CITY EDGE PROJECT

INTERNATIONAL BEST PRACTICE HOUSING REVIEW FOR THE CITY EDGE PROJECT

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CONTENT

CLIENT

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INTRODUCTION

REPORT STRUCTURE AND METHODOLOGY

This document has been commissioned to accompany and inform the City Edge Project Strategic Framework. The purpose of this document is to provide an evidence base for supporting the Strategics Framework's approach to fostering diverse sustainable communities that benefit from:

- A choice of dwelling typologies;
- A balanced spread of tenure typologies;
- Dwellings that are of a high and equitable standard; and
- Neighbourhoods that are suitably scale.

The approach to this is as follows:

1. **The liveable city:** investigate the components that form an optimal setting for housing in the Project Study Area, including a reflection on the academic position behind the density mix of uses and diversity of the housing stock. This will comprise a literature and research review relating to 15-minute city principles, synthesised to establish consensus on the components of the liveable city. The liveable neighbourhood and liveable housing matrix is identified as an assessment tool for case studies and can be used to assess future housing proposals in City Edge, particularly at statutory plan stage.

2. **Case Study - Neighbourhood Scale:** shortlist of large masterplan case studies that are relevant to the City Edge Project are presented and analysed in relationship with the liveable neighbourhood and liveable housing matrix. For each case studies the following are considered:
   - Context: national and city scale elements
   - Liveable Neighbourhood: transport, open space and urban design
   - Housing: Tenure mix, dwelling mix and social mix

3. **Case Study - Building Scale:** three buildings from each of the masterplans presented in the previous sections are analysed in detail:
   - Density
   - Height
   - Social mix
   - Tenure mix
   - Unit size mix
   - Private open space
   - Uses Mix
   - Architectural design.

4. **Guidelines:** recommendations for the approach to fostering diverse sustainable communities, covering:
   - distribution of tenure and typology
   - equitable approach to housing standards
   - urban form
   - height/scale.
   - density / plot ratio
   - Spatial principles of mixing:
   - Tenure blind development:
   - Density and design
   - Homes standards and open space.

1. THE LIVABLE CITY

An outline of the components for a liveable city to define a liveable housing matrix.

1.1 THE QUESTION OF LIVEABILITY

Creating the right settings for housing through a holistic approach

Cities have tremendous success as clusters and multipliers of opportunities, both in social and economic terms, providing access to jobs and entrepreneurship, communities and culture, life-long learning and services (Glazer, 2021). The future is urban, as the rapid growth of cities worldwide in the past two decades proves. However, urban settlement widely share a set of problems, related to their growth and form, that affect substantially the quality of urban life, countering the benefits of living in cities. These issues range from health and well-being, to social inclusion, growing inequalities, and climate emergency. If cities are constellations of opportunities, in fact, a recognition the spatial distribution of opportunities in relationship to urban morphology, in many cases, highlights an uneven distribution with brighter areas concentrated around one main city centre or in a few areas. This results in long, often expensive commutes, on congested roads and overcrowded public transport.

Expanding times of commutes not only have an impact on well-being by eating into daily free time, but also more seriously on health. Motorised journeys increase noise and air pollution, as well as carbon emissions and prevent sustainable lifestyles, heightening the climate emergency. Moreover, they foster a sedentary life-style, which has measurable adverse effect and correlates to higher incidence of cardiovascular diseases, obesity, cancer, anxiety and depression (Younger, 2008). If for some commuting to reach services and opportunity is an inconvenience, for part of the city population the cost, time and effort represent a real barrier to access, compounding existing patterns of disadvantage, reinforcing inequality, and hindering social mobility. The lower socio-economic demographics, new comers, children and teenagers, elderly, as well as parents of young children are particularly affected (Younger, 2008). These issues partly help understanding exclusion from economic opportunities, but also a sense of isolation and loneliness, which is a real concern for instance for the ageing population (Badland, 2014). Furthermore, a major challenge that cities face is responding to the climate emergency, with extreme weather events both threatening the stability of the world system and impacting locally with heat waves and torrential rains (Bai, 2018).

While there are multiple and interrelated factors at the roots of the question of liveability it is possible to begin to understand it terms of silos-thinking in city planning, a past approach to land use that has created urban fragments (Moreno, 2021). Determining factors that can be affected by the planning system prominently feature the size of metropolitan areas, the dichotomy between city centre and periphery, the legacy of mono-functional zoning development, a car-based lifestyle and urbanism, and the unaffordability of housing in central and well-served areas.

The need to accommodate forecasted population growth and regenerate existing neighbourhoods is here discussed in the context of sustainable urban development, in the effort to plan the right settings for long term economic, social and environmental sustainability - cities that are liveable as much as enjoyable. In many countries, for instance in the UK, the pressure to respond to a wide spread Housing Crisis, partly attributed to housing shortages, has focused the planning debate around housing, assuming as key indicators the number of homes delivered, the speed of the delivery and the affordability of the end product (RTPI 2018). While these are key elements, they are part of a larger picture. Housing needs to be seen in the much larger ecosystem of urban uses and interactions.

The question of liveability lies at the centre of contemporary processes of city-making. Liveability and more so enjoyment, depend on the experiential qualities of city life encompassing health, safety and comfort, but also relating to the ability to have meaningful social interactions, participating in economic life and experiencing a sense of belonging to a place and a cohesive community. It relates to functionality of infrastructures but also to its liveliness and interest, to the quality and character of public spaces and buildings the wealth of choices. It therefore requires a holistic approach to build liveable cities, in which living, working, learning, caring, playing are all equally important parts.

