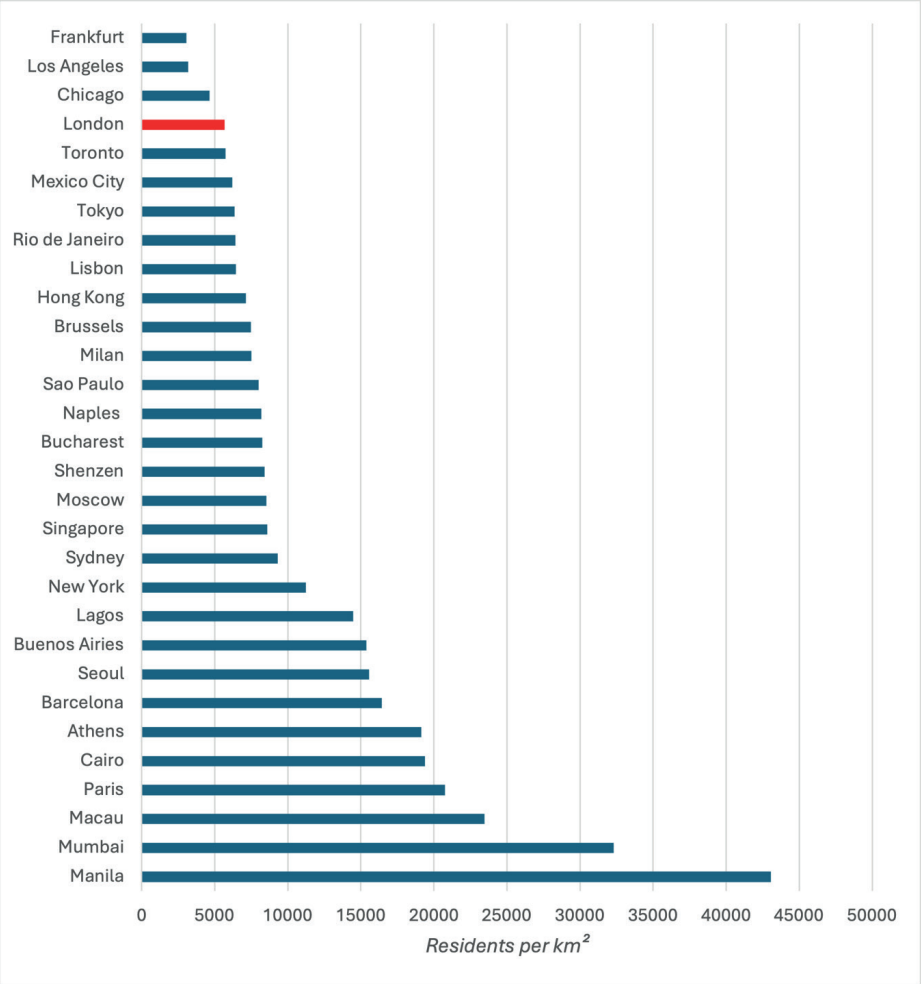
the chief facilitator of the impressive densities they maintain. Let this put to bed for good the notion that high-rise delivers high density. The next chapter will explore exactly how the mid-rise European apartment block performs so well in this regard and present a ready-made British version primed to do the same.

Fig. 12: Residential Densities in Western Europe: Despite decades of building high-rises, London (the UK's densest city) is still one of the least dense capitals in Western Europe and is comprehensively surpassed by cities that adopt more traditional, mid-rise housing typologies. (SOURCE: GLA/ISGlobal)



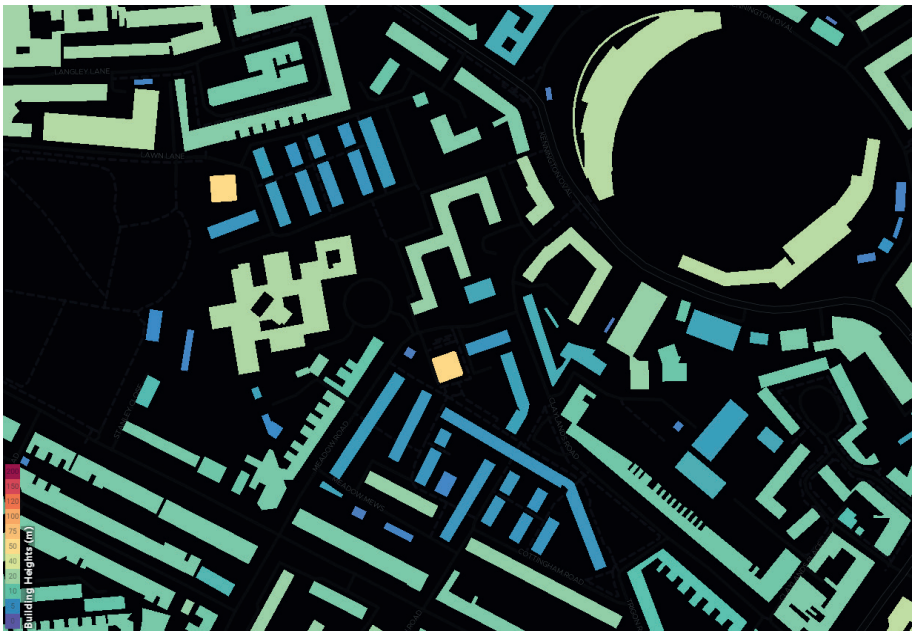
However, it is not only high-rise that poses a threat to sustainable urbanism, low-rise does too. One naturally expects a suburban context full of two-storey terraced, detached or semi-detached housing to maintain a proliferation of low-rise buildings. While it is advisable to ensure that new interventions are more ambitious in scale (obviously observing the required sensitives), it is perfectly acceptable that these existing areas, which often form cherished suburban neighbourhoods, should be allowed to remain as they are.

Fig. 13: International City Population Densities: Despite a surge in high-rise construction in recent years, British cities perform poorly when comparing their density to that of their international peers



However, it is increasingly untenable that inner-city and often town centres sites should exhibit low-rise low density in this manner. While this conforms to the more humanistic, landscape-conscious instincts that usually crafted the residential character of English cities (especially London) in contrast to their more ostentatiously civic European counterparts, the luxury of single storey buildings in a high employment city centre context is a luxury we as a nation can no longer summarily afford, especially within a housing crisis. Even London reveals this trend with parts of central areas like Covent Garden and Camden Town astonishing comprising multiple pockets of single storey accommodation. In these areas, there is surely a better balance between density and intimacy to be achieved and once again, mid-rise is the solution to delivering it.

Fig. 14: Building Heights in Inner London: Mapping of the Oval district just south of central London reveals a surprisingly high preponderance of single storey buildingings (indicated in blue). These sites should be targeted as part of a strategic densification drive by local councils. © EMU Analytics



In an effort to densify high-value inner city districts in central London and elsewhere, local councils should be required to undertake mapping of their districts to identify pockets, or expanses, of one or two-storey buildings. A Densification Strategy should then be drawn up targeting these sites for intensified redevelopment as mid-rise housing. Where any developer comes forward with a plan for redevelopment of these sites that involves mid-rise housing, default planning permission should be awarded. They should also be offered preferable options to redevelop other low-rise sites within the borough as either the same or separate projects.

In so doing, not only would this increase the attractiveness and economic viability of small, often awkward sites for redevelopment, it would reduce pressure on single sites to provide high-rise buildings because a co-ordinated, strategic plan for securing mid-rise housing, and arguably more units, across the borough would already be in place. Using multiple sites to provide mid-rise housing in this way rather than single sites to provide standalone high-rise housing would be a far more rational, collaborative and less contentious way of increasing both residential density and housing supply. It would also be quicker and cheaper than high-rise towers and would be instantly assured of an easier path through the planning system. This strategy would be an integral part of the S.M.A.R.T. City mid-rise approach.

S.M.A.R.T Density / 4.0 Mansion Blocks

Mansion blocks are synonymous with exclusive areas of central London but their unrivalled ability to house vast numbers of people within a traditional architectural template that is sympathetic to the street and significantly less expensive to build than tower blocks makes them an ideal candidate to lead any meaningful increase in housing supply and residential density.

Mansion blocks can house more people than tower blocks. Their revival must start here.

YES to contemporary interpretations of traditional mansion blocks.

NO to the continuing domination of soulless blocks of flats as our default high-density model.

Mansion blocks are the British super-flats that may not only be

expertly placed to deliver higher densities but they may also be one of the most effective secret weapons at our disposal to solve the housing crisis. As renowned architect Alison Brooks puts it, herself a designer of contemporary mansion blocks in north-west London's Kilburn, mansion blocks are "dense but desirable and bring graciousness to urban living"[11].