1.2 A CONVERGENT SOLUTION TO MULTIPLE ISSUES

The rise of polycentric cities, living locally and 15 minute cities

Recently, liveability has emerged as a critical concern in city planning - how cities can remain attractive, liveable and enjoyable into the future while they evolve and grow? (Sustainable Development Goal 11). The previous section highlights the unevenness in the vitality and uses of urban areas as a central factor. A degree of difference in concentration of activities between centres and peripheries is a natural consequence of the critical mass required to trigger the spark of urban opportunities. However, past a critical distance there is no alternative to a modal shift from walking and cycling to faster alternatives, which can start a sequence of adverse effects. While cities keep growing, planning practice progressively acknowledges the importance of providing sustainable access to daily or routine needs, services, and amenities to counter this tendency. This can only be achieved and sustained by a change in city planning and especially in land use, providing housing always as part of an ecology of uses, rather than an isolated need relying on the city centre to fulfil the promise of urban life. The development of this idea passed through multiple places and conceptualisation. Today, a growing number of cities include principles of living locally in its policy: Paris with the '15 minutes city' concept, Bogotá with 'vital neighbourhoods concept', Melbourne with '20 minute neighbourhoods', Portland with the 'complete neighbourhood'(C40, 2020). What they all have in common is an emphasis on access through sustainable journeys and a mix of uses in every neighbourhood to support daily activities close to housing. The review aims to highlight the context, reason and elements of liveability and to form a baseline to elaborate an assessment criteria.

PORTLAND CLIMATE ACTION PLAN AND THE COMPLETE NEIGHBOURHOOD CONCEPT

Portland Climate Action Plan set the goal to reduce carbon emissions by 80% by 2050. Since 2012, Portland, has introduced the concept of complete neighbourhoods in its city planning documents, to support the realisation of this target. The "complete neighbourhoods" concept was developed to translate into a measurable spatial framework the ability of residents to move away from motorised journeys and in turn reduce emissions. A "complete neighbourhood" is defined as "an area where residents have safe and convenient access to goods and services they need on a daily or regular basis. This includes a range of housing options, grocery stores and other neighbourhood-serving commercial services; quality public schools; public open spaces and recreational facilities; and access to frequent transit. In a complete neighbourhood, the network of streets and sidewalks is interconnected, which makes walking and bicycling to these places safe and relatively easy for people of all ages and abilities." (Portland Plan, 2013). In Portland, complete neighbourhoods were assessed based on a 20 minutes active travel journey. The distance was identified as the average length of trips that residents were willing to undertake by walking and cycling before preferring motorised solutions. In 2013, less than a half of residents lived in complete neighbourhoods and were therefore in the conditions to start to rely less

Traffic Jam

Active travel and SuDS, Le Trapeze, Boulogne Billancourt

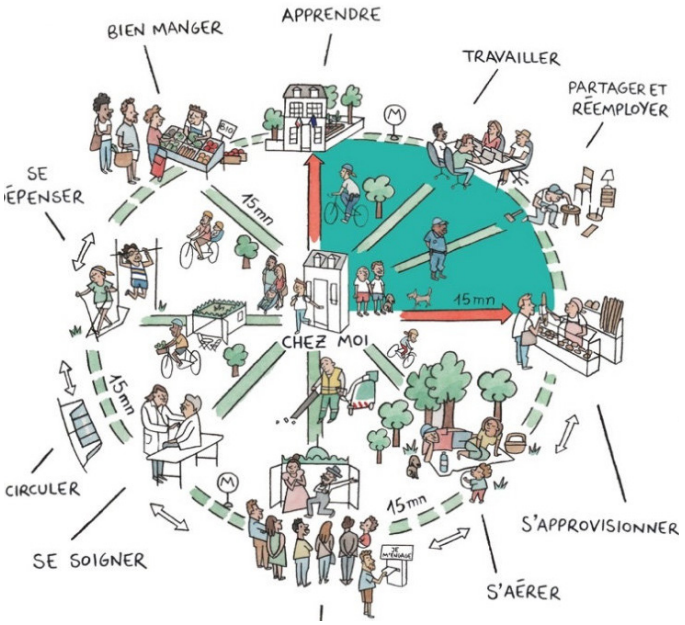
on cars. The Portland Plan introduced in its 2035 objectives that 80% of the residents of the whole city should live in a complete neighbourhood. Portland introduced in this way a connection between behavioural change and planning neighbourhoods. Analysis of accessibility through a city wide heat-map highlighted that peripheral areas were under-served and required particular efforts to change transport patterns.

15 MINUTE CITY, PARIS

Carlos Moreno, Urbanist and Professor of Sorbonne University, in 2016 re-conceptualised and expanded the idea of living locally with the framework of the 15-minutes city. This idea is grounded in the consideration that the well-being of urban residents depends on the ability to fully perform six social functions within a short 15 minutes walk or cycle from each other; these functions include living, working, shopping, healthcare, learning and entertainment. While Moreno's understanding encompasses social, environmental and economic sustainability advantages, its focus is democratising well-being and promoting human-centred design. The concept was popularised when Paris Mayor, Anne Hidalgo, used it as the centre of her re-election campaign, proving that Parisians were interested in seeing flourishing the areas where they lived even more than economic recovery. The plan for Paris firstly focuses on redistributing the street space to favour active travel, extending the cycle infrastructure and repurposing 70% of on-street parking (C40, 2020). Moreover, it focuses on bringing opportunities to under-served parts of the city, increasing office and co-working spaces, promoting flexible use of public buildings, and opening up schools yards to resolve the lack of open space.

MELBOURNE 20 MINUTE NEIGHBOURHOODS

The Melbourne Plan 2017-2050 includes "Living locally - 20 minutes neighbourhoods" within its nine guiding principles. Reducing emissions is a crucial concern for the policy document, which states that if the whole population of Melbourne was living in a 20-minute neighbourhood, the city's daily emission of greenhouse gas could be cut by 370,000 tonnes. A strong influence on the Melbourne Plan is also public health. The Healthy by Design Guidelines published by the National Heart



15-minutes city, streets and diagram, Paris en commun champaign

20-minutes Neighbourhood components, Melbourne Plan

Foundation established a link between urban form and poor health outcomes and prioritised creating the right conditions for good health through adequate streets and open space to support an active lifestyle. The plan acknowledges that commutes to work may take residents further afield; however, the Melbourne Plan aims to bring within an 800m from home (20 minutes return walk) social infrastructure, retail and open spaces, the key tool being promoting mix-use neighbourhoods. The plan suggests the critical components of the 20-minute neighbourhood and acknowledges the relationship between liveability and housing delivery, stating that its realisation relies on "housing/population at densities that make local services and transport viable".

BUILDING TOWARD THE SUSTAINABLE DEVELOPMENT GOALS

The best practice examples show how living locally has become a widespread concept. Part of the success is that it offers a pragmatic, spatial answer to several urban issues in line with the Sustainable Development Goals:

Reducing emissions (SDG 13 Climate Action)
In Europe, it has been calculated that one-third of total emissions is generated by transport and 60% of it is due to car journeys. This is also the single category with emissions rising between 1990 and 2016. It was, therefore, established by the Paris Agreements the target to reduce 60% of transport emissions by 2050 (European Parliament, 2021). Increasing the share of journeys by walking and cycling is a key step towards net-zero carbon. However, active travel is bounded to a limited area and requires infrastructure and land-use changes.

Building resilience: (SDG 11 Sustainable Cities)
Creating more green in the city has a critical role in building resilience towards climate emergency, considering the effect of heath and rain in extreme weather events. Moving away from car-based transport allows reallocating street space to other functions, such as sustainable drainage and green, which can help mitigate floods and heath.

Minimising land consumption: (SDG 12)
The 15 minutes city advocate for a compact urban form. Higher densities and avoiding urban sprawl is the only way to make services and transport viable, and this also means preserving land and minimising expansion on greenfield.

Foster health and well-being: (SDG 3)
Long commutes impact well-being and health. Not only do they represent a significant loss of time and a source of stress; they also are correlated with poor health outcomes due to a sedentary lifestyle. This unveiled a significant burden to health providers, with associated costs (The heart Foundation, 2009). Locating everyday needs within easy reach from homes positively affects health because it promotes walking and cycling.

Promote social inclusion and access to education: (SDG 10 Reduce Inequality)
The 15 minutes city aims to address urban inequality, considering how to bring the same wealth of opportunities available to those living in the city centre to under-served communities. (SDG 10). The 15 minutes city concept supports the less mobile population, including senior residents, teenagers, parents with young children and lower socio-economic demographics, and newcomers. A longitudinal study in the US by Professor Raj Chetty (Chetty et al. 2020) showed that growing up in cities with more opportunities does not always correlate to better economic outcomes for adults. More relevant are neighbourhoods characteristics, possibly related to the inability of teenagers to access citywide opportunities during formative years (Gazer, 2021).

Support women (SDG5 Gender Equality):
Women and men follow different movement patterns, with women moving more in their neighbourhood, caring more for children, cycling less and riding more buses, as a study of mobility in London highlights (tfl, 2020). Local opportunities can ease the burden of caring for others and free more time to dedicate to their work, interests and themselves. Women's mobilities need to consider personal safety walking and cycling (Kern, 2020).

1.3 CONSIDERATIONS FOR HOUSING AND URBAN DESIGN

Proximity, density, diversity

The previous sections discuss liveability as a central question in planning for new city expansions and propose the spatial framework of the 15-minute city as a useful tool to create places that are sustainable in the future and enjoyable in the present. The holistic approach proposed to liveability requires to see the housing question its relationship to other urban functions in a tight network of short active journeys. Carlos Moreno suggests that the liveable city principles can be summarised as proximity, diversity, density and ubiquity (Moreno, 2021). This section will discuss these principles in relationship to housing design and delivery to establish how housing should be shaped to foster liveable cities. Key learning from the categories of proximity, density and diversity will be used to define an assessment matrix that can guide precedents review and inform future development requirements.

Granary Square, King's Cross, London

PROXIMITY

Liveability and social, economic and environmental sustainability can only be achieved when urban and social functions are easily accessible. For this condition to be realised, housing needs to be integrated into mix-use neighbourhoods and delivered in conjunction with other uses creating proximity or co-location relationships. Best practice examples such as Plan Melbourne (2017) and the Portland Plan (2012) provide a useful long list of uses to be considered and adapted to the specific context of each plan.

Proximity to Open Space: an adequate range of open spaces to be considered in conjunction with housing includes access to nature as well as spaces for ecological systems that can thrive protected by human interaction, traffic, noise and lighting; parks with an adequate offer for all age groups, outdoor sports facilities which will include both pitches, outdoor gyms and running, skating or biking paths; and play for different age groups from young children to teenagers. Additionally, the public realm, such as streets, integrate green and SuDS, while local food production and gardening opportunities can be provided as community gardens.

Proximity to a Mix of Uses: Clusters of functions that are mentioned as fundamental for the vitality of local neighbourhoods include: opportunities for learning in public schools and lifelong learning; cultural activities including museums, theatres, concert halls, and libraries; healthcare, including general practitioners, pharmacies, dentists; socialising opportunities that include community centres, elderly daycare, youth centres and faith centres; leisure opportunities such as restaurants, cafés, cinemas, meeting points, leisure and indoor sports centres; local retail, especially providing healthy food with complete grocery supermarkets and farmers markets, economic opportunities with offices and co-working space as well as other local employment opportunities and productive spaces or workshops.

Proximity as accessibility: While local living is a strong evocative concept that has encountered the favours of planners and politicians, as well as the wider public, its practical application requires to detail further the principle of proximity to consider what uses can be included in each vicinity, as well as the transportation mode. There is a considerable difference between the space that can be covered by walking, ca. 1,2 km in 15 minutes, and cycling ca. 5,6 km in 15 minutes (TfL, 2020). Some elements, such as access to open space and public transport, should also be reached in less time, ideally, within 5 minutes walking, or 400 m.