While there is no conclusive definition of what a mansion block is, they can perhaps best be described in comparison to a typical block of flats. Mansion blocks are generally mid-rise buildings of around four to ten storeys (sometimes higher in contemporary versions) whereas flats can extend over virtually any storey height. A block of flats could have as little as a single entrance serving hundreds of flats. Each flat will typically be reached from an internal corridor or external deck served by a limited number of cores. These corridors can often extend to considerable length and their 1960s council estate iterations were sometimes (with more optimism than truth) referred to as "streets in the sky"[12], with estates like Park Hill in Leeds and London's demolished Robin Hood Gardens being typical of genre.

Mansion blocks on the other hand tend to have multiple entrances serving a greater number of smaller cores with shorter and sometimes non-existing corridors. Accordingly each core will serve a smaller number of flats with access to residential units almost exclusively negotiated internally and without the use of external decks. Mansion blocks therefore tend to have a more defensive and solidly enclosed facades than flats, even though both formats can be commonly alleviated with balconies.

Mansion blocks, historically at least, tended to be built from traditional masonry often relieved by the effusive application of rich architectural decoration. Red brickwork was the most common external material used often festooned with a cornucopia of stone dressings, string courses, carved plasterwork, terracotta reliefs, ornamental ironmongery, decorative banding, corbels, quoins and gables.

11. https://www.standard.co.uk/homesand-property/buying-mortgages/why-building-modern-mansion-flats-could-be-key-to-easing-londons-housing-crisis-a117321.html

12. Intersection Fields III: Michiel Brinkman vs. Peter and Alison Smithson" (2016)

Fig. 15: With its bold red brick, distinctive banding, stone dressings, active roofline, projecting bays and enclosed loggias, Albert Court Mansions in London's Kensington provides a palatial rendition of many of the architectural features historically common to mansion blocks

Later mansion block examples however, such as the famous Dolphin Square in central London's Pimlico (1936), were simpler and more chaste in appearance, inspired by the Modernist sensibilities of the day. Obviously the most elaborate examples of traditional mansion block design are to be found in exclusive central London districts like Westminster and Kensington but in their heyday in the late 19th and early 20th centuries they were successfully adapted to more modest variants and spread to working-class suburban London districts like Stoke Newington, Hammersmith, Kentish Town and Clapham.

Fig. 16: A new residential development by Sebastian Treese Architects in Stuttgart, Germany demonstrates that as well as delivering high housing densities, the traditional London mansion block also enjoys international appeal and is currently enjoying a resurgence at home and abroad

Historically the accommodation mansion blocks offered was defined by high-ceilings, large windows, large rooms (subject to the social class being served) and a strict spatial hierarchy that placed more formal habitable rooms along the frontage and ancillary, service spaces like kitchens and bathrooms at the back. While the format was eminently socially adaptable, (as proven by the mansion block's eventual distribution to suburban neighbourhoods), a mistakenly perceived preoccupation with affluence and elitism played a significant role in rapidly accelerating the popular demise of mansion blocks after the Second World War and hastening their replacement with the tower and podium style flats and estate that proliferated from the mid- to late 20th century.

Mansion blocks also work superbly well with the street and tend to reinforce public realm by following the street edge, a propensity that is not always present in flats. Additionally, the potential for a greater number of ground floor entrances integrates mansion blocks more firmly into the street and mimics the domestic intimacy of terraced housing, even though it achieves densities that are considerably higher.

Mansion blocks' enclosed facades and innate decorative compatibility provide copious opportunities to reinforce or reinterpret the elevational rhythms and proportions present in surrounding context, affording vital opportunities for mass housing to make a positive local contribution to both local streetscape and townscape. Historically they also reached impressive residential densities of up to 200 and 250 units per hectare, putting them squarely in and often beyond the density league occupied by tower blocks. And last but not least, mansion blocks are significantly cheaper to build than high-rise buildings making them a more cost-effective solution and one that, despite their historic socio-economic association with affluence and exclusivity, renders them uniquely compatible with affordable and social housing models.

It is for all these reasons that mansion blocks are currently enjoying a resurgence in both British and European housing markets. More contextual than standard flats and more consensual than tall buildings, they offer a perfect solution for how high density can be delivered intimately, humanely and potentially decoratively and crucially at a human scale. Much more should be done to ensure their usage is adopted as widely as possible.

If this were to be the case, not only might this help boost sluggish British urban densities but it would represent a committed revival of an English housing typology designed to respond to the staggering efficiency of the European apartment block. For various historic, cultural and socio-economic reasons, the continental adoration of the city centre flat did not translate to the same extent in more conservative English urban scenarios with cities like London, Liverpool and Bath choosing to house many of their citizens in lower density squares and terraces rather than higher density apartment blocks so common in Barcelona, Paris and Athens. (Scotland's tradition of tenement housing rejected these principles and was more closely aligned to European models, see **4.1 Courtyard Blocks**.)

Fig. 17: In many ways the London mansion block was historically conceived as an English response to the Parisian or continental apartment blocks responsible for high European urban densities

However, in many ways the mansion block was developed in the late 19th century in part as an albeit limited English response to this successful continental typology. The Industrial Revolution had long transformed London into the largest city in the world and while many of the terraces with which London is synonymous had already been split into flats by this point, these conversions were simply not sufficient to accommodate the city's rapaciously expanding middle- and upper-middle classes. As Charles Dickens Jnr. (son of the famous author) put it in 1879, the wealthy were beginning "to avail themselves of the continental experience … and to adopt the foreign fashion of living in flats."[13]

The mansion block therefore was developed as a solution to this growth and one whose initial rent-only ownership structure was uniquely suited to the peculiar leasehold demands of a central London real estate ecosystem where individual freehold property purchases were all but impossible.

Architecturally, mansion blocks also differed from their continental neighbours by replacing the forensic, repetitive uniformity of, for instance, a typical Haussmann façade with a less regimented, less formal and more domesticated Anglicised version that mimicked the reassuring organisational conventions of terraced houses but exaggerated them over a much larger and often palatial buildings containing flats rather than houses. As such they represent a uniquely English compromise but one whose revival holds the promise of enabling British cities to match European densities but in a manner that amplifies local heritage and vernacular rather than disrupts it.

In 2014 the Prince's, now King's Foundation, published a report the summarised the innate benefits of the mansion block and recommended it, as this report does, as an exemplar British housing model that could prove crucial to solving the housing crisis:

> *"The mansion block in particular should be celebrated as a local form to aspire to: allowing for a flexibility of living spaces, supporting shared green spaces and providing appropriate densities in sites across the city. The mansion block form, along with converted Victorian and Georgian mid-rise houses, exhibit many of the strengths of well-designed mid-rise residential buildings and promote the*

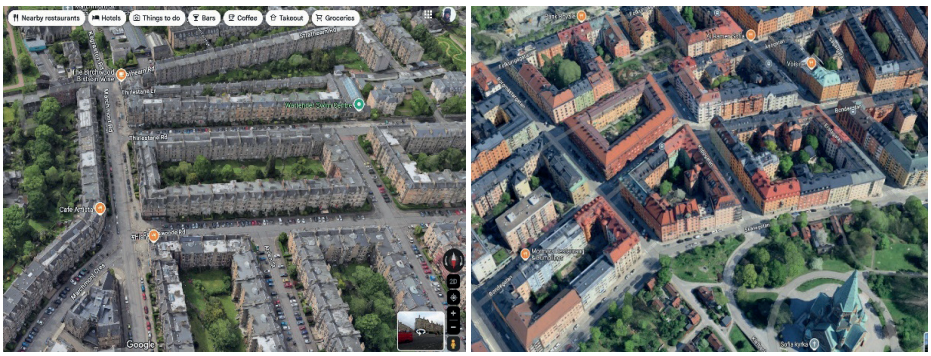
13. *Charles Dickens (Jr.)*, Dickens's Dictionary of London, (1879)

type of walkable, sustainable urbanism that London needs as it looks to solve its housing problems. It is crucial in the response of developers and policy-makers to the housing shortage, that density is not approached solely as the domain of high-rise towers."

Courtyard Blocks

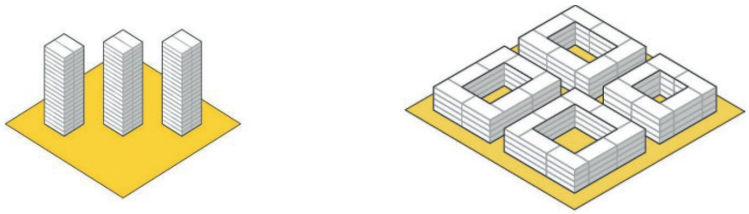
There is another replated typology of housing intimately related to mansion blocks that is equally capable of producing high residential densities: the courtyard block. Unlike mansion flats these were historically less common in England but used to a far greater degree in the continent and, ironically enough and possibly as part of a long-held historical strategy of promoting continental fraternisation to culturally isolate Sassenach sensibilities, Scotland. The traditional tenement housing developed in cities like Glasgow and Edinburgh in the early 1800s predated the English mansion block by several decades and often found itself applied to the courtyard block format.

Fig. 18: Courtyard blocks in Edinburgh (left) and Stockholm (right)



As the name suggests courtyard blocks are perimeter blocks arranged in a manner to allow for open amenity space of varying size in the middle. They are similar to mansion blocks in that they maintain the elevational rhythm of streetscapes and, in a bid to maximise the size of the inner courtyard, extend building footprint right to the street edge. Like mansion blocks they represent an incredibly efficient use of land capable of achieving high densities. But unlike mansion blocks they offer the added benefits of increased light and ventilation, private communal amenity space and dual aspect living accommodation. However, they tend to require larger, deeper sites than mansion blocks and therefore are less appropriate for utilisation of tight, awkward urban sites.

Fig. 19: Like mansion blocks, courtyard blocks offer considerable advantages over high rises including longer street edges, more efficient site coverage and greater private street access to a larger number of flats

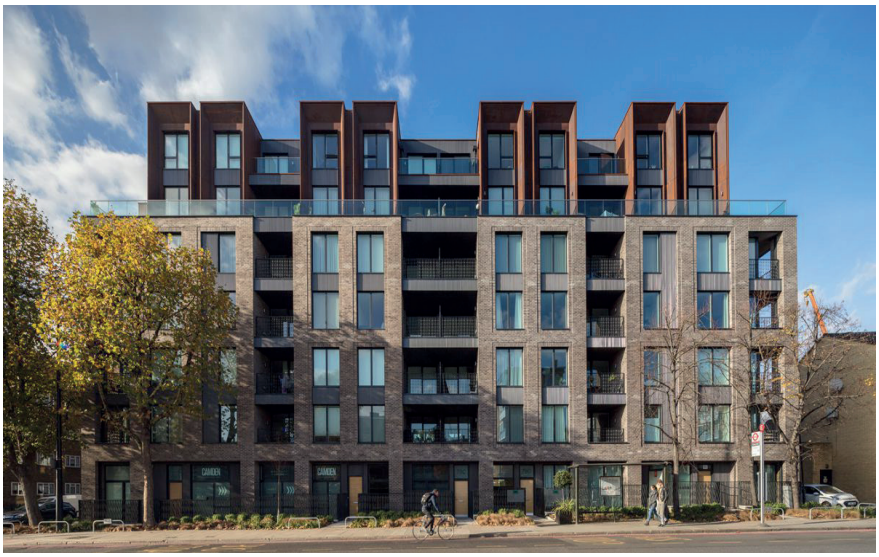


3 towers
18-19 floors
Building footprint: 1,200 m^2
5% ground floor
5% top floor/"penthouse"
22% walk-up height
Street edge: 240 m

Smaller courtyards
4 floors
Building footprint: 5,600 m^2
25% ground floor
25% top floor/"penthouse"
100% walk-up height
Street edge: 720 m

The benefits of courtyard blocks are increasingly being noted in England and architect Sheppard Robson's Camden Courtyards development (2018) in north London was widely celebrated for achieving a stupendous super-high density of 410 dwellings per hectare at just seven storeys high. Like mansion blocks, it also shows how courtyard blocks can utilise traditional forms and materials to more successfully harmonise with existing streetscapes. Finally, with an impressive affordable housing provision ratio of 50%, Camden Courtyards demonstrates how courtyard blocks are no barrier to affordable housing[14]. As such, they too, like mansion blocks and where sites allow, should be earnestly incorporated into any programme of densifying the city.

Fig. 20: The Camden Courtyards development in north London offers a masterclass in high-density housing



14. https://hdawards.org/scheme/camden-courtyards/

For streets and courts, FSI reaches a maximum, beyond which the density does not rise further despite the increase in the number of storeys. In the case of pavilions, FSI reaches a maximum and then declines as more storeys are added.

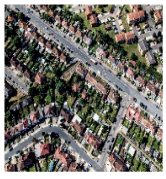
S.M.A.R.T Density / 5.0 Activity (Urban)

While the sight of recreational amenities in residential neighbourhoods is common in countries like France, it remains a relatively rare sight in British suburbs

A wholesale reset of suburbia.

YES to mixed use suburbs where higher densities promote vibrancy and variety.

NO to creating or extending low-rise, low density residentially monocultural suburbs.



Suburbia remains one of the biggest obstacles to densifying the city. Brownfield densification is largely now the settled will of inner-city areas

with few willing to argue against the principle (if not the practice) of growth and expansion. But suburbia, which can sometimes represent up to half of a town or city's size, presents an altogether more sensitive and contentious set of sometimes long-established attachments, prejudices and priorities which many planners, residents and politicians have found almost impossible to reconcile with the both the principle and the practice of redevelopment.

Like most contemporary social riddles, the issue has its roots in history. British suburbs developed differently to their continental counterparts with middle-class Europeans persisting in occupying the centre of their cities but their English equivalents, doggedly enraptured by the omnipresent cultural idyll of an Englishman's home being his castle, aspired towards a home if not in the country, then in the part of the city that most resembles it.

Consequently, wealthier or middle-class Europeans, facilitated by their copious compendium of city centre apartment blocks, retained the centre of the cities as exclusive mixed-use, multi-generational zones with flats intermingling with cafes and brasseries, thereby forcing the poor to flee to the girdle of ghettoised banlieue that encircles cities like Paris. Whereas in Britain, it was the middle-classes, liberated in London by the Metroland tube expansions of the 1920s and transfixed by the emergent Garden City tradition, that were able to relocate to the suburbs and fashion them as the exclusively monocultural residential enclaves, richly adorned with verdant natural landscaping, that most represented their desired cultural hybrid between town and country.

There is no doubt as to the comparative success of the British suburban experiment. While recent decades have seen suburbs mocked mercilessly for their bourgeois pretensions, perceived cultural insularity and increasingly unfashionable reliance on the car, they still represent an ideal of affluent and (relatively) safe, family-friendly Arcadia which many still aspire to.

However, it is precisely because of these venerated characteristics that suburbs have often proved so implacably opposed to the densification prescribed to inner-city areas. The idea of violating these semi-rural idylls with the supposed grit, grime and detritus of the urban environment has been fiercely opposed by residents and often planners, breeding seething resentments that have not been helped by the recent clumsy and incongruous imposition of tall buildings onto many unsuspecting suburban contexts.

That is obviously the wrong way to densify suburbia. But there are many right ways in which suburbs can be carefully and sensitively expanded and developed to provide the additional housing units we so desperately need. Street Votes, the novel localised expansion strategy presented in our *Strong Suburbs* report (2021) and embedded into legislation by the last Conservative Government, was one such example. Identification and selection of redundant or underutilised single or two-storey non-residential buildings for redevelopment could be another.

As could more prodigious residential redevelopment above suburban shops and high streets. American zonal planning calls this the '5 over 1' model where five storeys of flats are placed above a ground floor level of retail. That model is not without its problems and as it has essentially been generated by U.S. fire codes rather than urban altruism, it has been accused of its own share of blandness and monotony. But it does provide meaningfully high-density and achieves, in nominal terms at least, the mixed-uses that create liveable and vibrant urban neighbourhoods.

Fig. 21: A colonnade of houses in Ruislip NW London, their front doors clearly visible above the shops, provides an innovative historic precedent for how suburbia can be densified. It marks a smaller UK variation of the US '5 over 1' development model (See Fig. 22)

It is extraordinary that Ruislip in north-west London, one of the Metroland's genteel nodes and therefore an intrinsic part of suburbia's spiritual heartlands, presents its own highly successful 1920s versions of how this format can be achieved in a British context and how over-shop development can be effectively be used to increase residential units and density within a progressive mixed-use format. Ruislip features several instances of terraced streets being placed directly above shops at first floor level and being defined by continuous runs of exposed balconies or enclosed colonnades above the shopfront facias below. While more '2 over 1' than '5 over 1', it could potentially be extended vertically and is an innovative example of how suburbia can be gently densified while maintaining the scale and intimacy that are its urban hallmarks and also providing the shops and amenities that lead to more active frontages and animated neighbourhoods.