Water edge, Nordhavn, Copenhagen

Green Space, King's Cross, London

Proximity is understood as a physical distance and in terms of time, comfort, and cost of journeys - as accessibility. For this reason, a critical component of delivering housing in a mixed-use neighbourhood together with other uses is active travel and access to public transport. Active travel can be promoted by reallocating street space towards pedestrian and cycle movement to improve the settings and safety of these journeys. One key component of active travel is the real and perceived safety for all users, beyond considering the adequate transport implications, with speed restrictions, separations between different speeds and adequate environment to minimise accidents. However, this also includes realising the best conditions for children, the elderly and people with disabilities, for instance, creating legible streets and adequate signals, as well as a degree of passive social surveillance to improve the use of streets by pedestrians, for instance, at night, with special regard to the experience of women and girls. Remains critical to consider access within walking distance to the regional transport network, which remains a critical concern to allow everyone to access further opportunities that constitute the benefit of living in a city, such as special cultural institution leisure opportunities or the workplace. The 15-minutes neighbourhood concept has been often criticised for promoting close, gated neighbourhoods and discouraging the typical social encounter that makes the special character of big cities (Glazer, 2021). This is, however, a misconception, by easing pressure on roads and public transport, the 15-minutes city aims to ultimately improve the connections between different neighbourhoods, which would still be central even though not required with the same frequency by everyone.

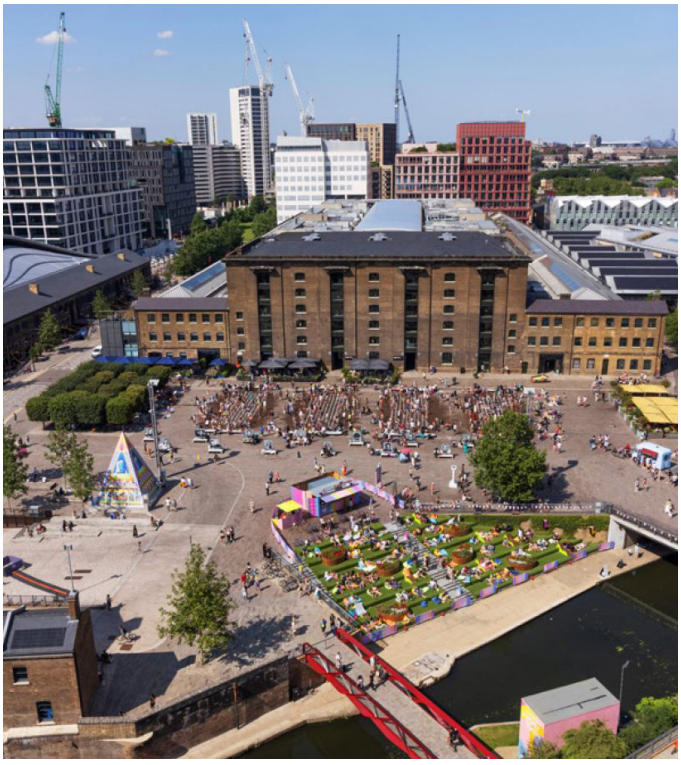
PROXIMITY KEY LEARNINGS FOR LIVEABLE HOUSING MATRIX

Housing is a key component of livable cities; it should be provided within a holistic approach that considers its relationship with other functions.

Access to Active Travel: all housing is provided with easy and convenient access to public transport stops within a walking distance of 5 minutes and with walking and cycling-friendly streets

Access to open space: housing is provided with access to green space, play space, and sports areas

Access to services, amenities and opportunities: housing is provided with access to daily needs, such as retail (especially grocery shops), culture and education, job opportunities, amenities and other social infrastructure



Granary Square, King's Cross, London

DENSITY

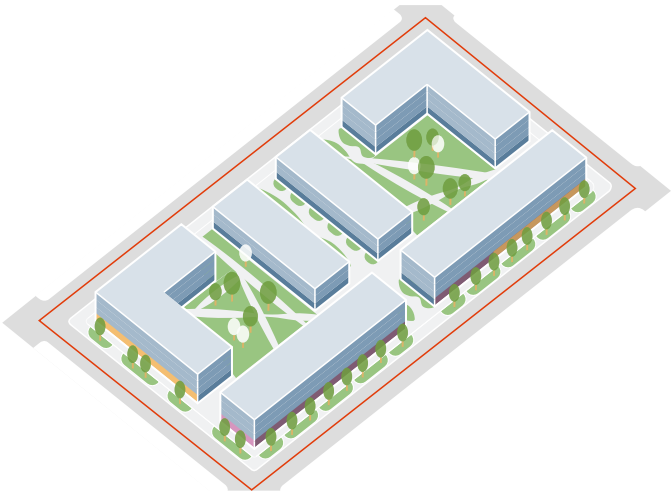
The question of density is central to liveable cities, and striking the right balance depends on many factors, some of which are culturally and context-specific. However, here is suggested as a way forward to examine edge conditions to identify a suitable bracket that helps to deliver liveable housing in liveable neighbourhoods.

Over and again, housing, especially at the lower end of the market, has been provided on low-value, peripheral land at low density with scarce access to services and transport (Badland, 2014). According to our working definition, urban sprawl does not generate a liveable city based on non-motorised access to a wealth of opportunities. When density is too low, it is neither efficient nor viable to provide them. Density makes public services cost-effective and choice in retail, amenity and culture viable (Tonkiss, 2013).

Therefore, the minimum housing density is recommended to be able to create the critical population mass for supporting a range of urban and social functions in every neighbourhood, including public transport and variety and diversification of the economic offer (Tonkiss, 2013). Density and diversity make a walkable environment, increasing the chances for meaningful face to face interaction and fostering a sense of belonging (Bramley, 2009). Several studies fix the inferior threshold to effectively support a 15-minute city at 70dph gross density (RTPI, 2018 and Lehmann, 2016).