Fig. 22: A mock-Tudor mansion block, its entrance visible at the centre, rises above shops in Lower Clapton, east London, also offering an impressive example of mixed-use

Equally, the ever-versatile mansion block proved eminently adaptable to mixed use when, at the start of the twentieth century, they started to spread from their traditional exclusive residential enclaves of central London to poorer, working-class districts in what were then the suburbs that ringed the city. When more modest versions of these mansion blocks started springing up in places like Camberwell and Hackney, they would often be placed above shops serving both residents and the local community. They hereby forming a perfect retail/residential hybrid that could potentially prove crucial in regenerating our moribund high streets today.

What is needed therefore is a new national settlement that releases suburban land for sensitive and forensic interventions that can engage in the pattern of densification this paper is proposing for the rest of the city without grossly undermining the qualities that make suburbia unique. This does not mean the erasure of suburbia as we know it or the replacement of every semi-detached house in suburbia with a four or five storey block of flats. That would be unpopular, unfeasible and unrealistic and those who still aspire towards a three-bed semi with a drive and garage should be free to pursue their dream amongst the copious number of housing stock that conforms to this palette, affordability permitting.

But that pertains to existing suburbia and follows a development model that was appropriate for the 1920s. That same development model is no longer appropriate for the 2020s and new suburban interventions should seek to robustly but sensitively interrogate sites to achieve the optimum density reasonable contextual sensitivities will allow. As well as boosting housing supply, this could add vibrancy, animation and interest to parts

of the suburban condition while retaining the tranquillity and repose of others.

The concept of the 15-minute city revels in the idea of a compact, walkable neighbourhood in which all amenities, from bakery to library, are available within easy reach. This paper makes no endorsement of this concept the merits and demerits of which is sadly mired in political partisanship. But those interested in driving more activity in our residential districts and in seeing more pubs or cafes at the end of terraced housing or residential avenues and not just on high streets, should remain mindful that reimagining how we think about suburbia and not just inner cities is the most effective way to achieve this aim.

Fig. 23: The US '5 over 1' development model sets 5 residential storeys above ground floor retail and has been variously praised by some as a highly efficient mixed-used density template and criticised by others as a bland realisation of regulatory constraint

S.M.A.R.T Density / 6.0 Activity (Economic)

While the relationship is neither simple or clear cut, density can have a positive effect on economic growth.

Using density to drive productivity and growth.

The relationship between density and economic growth is a complicated one and has been subject to rigorous academic study over the decades.

At a broad macroeconomic level, it is too simplistic to posit that higher residential density will automatically increase economic growth, Manila in the Philippines is the densest city in the world but it is neither the richest or most productive city even in the south-east Asia region. And yet definite links can be made between increased density and more jobs, infrastructure, innovation, learning and productivity. It is clear therefore that the relationship between density and growth is a delicately calibrated one that is subject to influence and potential distortion by a wide range of external factors. In recent times the relationship was perhaps best summarised by economists Elisabetta Pietrostefani and Gabriel Ahlfeldt's conclusion to their landmark 2019 LSE study into the subject:

> *"….policy-induced densification may lead to aggregate welfare gains. However, there may be a collateral net-cost to renters and first-time buyers if residents are not perfectly mobile and housing supply is inelastic."*[15]

Both these closing caveats, specifically in relation to under-provision of public transport infrastructure and restricted housing supply, apply directly to the UK housing market and thereby emphasise the difficulty in drawing clear conclusions and density positively and universally impacting growth.

Notwithstanding, there are established theoretical patterns that have been identified that show how density can positively impact growth. The Agglomeration Effect is one of the most common principles in spatial economics and shows how economic benefits can arise when businesses and people cluster together in specific, concentrated geographic areas[16]. The subsequent knowledge spill-overs, specialist expertise, streamlined supply chains and pooled labour market has the potential to lead to increased productivity and efficiency. Arguably mid-rise Silicon Valley remains the world's most famous example of how the Agglomeration Effect can work but the term also applies to renowned contemporary European economic centres like Canary Wharf in London and La Défense just outside Paris.

Other established relationship patterns between density and economics also exist. While businesses can obviously be located in any location, including suburban or even rural contexts, the densest part of cities is usually city centres and they are generally 21% more productive than non-urban areas and host 72% of all highly skilled jobs.[17] Therefore, residential densification of city centres usually delivers a number of economic benefits. These can include an increase in jobs and innovation, increased viability of public transport infrastructure and the environmental and sociological advantages all less reliance on car use and less time spent commuting. All of this has the potential to make denser city centres a decidedly attractive destination for businesses and therefore a key driver of economic growth.

Despite their comparatively and sluggishly low densities on an international level, the broad demographic experience of British cities over the past 25 years has been one of positive city centre repopulation. At the start of the 21st century, the influence of the Blair Government's Urban Taskforce and especially its landmark 1999 report, *Towards An Urban*

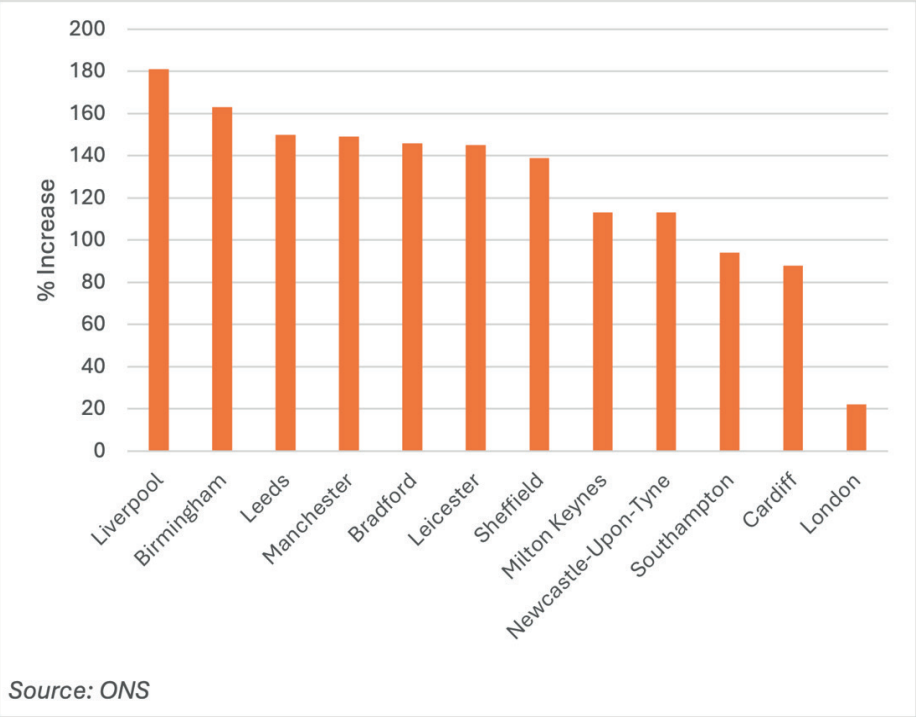
15. Ahlfeldt, GM, and E Pietrostefani (2019). "The economic effects of density: A synthesis"

16. Ciccone, A., and R. E. Hall. 1996. Productivity and the density of economic activity. American Economic Review 86 (1): 54– 70.

17. McGough, Louise, and Thomas, Eli (2014), "Delivering Change: Putting City Centres at the heart of the Local Economy", Centre for Cities

Renaissance, was pivotal in encouraging a new wave of national inner city urban regeneration and shifting cultural and societal attitudes about the desirability of living in British city centres towards a more sympathetic continental model. As Fig. 24 shows, for much of the past two decades this prompted an astonishing increase in the residential population of British city centres, the concentration of which has done much to encourage the urban densities we see today.

Fig. 24: At the start of the 21st century, British cities experienced extraordinary levels of city centre repopulation



Source: ONS

London, with a comparatively meagre residential population increase of 22% between 2002 and 2015, is the one exception to this trend. Heritage sensitivity, high-land values and the disproportionately high incidence of commercial development are some of the main reasons. However, it must also be noted that central London saw the highest national rate of tall residential buildings over this period, a circumstance that failed to appreciably increase its city centre population and once again demonstrates the counterintuitive folly of assuming that high-rises deliver high-densities.

And yet, despite the significant uptick in UK city centre densities in recent decades, UK cities are still generally less productive than their continental equivalents. In 2022 The Centre for Cities calculated that despite being broadly the same size, Rome is 55% more productive than Manchester[18]. Additionally, they also discovered that in Marseille 87% of residents could reach the city centre in 30 minutes by public transport, compared with only 38% Leeds, the largest city in Europe without a metro

18. https://www.ft.com/content/a45e028d-4b81-4bef-9546-970838ab963a

or tram network[19]. This is despite the fact that both cities are broadly the same size.

Worryingly, similar comparative economic trends were spotted across cities in the UK. The reasons for the British urban productivity underperformance are broadly apparent and include insufficient public transport provision, a disproportionate residential reliance on suburban accommodation, restricted housing supply and low housing affordability. These reasons perfectly encapsulate Pietrostefani and Ahlfeldt's earlier description of the scenarios in which density's positive economic impact can be frustrated and they all the more emphasise the critical economic importance of establishing and maintaining an intensive programme of urban densification in our city and town centres.

Additionally, it must also be remembered that repopulating our city centres is merely restoring the historic demographic settlement that once existed for hundreds of years in the past. In 1850 the population of the City of London was 130,000[20]. Today it is just 9,000, the vast majority of which is housed in one residential development alone, the Barbican. Inner city urban densification is as much historic repair as it is economic surgery.

19. https://www.ft.com/content/a45e028d-4b81-4bef-9546-970838ab963a
20. https://en.wikipedia.org/wiki/File:Population_of_the_City_of_London_over_time.png

S.M.A.R.T Density / 7.0 Aesthetics

Clamart de Paris is a new, under-construction housing development in south-west Paris whose residential blocks are modelled on traditional French apartment buildings and which maintains 35% social housing

No to bland spreadsheet boxitecture, high density demands exceptional design & a renewed focus on aesthetics to avoid urban monotony & maintain human scale.

Beauty and aesthetics are always critical to the urban condition but in a high-density environment where a greater number of people are invited to congregate in a greater number of larger buildings, it becomes all the more important. In such a scenario, beauty is upgraded from a visual concern to a social one and it becomes a powerful tool in subverting the

oppression and intimidation that can sometimes be a feature of densely populated urban environments and instead reinforcing human scale, spatial intimacy and visual variety in their place. In short, beauty makes mass urbanism tolerable.

Beauty is also an essential tool in potentially making mass urbanism something else not always routinely associated with it: popular. As we have seen in suburban scenarios, densification can often be a deeply contentious exercise, provoking deep-seated resentments and suspicions within local communities that incongruous, insensitive and inappropriate development is about to be unilaterally imposed on local residents against their will and that a particular way of life is about to be violently disrupted. Beauty can be a powerful way of challenging these fears and reassuring residents that high density can also potentially mean high quality and that if new interventions are designed well and with aesthetic harmony in mind, they can enhance local environments and enrich the visual and civic experiences they offer.

It is also especially incumbent on high density intensification to embrace beauty because as the public housing projects of the mid- to late 20th century showed us, the utilitarian compulsion to maximise units can sometimes lead to a totalitarian temptation to marginalise aesthetics, thus making a social and architectural venture already vulnerable to inhuman alienation even more so. This is how many of the high-density council estates of the 1960s and 1970s became so closely associated and stigmatised in the public mind with the stain of Stalinist-style militaristic brutality, the unwitting revival of which would be disastrous for any new programme of urban densification.

Fig. 25: Sadly, the absence of beauty and marginalisation of aesthetics are all too recurrent themes in our modern built environment

Even today, the absence of beauty is still all too evident in so much of our residential architecture. Bland luxury towers, anodyne facades, sterile

landscaping, visually lobotomised rural girdles of Lilliputian houses and the grinding banality of endless regurgitations of angularly awkward spreadsheet architecture blocks of flats all serve to deeply ingrain a noxious identikit incongruity into our urban landscape that ruins skylines, harms heritage, alienates residents, undermines urban character, suppresses a discernible sense of place and stigmatises density.

Beauty is the solution to eradicating all of these ills and there can be no programme of committed urban densification without it. And one of its most powerful and effective applications lies in its unique ability to install visual variety throughout the built environment and neutralise the risk of monolithic monotony that high-density housing of post-war generations so often fell victim to. Diversity is a much used and misunderstood word in our contemporary parlance but in an urban context it is an unreservedly welcome intervention that ensures that buildings and neighbourhoods retain the unique differences and distinct characteristics that animate and enrich the urban condition and sustain our human interest and engagement with it.

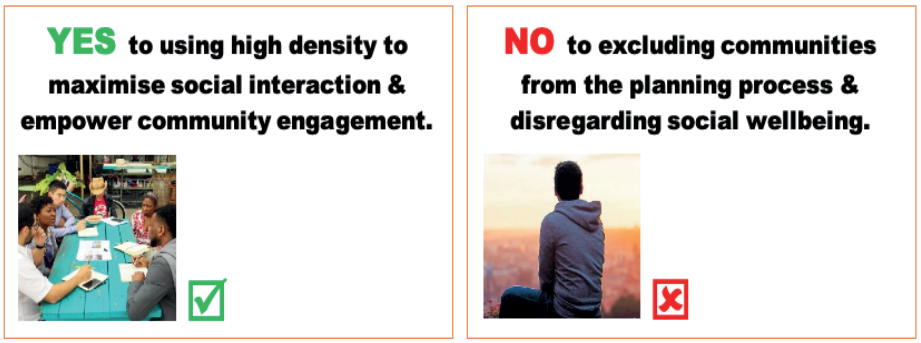
The issue of human engagement is a final key issue when assessing the relationship between beauty and density. Because for centuries, that engagement has been artistically carried by an aesthetic device that now, sadly, holds a controversial position within contemporary architectural doctrine: decoration. Though banished by (later) Modernists, decoration is one of the most powerful methods to not only enliven facades and reinforce variety, but, in its visual mimicry of the fractal geometries we find in nature, appeal to a human subconscious instinctively drawn to the natural world. In so doing, decoration helps strengthen the bond between user and building, humanising the latter in the process. While decoration is and should never be mandatory in architecture, it would be absurd for any new densification enterprise to waste decoration's enormous potential to humanise our built environment.

Fig. 26: If cheaply built, turn of the century tenement housing in New York's notorious Hell's Kitchen could incorporate decorative architectural details, then we should not proscribe against them either

S.M.A.R.T Density / 8.0 Residents

Vibrant public spaces and the presence of mixed-use amenities can help embed people and communities into high-density environments.

"Utilising density to maximise social wellbeing & place residents and community at the heart of development."



The paradox of feeling alone in a crowd is one of the most ubiquitous social contradictions the human experience has to offer. The urban experience too harbours its own debilitating equivalent, the social isolation

some can feel when surrounded by a city of millions. As with economics, density's impact in this area is ambiguous and their both academic and anecdotal evidence to suggest that increasing density can both help and hinder social isolation.

The latter comes in the form of a greater concentration of people amplifying feelings of detachment and alienation some may already feel. As they get larger cities by their nature become more impersonal and to those already rootless and lonely, this may serve to merely deepen their predicament, especially in a post-Covid world where working from home now forms a significant component of prevailing employment patterns.

There also appears to be a direct relationship between feelings of loneliness and the physical composition of the urban environment, a condition intrinsically related to density. In its 2024 report, *Lonely Nation*, the Centre for Social Justice found that amongst those who had access to green space, 59% said they had no feelings of loneliness while amongst those who had no access to green space, the number of people with no feelings of loneliness drops to just 44%[21].

While there are obviously a wide range of conditions and characteristics that regulate human susceptibility to loneliness (most of which are beyond the control of the built environment), the findings still prove that there can be little doubt that the built environment still has a significant role to play in either nourishing or neutering the social isolation that can sometimes be unfortunate emotional by-product of the urban experience.

More encouragingly, there is anecdotal and academic evidence to suggest that by increasing the potential for social contact and community support, high density can minimise social isolation. But while this may happen spontaneously and organically with chance encounters hypothetically prompting lifelong friendships and community immersion, there are certain policy strategies that can be taken to ensure that high density more naturally relates to high sociability.

We have already seen the importance of proximity to green space in an urban environment and this incumbency is heightened in high density scenarios. Another relatively simple policy solution is to exploit the opportunity for mixed-uses high densities engender in order to maximise communal amenities where residents can meet and linger. The build-to-rent housing model is expert at providing these and blocks of flats designed on this model can often have an effusive assortment of dedicated communal facilities ranging from cinema rooms and libraries to cafes and spas.