There is a positive correlation between denser urban form and access to services confirming that compact development fosters social sustainability (Dempsey, 2009), a finding consistent in hyper-dense contexts, such as Hong Kong (Lang et al., 2019). Gross densities upwards of 100dph are recommended in high-intensity areas such as along transport corridors, within walking distance, maximum 15-minutes, of high capacity transport nodes (such as rail station, mass rapid transit, key bus interchange stations) and in neighbourhood hubs or town centres to take advantage of the opportunities of well connected and well-served locations.

Minimum recommended density, min. 70dph. (Gross). Mix of houses and apartment blocks



All images above, ca. 70dph gross density. Mix of houses and apartment blocks, Stadstuinen.

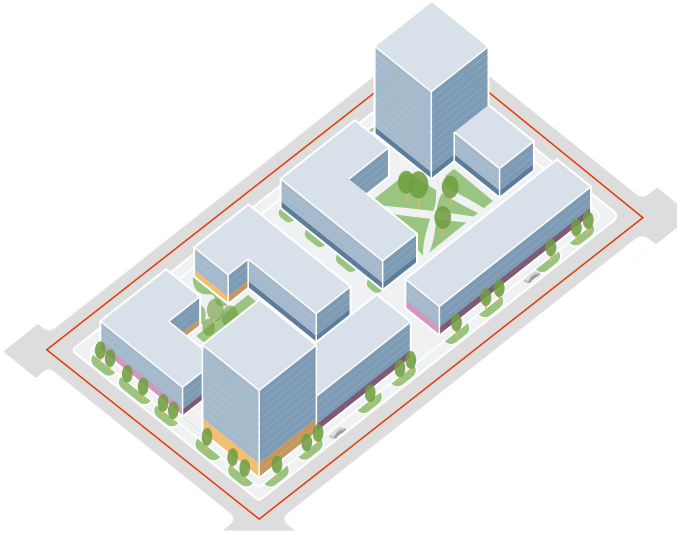
Density is an essential condition for a liveable neighbourhood; however, it needs to be adequately planned and managed to achieve the desired outcome. When new high-density development is characterised by poor accessibility, low functional integration and underused or scarce open space, liveability is compounded rather than enhanced. Additional complexities arise for high-density developments, which relate to residents' perception, the integration of different functions, the performance of individual buildings, and environmental sustainability.

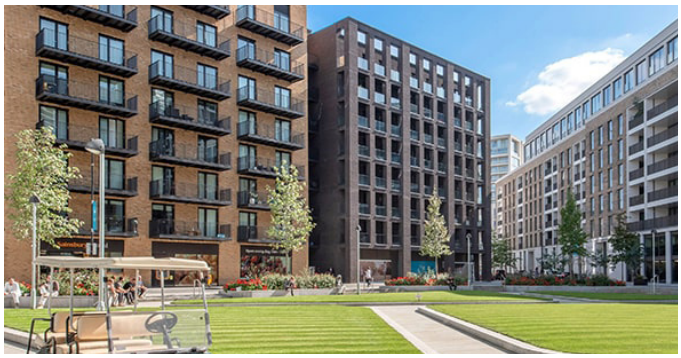
Higher densities also pose challenges in terms of environmental sustainability performances. From an environmental sustainability perspective, medium-density perimeter blocks perform better than hyper-dense high-rise cities. Compact developments of four to eight storeys perimeter blocks combine several benefits due to their smaller building envelopes (good ratio between the area of the facade and the enclosed volume). This ensures reducing heat gain in summer and heat loss in winter due to shared walls; less material required for the façade and the façade superstructure and simpler structural elements, resulting in less embodied carbon (Lehmann, 2016). Notably, construction systems with lower embodied carbon, for instance timber frames, when compatible with local building regulations, are more suitable for mid-rise and mid-density blocks.

Higher densities can be unpopular and are sometimes associated with the perception of a lower sense of community, dissatisfaction with the urban environment and perceived neighbourhood problems (Dempsey, 2009). These traits are highly contested and culturally specific (Scanlon 2020); they can be correlated rather than with density itself with the image and status evoked by different typologies and other factors such as location and residents demographics (Bramley, 2009). It has been noted how the same tower typology in Manhattan and Glasgow relates to very different residents satisfaction, depending on location, architectural quality, prestige of the area, residents demographics.

A critical observation to understanding density is that this measure relates to but do not determine an urban form. As the image on the opposite page demonstrates, the same density can be achieved

High density, upwards of. 150dph. Mainly apartment blocks





All images above, gross density upwards of 150dph. Mainly apartment blocks, Royal Wharf.

with different typologies. These respond to the context differently, form different public realms and streetscapes, and create homes with different qualities (for instance, private gardens for terrace houses, communal courtyards and well-defined streets for perimeter blocks and views for towers). Different typologies at the same density will provide a different townscape and plot coverage ratio. Therefore, it is critical to understand density together with building height and building footprint. For instance, the same density can be achieved with lower buildings with a larger footprint where tall buildings are not adequate for the context. The typology better suited to accommodate the required density in a particular context will depend on urban design considerations. For instance, the ability to form active fronts on ground floors, define fronts and backs and create communal amenity space is often a reason to promote perimeter block developments.

Two independent qualitative studies conducted in London in 2020 in high-density schemes (Tower Hamlet, Living at High Density and LSE London, Living in a denser London) highlighted that a significant proportion of the residents (respectively reported by 38% and 46%) lacked a sense of community, however many of them where still satisfied with their living situation and found that their sense of community was related more to the wider city than to their immediate neighbourhood. Considerable differences were also reported between different schemes. Length of stay, which is inevitably connected with tenure, has been identified as a critical factor in forming a local network. The presence of shared services and amenities and a pedestrian-friendly environment were also quoted as critical factors. Both studies highlighted however the critical role of architecture, public realm and services to ensure, at higher densities, that a scheme is successful, creates a sense of pride in the residents and fosters

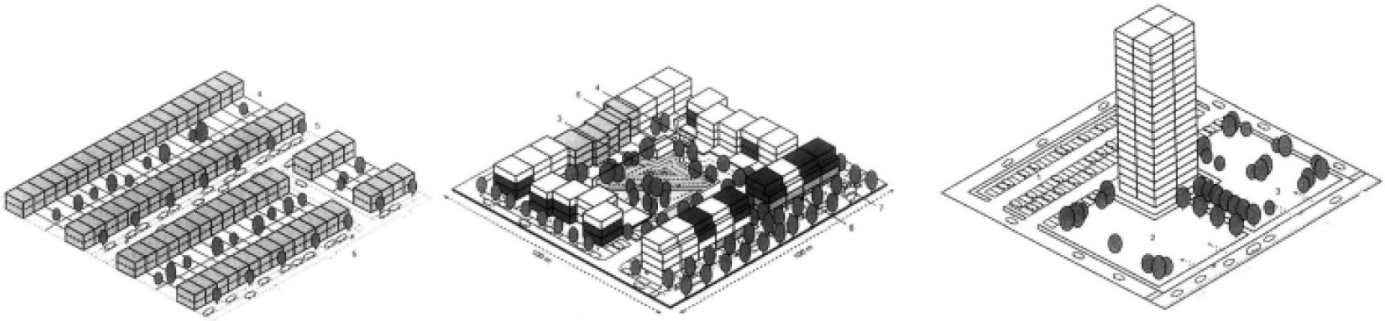
DENSITY KEY LEARNINGS FOR LIVEABLE HOUSING MATRIX

Minimum residential density to support a mix of functions for a 15 minute neighbourhood: ca. 70dph (gross density).

Minimum recommended density along transport corridors, within walking distance of maximum 10 minutes to main transport nodes and neighbourhoods hubs (i.e. town centres, local centres): ca. 100dph (gross density).

Urban form recommended to foster environmental sustainability:
- **recommended height from research is between 4 and 8 storeys**
- **Perimeter blocks make good use of the building footprint and accommodate higher density in limited height, while creating legible streets and active ground floors.**

In high density developments, above ca. 150 dph (net density), design quality is essential for housing liveability. Development above ca. 150 dph (net density) should be considered carefully in high intensity areas with design that substantially exceeds minimum standards irrespective of tenures, concerning:
- **Outlook and privacy**
- **Overheating and noise**
- **Flexibility of units layout**
- **Lack of storage**
- **Access to play and amenities**
- **Building management**
- **Length of stay and presence of communal amenities are key to a sense of community.**



Three areas with 75 dwellings per hectare that are achieved with different typologies (Fernandez Per & Mozas 2004:206-207).

a positive engagement of residents with their immediate surroundings and community.

The two studies also identified a consistent set of issues related to dwelling standards that can arise in high-density schemes (net density above 150 dph), which should be carefully considered to ensure that they produce liveable settings. Some of these elements may be relevant for other flatted scheme, however these problems can be intensified at higher density because it is more challenging to find space for communal solutions. Key issues from these two studies are summarised below. They depend on design quality and can be mitigated when adequate guidance is in place.

- **Dwelling space standards**: dwellings are experienced as not flexible, challenging to furnish for different uses, especially for home working and with limited storage. The lack of storage has been reported not only as built-in storage but also as a challenge to add storage space, with several people interviewed reporting having either a sofa or a storage unit blocking floor to ceiling windows for this reason.
- **Family units**: lack of play space inside the dwellings, potential of overcrowding, limited play space (especially suitable for unsupervised play, which needs to be comfortable accessible and visible and therefore is not functional when only provided on the roof or outside the plot), limited spaces of interaction for teenagers (often perceived as potential disturbance, but at the same time particularly isolated in their space)
- **Microclimate:** the potential of overheating, especially in the internal circulation, often provided without windows and in noisy environments that do not allow to keep windows open); and wind, which can significantly affect outdoor amenities and balconies.
- **Noise:** especially the insulation between units and to the public realm.
- Aspect and outlook: high density can compromise access to daylight, sunlight, and privacy. Several residents report that they feel observed by their neighbours through the windows.
- **Management:** the importance of management and having building managers on-site to create a sense of community.
- **Systems:** especially waste management and access to bin stores and lifts, were highlighted as critical factors compromising liveability.

DIVERSITY

Diversity of users, not only diversity of uses, is critical to creating liveable neighbourhoods. Different socio-economic and demographic traits in the population promote healthy and well-balanced communities and help sustain the diversity of services that support the residents. One exemplar problem of sustainability of services related to residents demographic, which was common in English new towns, was linked to the homogeneous type of families with children of similar age moving to the area soon after construction. This created staggered peaks in demands of services, for instance, difficulties sustaining schools after an initial peak in demand. Living locally and relying on local services could result in segregated areas if no steps are taken to ensure a representative cross-section of the wider city population in local areas, with a lack of meaningful interaction between people of different backgrounds (Glazer, 2021).

Diversity in housing is paramount to fostering equality, social mobility and social capital. The housing component of new development is required to consider the incidence of different socio-economic and demographic traits on the ability to access housing. After the completion of large scale developments, hundreds or thousands of families move into the area in the space of a few months (Scanlon, 2020); therefore, conditions to welcome diverse populations need to be considered. Age, household size and composition, and income are important in planning new residential housing, as they relate to the diversity and proportion of housing sizes, typologies, and tenure.

Housing typologies and sizes:
Housing typologies need to consider how to foster lifetime, inclusive neighbourhoods that welcome a diverse population able to remain in the local area as life evolves. This includes considering both flexibility within unit types and a wide range of typologies that cater to families, singles or couples, students, multi-occupancy households, multi-generation households, senior population, assisted living, and natural resources evolution of family structures during the lifetime.