As the name suggests, the co-housing model is based on the very principle of intense communal engagement and it would be socially prudent to encourage both these housing typologies to play a meaningful role in any programme of urban densification. But even in other more conventional and traditional housing typologies, the opportunities high density presents to intermingle recreational and leisure amenities with residential units offers the potential for dynamic shared expressions of communal camaraderie and community prerogative.

21. Centre for Social Justice, "Lonely Nation", (2024)

A final key strategy by which high density can diminish social isolation is in encouraging and empowering communities to become directly involved with the planning process. This has been a long-standing Building Beautiful ambition and the words of the late former Housing Secretary of State James Brokenshire still ring true today as he did when he first penned them for the inaugural Building Beautiful report foreword back in 2018:

"We want to see local communities intimately engaged in helping to shape the future of the development in their area, feeding in their views on the design and style of new developments and helping local authorities create style guides and codes which developers can use to meet the needs of communities."[22]

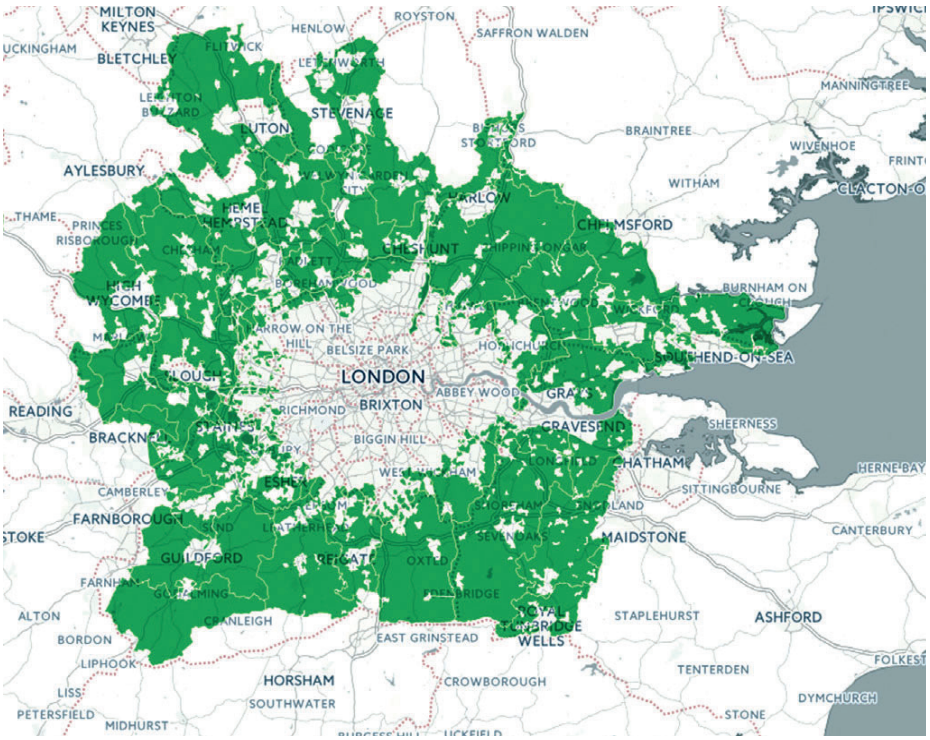
Happily this appears to mirror the approach of the current Government whose latest Neighbourhood Plan committed to prompt "community empowerment and collaboration" by "encouraging local residents to take an active role in the decision-making in their communities."[23] This strategy is all the more critical where high densities are concerned.

Directly encouraging communities to more closely engage with their local developments in this way, and providing the public consultation reforms necessary to do so, thereby accomplishes three fundamental aims, all of which are also embedded in core Building Beautiful ideology. First it ensures that high density environments retain a close practical connection to the communities they house. Secondly it endows densification enjoys a greater degree of democratic sanction from the local community than might otherwise have been the case. And finally, and in a welcome return to our founding point, by encouraging residents to socially invest in their surroundings, it systematically reduces the prospect of those same surroundings themselves being a source of the social isolation for the residents who helped develop them.

22. Policy Exchange, "Building More, Building Beautiful", (2018)

23. https://www.gov.uk/government/publications/plan-for-neighbourhoods-prospectus-and-tools/plan-for-neighbourhoods-prospectus

S.M.A.R.T Density / 9.0 Regulations



The Government has created a new 'grey-belt' classification to define greenbelt land that is appropriate for development. But the need for greenbelt development of any kind could be significantly reduced if available brownfield land was intensively redeveloped with optimal densities.

Using density to regulate development by protecting greenbelt, intensifying brownfield and determining appropriate types and locations of new housing.

Density often finds itself at the centre of a conflictive and contradictory discourse in the planning system. It is commonly accepted that we are in the middle of housing crisis defined by a critical undersupply of new homes. But it is not uncommon to find planning applications for residential developments rejected on the grounds of excessive density. This in itself reflects a central misunderstanding of how density works. As we have seen, high density can be delivered in all manner of ways, some mid-rise, some high-rise, some contextual some incongruous. Accordingly, it is important to remember that it is never the density that is defective but the design.

Few planning measures illustrate the contradictory nature of planning's relationship with density, or the tension it sometimes maintains with design, than the scrapping of the London Plan's infamous Density Matrix in 2021. Since its inception in 2004, the matrix had treated achieving density as an exercise in numerical compliance, setting fixed density values for proposed developments determined by a variety of local and strategic considerations such as public transport provision and the proximity of amenity space.

However, the matrix was routinely ignored[24] and frequently accused of perpetuating a mechanistic yet performative ritual of compliance that failed to take account of key underlying residential issues like community impact and social infrastructure. There was also widespread suspicion, (largely unfounded) that by setting an upper limit for density the matrix was restricting the supply of new homes, obviously an intolerable impediment in the middle of a housing crisis.

Largely as a result of these concerns, the matrix was scrapped in favour of the what the London Plan now refers to as a "design-led approach". This involves density being determined by a site-by-site based assessment of issues like local context and infrastructure capacity. But while this approach is more flexible than its predecessor, this too has come in for its fair share of criticism with some accusing its removal of the matrix's upper density limits as a tactical ruse for profiteering and overdevelopment[25] and others maintaining that it ignores the relationship between density and the *type* of housing output produced[26].

Nonetheless, the more ambiguous density trajectory charted by the removal of the density matrix mimics changes in national policy. Before 2012, Planning Policy Guidance 3 (PPG 3) set a minimum density of

24. https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/removal-density-matrix-new-london-plan-1
25. https://www.times-series.co.uk/news/15705533.theresa-villiers-mp-expresses-concern-over-housing-in-mayor-sadiq-khans-draft-plan/
26. https://www.bdonline.co.uk/briefing/the-new-london-plan-has-got-it-wrong-on-density/5091396.article

30dph for all residential development. The introduction that year of the National Planning Policy Framework (NPPF) removed this requirement and gave local planning authorities the freedom to set their own density thresholds in line with local circumstances[27].

Today, a ubiquitous new phrase has entered into the planning lexicon as updated versions of NPPF encourage "efficient use of land", a term famously open to significant interpretation. Paragraph 129 of the NPPF also promotes "appropriate densities"[28] and again exhorts local authorities to set their own minimum density standards determined by considerations like public transport provision, proximity to city centres and the potential for land use optimisation.

Recent post-consultation changes to the NPPF strengthened these sentiments further, and a key phrase in Paragraph 130 now explicitly calls for the following:

> *"These standards should seek a significant uplift in the average density of residential development within these areas, unless it can be shown that there are strong reasons why this would be inappropriate."*[29]

Observably, density's recent regulatory evolution through the planning system can defined by two strategic subtexts. First, a move away from setting density limits or thresholds to maximise housing supply and neuter any conceivable perception that the planning system is acting as a barrier to the delivery of new homes. This, as this paper has argued, is a positive step and it is encouraging to see it strategically endorsed by central government.

But the second subtext is less positive. While there seems to be broad acceptance that high density is something to be welcomed strategically, there is an underlying perception that it is something to be feared locally and therefore requires careful presentational management by conciliatory overtures to populist incentives like 'appropriateness' and 'local character'. This generally means that the issue of density is treated with trepidation, its true potential to positively transform our housing supply and built environment muffled by a determination not to offend the suburban hegemony.

This restraint is understandable. When high-density is presented as squadrons of high-rises or phalanxes of anodyne blocks of flats it is natural that many would recoil. But there is a workable regulatory solution to this and that is to routinely associate high density with the type of housing it will engender. It is not enough for the planning system to set high density as a target, it must define what high density looks like as an output.