Variety of forms: houses, perimeter blocks and tall buildings

The space requirements associated with families with children usually include three or more bedrooms, a larger storage area, play space within the dwellings and outdoor, in gardens and communal courtyards. In many cases, especially within higher density development, families prefer to live closer to or on the ground floor and have independent access. Senior accommodation focuses on adaptability and accessibility. Particular housing typologies such as student housing and special needs or assisted living also have specific configurations and spatial requirements that can be integrated into various options. The variety of uses is reflected in unit sizes and typologies, including houses, flats, duplex and ground floor maisonettes or flats.

Tenure:

A liveable city is accessible for all residents, catering for different economic capabilities and needs. A range of tenures comprising homeownership, private rent and affordable or social housing is a critical component to ensure diversity of residents. While market prices allocate the first two tenures, affordable and social housing is usually allocated according to restricted criteria to facilitate lower-income households that could not secure housing at market prices or middle class, usually young, households that would struggle to access the housing market for homeownership. These policies provide discounted rates (such as cost-rental schemes or rents set as a proportion of income) or other forms of support, for instance, shared equity schemes.

The topic of affordability, which is in its broad sense the ability of households to access housing based on the proportion between their income and housing expenses, is central to forming balanced communities and inclusive growth. With a growing percentage of the population spending more than one-third of their income on housing, which is considered the affordability threshold (Stone, 2010), governments across Europe have started to consider housing policy as a central point of their programme.

This theme can become especially prominent in large scale regeneration projects, which through exceptional private and public investments, usually concentrated in highly accessible locations, can create high-quality, desirable developments with inflated housing prices. If unregulated, this growth could be only accessible to the higher-income segment of the population. Some example precedents, considered part of the City Edge baseline information for their quality, scale and location, resulted in high housing prices. Nordhavn, for instance, has become the most expensive neighbourhood in Copenhagen (source, Bloomberg), while market prices of housing in King's Cross are set at 172% of London average, which is ca. 650k £ (source, Plumplot). In both cases, housing policy introduces requirements for an affordable housing component as part of mixed tenure developments to counter these effects.

Traditionally, the most common solution from governments to the population segment that cannot cover their housing costs was social housing (Poggio and Whitehead, 2017). Common trends emerging from different countries have highlighted that segregation is a growing concern. Recently, the approach to housing residents of different economic capabilities has changed significantly to favour policies that emphasise mixed communities, with affordable housing tenures seen as part of more significant developments with homeownership and market rent (Scanlon, 2008). Some countries, like France and England, have had for a long time targets to increase social housing stock and policies that require their delivery as part of any housing development, with multiple countries involving the private sector in the delivery. Intermediate affordable products in England aim to provide support to access high-value markets for people who would not qualify for social housing, currently mainly destined to vulnerable or homeless households. These products address tenure insecurity, high rents and difficulties for the young, middle class, first-time buyers to access the housing ladder. They are divided into homeownership subsidies, in the form of shared equities and shared ownership, demand-side subsidies and discounted rents - 80% of market price, while usually social rents are at 50% of market price (Scanlon, 2017).

Some countries like England, the Netherlands and Ireland have developed models where private finance, not only public subsidies, have helped deliver social housing. At the same time, management and allocation remain formally in the social sector. Today, in the UK, nearly half of the social housing stock is built by private developers as planning conditions for other development and later transferred to Registered Social Landlord - Housing Associations (Scanlon, 2017). In contrast, other countries like Austria have delegated construction and ownership to the private sector. In Ireland, social housing or land for such is provided by developers (up to 10%) under Part V of the Planning and Development Act 2000 (as amended). Under new affordable housing legislation provision has been made for land purchased on or after 1st August 2021 to be subject to a 20% Part V requirement for at least 10% to be used social housing and the remainder for affordable housing, which can be affordable purchase, cost rental or both.

The case study and literature review conducted at stage 1 has highlighted a significant affordable housing component integrated within large masterplans across Europe, focusing on case studies in the UK, Austria, France, Denmark and Netherlands. In the Irish context, affordable housing quotas are limited by national policy, and the affordable housing allocation is set in each context to respond to local housing needs.

However, these best practice examples are helpful in showing different tenures as highly integrated within each urban block participating in a vibrant ecosystem of uses within the setting of liveable neighbourhoods. The case studies review demonstrates how different tenures are designed according to tenure-blindness principles, reflecting similar design and materials quality across tenures and a similar variety of sizes and typologies. This is a crucial principle to provide good integration and units that can be re-allocated in different ways in time. This principle is particularly important for built-to-rent and affordable housing schemes in order to perform similarly to market sale units and prevent segregated communities.

A mix of tenures, their integration and the ability to respond to changing local needs is critical to the diversity, inclusion and equality that make a new part of the city fair and liveable for all residents. Research highlights that developments homogeneous in units sizes and tenures are not successful in making balanced communities. Moreover, it is important that the household structure and population characteristics related to age are also taken into account. Tenure mix and unit mix percentages however should be prescribed by policy and identified on the basis of local housing needs assessment.

DIVERSITY KEY LEARNINGS FOR LIVEABLE HOUSING MATRIX

Housing should provide enough diversity of typologies and tenures to house a representative cross-section of the city population.

Diversity of housing choice creates well-balanced communities, that are inclusive but also critical to the efficient running of city functions that make 15-minute neighbourhoods and liveable cities.

Diversity of typology should consider the needs of different residents and households and cater to families, singles or couples, students, multi-occupancy households, multi-generation households, senior population, and assisted living.

Family units should include three or more bedrooms, a larger storage area, play space within the dwellings and outdoor.

Developments with a single housing typology (e.g. 1B flats) and one tenure fail to form well-balanced communities. Each development should provide a mix of sizes, typologies (houses, flats, duplex, ground floor maisonettes and flats) and tenures (including homeownership, market rent, and affordable housing or social rent) responding to policies based on local housing needs assessments.