Is it family homes? Is it homes for young professionals? Is it mansion blocks? Is it tower blocks? Is it courtyard blocks? Is it podium slabs? Is it streets? Is it squares? Is it multi-generational housing? Is it co-housing? Is it build-to-rent (as the original mansion blocks were)? Is it affordable housing? Is it social housing? While all these commodities are invariably addressed in other areas of planning policy (such as local plans), were we more explicit about the visual and typological consequences of high

27. https://www.building.co.uk/technical-case-studies/housing-density-does-it-stack-up/5092832.article
28. https://www.gov.uk/guidance/national-planning-policy-framework/11-making-effective-use-of-land
29. https://www.gov.uk/guidance/national-planning-policy-framework/11-making-effective-use-of-land

density as a planning objective and were density routinely associated with these consequences then it would be much more likely to embrace it as a universal societal ambition.

Of course this paper's position is that these consequences should be primarily focused on the themes the S.M.A.R.T. Density approach wishes to endorse. The pursuance of existing misconceptions that already view high-density as towers and housing estates could be both disastrous and counterproductive.

Instead, this means an alternative repackaging of high-density as a mid-rise solution that promotes mansion blocks, street-based developments, perimeter edges, a high-quality public realm, natural landscaping, mixed-use neighbourhoods, aesthetic excellence, the potential for new public transport links and human scale and intimacy throughout.

Were density strategically dissected in this way, this would place the focus inexorably on brownfield rather than greenbelt densification. It would suggest which areas might be more appropriate for densification than others. It would identify which housing types were best placed to deliver the development outcomes required. It would be an explicit endorsement of the 'design-led' approach as opposed to the numerical compliance matrix approach. And it would give density the kind of strong spatial and visual dimension that will enable it to be more effectively and forensically managed by the planning system.

And finally, it would lend any strategic campaign of high density intensification the crucial mantle of public support. The vast majority of people do not care how many dwellings to hectare their street accrues. But they do care if they can see a tree from their bedroom window. The planning system and its approach to density should reflect these priorities.

S.M.A.R.T Density / 10.0 Transport

Recently listed Southwark tube station in London opened in 1999 as part of the Jubilee line extension with its design justifying and specifically configured to accommodate an as yet unrealised residential development planned above it.

High density always makes transport more viable but transport doesn't always make high rise more appropriate.

Density and public transport maintain a transactional and highly symbiotic relationship. At its core, it is based on the simple fact that the more people that live in any single area, the more economically viable public transport infrastructure serving that area becomes. In its simplest terms, a new rail or metro line extension to a neighbourhood housing 20,000 people would pay for itself more quickly

Fig. 27: In an impressive and relatively rare example of British state planning and strategic foresight, when London's Docklands Light Railway opened in 1987, construction of Canary Wharf had not yet begun but the new infrastructure gave confidence to investors that the development should proceed.

than a similar extension to a neighbourhood of the same size housing 5,000 people. Therefore, the higher the population density of an area, the higher the economic viability of the public transport network serving it.

This is a relationship the S.M.A.R.T. Density approach would strongly support. Too many housing developments, especially in non-urban areas, are built with inadequate public transport provision and it is perhaps the fundamental infrastructure component on which the success of new housing developments or urban regeneration projects rely. Countless historic examples validate this approach, perhaps most notably the Government's provision of the Docklands Light Railway long before the construction of the Canary Wharf development it was conceived to serve got underway in earnest. The presence of the railway to a previously inaccessible (by rail at least) peninsula that was largely (though not entirely) composed of de-industrialised wasteland provided a massive confidence boost to investors and developers involved in the Docklands regeneration project and underpinned the entire project's economic and commercial viability at its crucial early stages.

Equally, the presence of the Docklands Light Railway also illustrates

the unique value of state intervention in redevelopment projects of all kinds. Early investment in transport infrastructure before the existence of the residential and commercial units designed to finance it in the long-term represents a significantly higher economic risk for the private sector than it would for the state, so high in fact that in the former scenario the infrastructure may be abandoned altogether until such time as it can be financially supported by surrounding development, a delay which in itself would significantly undermine the desirability and success of said development. The presence of the state providing early infrastructure reassurance obviates the emergence of this vicious circle.

While it is long-established that high density makes public transport more viable, the reverse can also be argued. Public transport also plays a significant role in making high-density more sustainable and there would be obvious both social, economic and environmental drawbacks to promoting high density developments *without* the public transport infrastructure required to sustain them. For instance, it is no accident that the biggest city in Europe without a metro, Leeds, is also the least dense big city in the UK (see Figs. 9 and 10). It is arguable that while Leeds clearly needs a rapid transit network in order to accelerate economic growth, its lack of density is a recurring disincentive to provide one. So arguably the best way to build a viable economic argument for the construction of a tram or metro in the city would be to concurrently increase the concentration of housing this new infrastructure would eventually serve.

Public transport's role as a validator of high density is long-established and we saw its most recent strategic iteration in November 2025 when Secretary of State for Housing, Communities and Local Government Steve Reed announced that housing around "well-connected" railway stations and transport hubs would be given default planning permission[30].

This is a welcome move and, as we have seen, it makes obvious sense to concentrate density close to public transport hubs to fully utilise the economic and connectivity benefits their proximity can provide. However, there is also need for caution here. As this paper argues, as well as public transport, there are multiple measures that must be taken to make high density viable in civic as well as social terms. This paper has argued that these must invariably include, amongst other things, mid-rise building heights, high placemaking standards, superlative public realm, aesthetic quality and strong community engagement. Density decisions must be taken on a holistic, site by site basis. Context, as well as density, should be the overriding concern.

Therefore, should due consideration not be given to other contextual conditions, then the presence of public transport alone cannot in itself, substitute them and unilaterally justify the imposition of high density. If it does, there is every possibility that the development undertaken might well provide units but unleash other strategic harms on its local context. At its crudest, the presence of tube station at Westminster is not sufficient justification to build a 50-storey tower block beside the Houses of Parliament. A whole host of other considerations, in this case largely

30. https://www.gov.uk/government/news/housebuilding-around-train-stations-will-be-given-default-yes

civic and historic, should first be scrutinised. High density always makes public transport more viable but the S.M.A.R.T. Density approach would argue that that public transport, in and of itself, does not always prove that high rise is appropriate.

Appendix 1: Defining Density

At its simplest, residential density is the amount of units provided in any given area or site. While density is most commonly measured in the number of homes per hectare, mile or kilometre, the site it seeks to define can vary from an individual development to a whole neighbourhood or to an entire city or even country. Homes need not be the only measurable component either, density can also refer to the number of habitable rooms, bed spaces or people that populate any given site, unit measures that are often scrutinised in the planning system.

Density is important because it adds a further level of detail and understanding as to how and where housing supply is distributed and configured. These are essential tools in both urban planning and urban regeneration, and they are particularly important when trying to assess the viability of new housing and its suitability for existing or proposed urban, transport and social infrastructure capacity.

But density is not just a numerical tool but a deeply intuitive and empathetic one too. While residential units tell us the number of homes in question, density can begin to suggest the kind of *place* in question and is therefore intrinsically relevant to determining less tangible housing characteristics like urban character, social activity and a sense of place.

For instance, Bromley is the least densely populated borough in London and has an average population density of 22 people per hectare[31]. This immediately suggests a suburban character with detached houses, larger homes, single-family occupancy, wider streets, fewer flats and possibly an attendant greener or less intensively-developed urban landscape. With almost half the space in the borough being allocated to green or open space, these are characteristics that almost perfectly summarise most of Bromley's physical appearance and urban character

Yet a population of density of 164 people per hectare, as attained by the London Borough of Tower Hamlets which is the densest in the UK[32], conversely suggests a preponderance of high-rises, more flats, bigger households, smaller properties, narrower residential streets, a tighter urban grain, more multi-occupancy accommodation and more multi-generational housing, all features of Tower Hamlets' urban and socio-economic physiognomy.

In both extremes therefore, we see how density is instructive in helping inform a palpable sense of place as well as a statistical summary of local demographics. But there is also need for caution here. Density is a pattern not a rule. It only tells part of the story as there is a whole compendium of other factors - such as housing type, street layout, usage, townscape and

31. https://www.ons.gov.uk/visualisations/censusareachanges/E09000006/
32. Tower Hamlets Borough Profile, London Borough of Tower Hamlets, May 2024

heritage - that ultimately determines the true character of a location and the role that housing efficiency plays in informing it.

The Royal Borough of Kensington & Chelsea for instance maintains one of the highest residential densities in London and is the fourth most dense borough in both England and the capital[33]. But it retains an urban townscape vastly different to that of Tower Hamlets and primarily packs its high-densities into historic mansion blocks and tightly-knitted mews and terraces, rather than tower blocks and housing estates favoured by its eastern neighbour. Understanding the multifarious forms in which high density can be achieved and modulating these to ensure consistent sensitivity to attendant concerns like beauty, location, usage, townscape, heritage, context and scale is how to intelligently optimise density's use and is the critical guidance this paper seeks to provide.

33. https://centreforlondon.org/rbck-social-housing-wait-times/

Appendix 2: Density Examples

The numerical density parameters below are primarily for guidance purposes. As there is no single definition of density categorisation, these examples are illustrative and do not form a definitive, scaled breakdown of how different densities can be measured.

Very Low Density / Less than 15 dwellings per hectare

CORFE MULLEN, DORSET, ENGLAND / 10 dwellings per hectare approx.
A picturesque village set within a typical rural context exemplifies the characteristics of very low density housing. These include low-rise buildings, detached housing, expansive plots, organic layout and a greenfield context. This density can sometimes be replicated within suburban contexts also.

Low Density / 15-35 dwellings per hectare

BECONTREE ESTATE, LONDON, ENGLAND / 30 dwellings per hectare
This is the density category into which the vast majority of UK housing fits. The average density for England for new residential developments

completed in 2022 was 31 units per hectare, an increase of 11 on the previous year[34]. However, when density is extrapolated to provide a ratio for the entire country, it tumbles to just 1.97 dwellings per hectare[35], a figure that broadly reflects that only around 5.9% of Britain is built on[36]. Becontree Estate, Europe's biggest council estate[37] was primarily built in the 1930s and presents a very different urban and architectural composition from the post-war models that were to follow. Wide, tree-lined boulevards, grassed carriageways, semi-detached housing, large terraced properties and a strong emphasis on houses as well as flats set the low density framework that also characterises much of suburbia. Before 2012, Planning Policy Guidance 3 (PPG 3) set a minimum density of 30dph for residential development[38].

Medium Density / 35-80 dwellings per hectare

ANGELL TOWN ESTATE REGENERATION, LONDON, ENGLAND / 68 dwellings per hectare

Angell Town presents a microcosm of medium density inner-city living. A recently regenerated council estate, it attains its housing efficiency through a mix of housing types (houses, terraces, flats and maisonettes) a mix of streets and open spaces arranged around a masterplan of mid-rise blocks. Many of the Victorian and Edwardian terraces that feature across Britian's urban inner-cities also attain medium density housing levels.

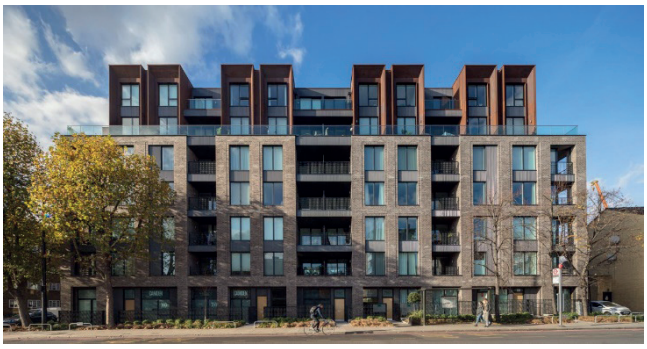
High Density / Above 80 dwellings per hectare

34. https://www.gov.uk/government/statistics/land-use-change-statistics-2021-to-2022/land-use-change-statistics-new-residential-addresses-2021-to-2022#:~:text=The%20average%20density%20(dwellings%20within,is%20unchanged%20from%202020%2D21.
35. https://www.gov.uk/government/statistics/dwelling-stock-estimates-in-england-2022/dwelling-stock-estimates-england-31-march-2022#:~:text=There%20were%20248%2C149%20long%2Dterm,as%20of%2031%20March%202022.
36. https://www.bbc.co.uk/news/uk-41901294
37. https://www.standard.co.uk/news/london/becontree-council-estate-coped-covid-pandemic-europe-b929278.html
38. https://www.building.co.uk/technical-case-studies/housing-density-does-it-stack-up/5092832.article

ST. ANDREW'S DEVELOPMENT, LONDON, ENGLAND / 321 dwellings per hectare

The high-density inner-city housing estate is a common component of our urban landscape. Typically providing few houses and more commonly comprising a mixture of high-rise tower blocks and large mid-rise blocks of flats, this typology seeks to maximise land efficiency by providing as many units as possible over any given area of land coverage.

Hyperdensity / Above 350 dwellings per hectare



CAMDEN COURTYARDS, LONDON, ENGLAND / 410 dwellings per hectare

In England, hyperdensity developments are relatively rare because they are commonly assumed to place undue pressure o+n local services and infrastructure and to require architectural forms increasingly incompatible with the more human demands of liveable streetscapes and human scale. Hyperdensity is also typified by the tower block typology, Hong Kong, one of the densest cities on Earth, aggressively deploys high-rises to attain astonishing residential densities of over 500 dwellings per hectare. However, as Camden Courtyards proves, hyperdensity can also be achieved by more sensitive and traditionally configured housing types such as mansion and courtyard blocks.

Appendix 3: High Density Advantages

There are practical and ideological trade-offs with most systems of housing and high-density housing is no different. So as well as the advantages listed below, some of the disadvantages concern overcrowding, overdevelopment, pollution, lack of open spaces and the potentially increased risk of social isolation. However, this paper argues that these potential deficiencies can be significantly diminished by fortifying high density developments with the infrastructure uplift, contextual sensitivity, traditional typologies and mid-rise scale that will allow the advantages below to be fully utilised.

1. Greater Efficiency
By placing more housing units in any given site, not only is housing supply in that specific area increased by the available land is utilised more efficiently.

2. Stronger Communities
Having more residents housed in a concentrated area is a dynamic assertion of the urban condition and can add the activity, momentum and community kinship that makes cities vibrant and attractive and increases the quality of urban life.

3. Varied Uses
A greater mix of people has the potential to attract a greater mix of uses, especially non-residential uses like commercial, leisure, recreational, community and civic, again enriching and reinforcing the urban condition and incentivising private entrepreneurialism.

4. Optimised Public Transport
Public transport is more likely to serve more densely populated areas and more densely populated areas are likely to attract a better standard of public transport. Whichever comes first, the density or the transport, higher density exponentially improves the cost/benefit analysis when proposing new transport infrastructure and increases its value and effectiveness.

5. Cheaper Infrastructure
As local infrastructure is designed to serve more people, its per capita capital cost decreases, providing greater cost efficiency and saving to

utilities, the taxpayer or private developers.

6. Cheaper Build Cost
As local infrastructure is designed to serve more people, its per capita capital cost decreases, providing greater cost efficiency and saving to utilities, the taxpayer or private developers.

7. More Employment
Higher densities traditionally attract more employment opportunities, offering the potential to incentivise economic activity and increase local or regional productivity.

8. Increased Sustainability & Energy Efficiency
While a greater concentration of residents will increase energy demand, it will also increase energy efficiency by ensuring that each component of infrastructure required to deliver energy supply will serve a greater amount of people. Equally, the greater likelihood of public transport provision reduces reliance on the private car and optimises a more sustainable transport model and reduces carbon footprint.

9. Revival of Traditional High-Density Housing Types
It is a common misconception that high-density requires high-rise. The reality is that there are a range of traditional housing solutions capable of delivering high-density development and a more nuanced focus on the of mechanics of density has the potential to lead to a revival of more traditional and contextually sensitive high-density housing types like mansion and courtyard blocks.

10. Revival of Town Centres
A combination of debilitating external factors, such as the growth of online shopping and the closure of a number of household name retail brands, has seen high streets across Britain fall into decline in recent years. This has often been matched by a simultaneous decline in the quality, activity and character of many British town centres as the gaps left by dwindling physical retail are filled with hopelessness and deprivation. Repopulating these moribund town centres by increasing residential densities could be key to their revival.

11. Protected Green Belt
While it is of course possible to densify greenfield land, the advantages outlined above make densification of brownfield land a considerably more attractive and feasible urban, environmental and socio-economic proposition. Therefore, by intensifying the use of brownfield land, the redevelopment of greenfield land is rendered more redundant, minimising urban sprawl.

12. Healthier Wellbeing

While there is academic evidence to suggest that increased residential density can exacerbate social isolation and loneliness, the obvious potential for increased physical contact that higher density can engender offers the potential for greater social interaction and community support.

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