A mix of tenures and units sizes should be well integrated in each plot.

Large scale masterplan with significant public investment can create great places to live, however market prices can be unaffordable. Housing policy should consider how affordable housing can ensure that new developments re accessible by a cross section of the population.

Tenure blindness. Standards on floorspace, dwelling mix and design quality should be equally applied to all tenures and housing types in the interest of equality, to promote diversity, and to avoid segregated communities.

1.4 CONCLUSIONS

The familiar image of future liveable cities

Liveability in residential settings has been linked in the discussion to the need to take a holistic approach and consider housing as a function participating into a thick urban ecosystem to create social, economic and environmentally sustainable places where people can and desire to live. Liveability has been linked to the concept of 15-minutes neighbourhoods, creating a framework to understand what urban form can create a liveable city. The summary of insights is listed in the matrix on the opposite page, including elements from Melbourne and Portland definitions of a complete neighbourhood, Badland's (2012) research on parameters for city liveability and the more comprehensive review included in this chapter. The key characteristics highlighted are summarised under parameters for transport, open space, a mix of uses and housing.

The housing element has been extracted and used to assess liveable housing settings. The liveable housing matrix includes environmental sustainability considerations, proximity to transport, open space and different uses, density and diversity targets, housing standards and urban form considerations. The matrix has been used as an assessment tool for the case studies analysed later in this document and can also be used as a baseline to assess current and future development proposals in terms of compliance with the principles of the 15 minute and compact city.

Research has highlighted how a mix of dwelling types, sizes, tenures, and social mix with equitable dwelling standards contribute to balanced and diverse communities and how tenure blind principles should be applied to ensure uniform quality. It has also been described the role that optimal densities, and an adequate urban form with perimeter blocks with as main height datum contribute to the creation of sustainable neighbourhoods. In the context of development with net densities of 150 dph +, which have been found to have a lower standard of living and amenity, the quality of design has been noted as an essential element for liveability.

The urban form emerging from this set of considerations can be described as compact. "A compact city is a mixed-use spatial urban form, which defines a relatively dense urban area linked by easy access to public transport systems and designed to have minimal environmental impact by supporting walking and cycling (while low-density suburbs are incapable of supporting walking, cycling and public transport infrastructure). The compact city with four- to eight-storey urban perimeter blocks represents the optimum use of space" (Lehmann, 2016). This urban form allows for functional integration, especially on the ground floor, improving character, place-shaping and climate resilience. Interestingly, this vision is also familiar, resembling a greener version of many European historical cities.

1.5 SUMMARY

Liveable City + Liveable Housing Matrix

LIVEABLE NEIGHBOURHOOD MATRIX

LIVEABLE HOUSING MATRIX

Housing

1.	Housing density	min. 70 dph (gross) min. 100dph (gross) high intensity areas
2.	Exceptional quality threshold for higher density	150 dph (net)
3.	Built density (all uses)	Net FAR and Plot Coverage Ratio relates to character*
4.	Compact Urban Form	4 to 8 storeys perimeter blocks
5.	Mix Housing Types (houses, flats, duplex, GF units)	no mono type development
6.	Mix of Unit Sizes (1B, 2B, 3B,...)	% based on local needs and policy
7.	Mix of Tenures (social rent, rent, market sale)	% based on local needs and policy
8.	Social Mix (families, elderly, students, couples, sharers)	including provision for
9.	Equitable dwelling standards	y/n
10.	Life long neighbourhoods and housing adaptability	y/n
11.	Tenure Blindness	y/n
12.	Access to open green space	y/n
13.	Access to Sport and Play	y/n
14.	Access to transport nodes	y/n
15.	Active travel	y/n
16.	Mix of uses (employment, retail, social infrastructure, culture/leisure)	y/n
17.	Major Anchor	y/n

Nature and Open Space

1.	Play	in 400 m (5 min walk)
2.	Park	in 1,2 km (15 min walk)
3.	Large park or natural area	in ca.5 km (15 minutes biking)
4.	Informal sport	in 1,2 km (15 min walk)
5.	Sport facility or centre	in ca.5 km (15 minutes biking)
6.	Community gardens	in ca.5 km (15 minutes biking)
7.	Safe Open Space (overlooked and active)	y/n
8.	Areas of biodiversity	in ca.5 km (15 minutes biking)

Active Travel

1.	Sidewalks	y/n
2.	Bike lanes (segregated or bikes sharing streets)	y/n
3.	Wayfinding (connectivity to key destinations)	y/n
4.	Safe streets (cars but also overlooked)	y/n
5.	Access to Local Public Transport	in 400 m (5 min walk)
6.	Access to Metropolitan/Regional PT	in ca. 1-2 km (15 min walk)

Functions

1.	Complete grocery stores	in ca. 1-2 km (15 min walk)
2.	Commercial district	in ca.5 km (15 minutes biking)
3.	Cafés, restaurants and pubs **	in 1-2 km (15 min walk)
4.	Cultural Activities (e.g. museum, theatre, concert hall)**	in ca.5 km (15 minutes biking)
5.	Leisure Activities (e.g. cinema, clubs)**	in ca. 1-2 km (15 min walk)
6.	Community centres (e.g. volunteering, faith) **	in ca. 1-2 km (15 min walk)
7.	Library**	in ca. 1-2 km (15 min walk)
8.	General Medical Practices**	in ca. 1-2 km (15 min walk)
9.	Pharmacy**	in ca. 1-2 km (15 min walk)
10.	Hospital**	in ca.5 km (15 minutes biking)
11.	Nursery	in ca. 1-2 km (15 min walk)
12.	Schools	in ca. 1-2 km (15 min walk)
13.	College**	in ca.5 km (15 minutes biking)
14.	Life-long learning opportunities**	in ca.5 km (15 minutes biking)
15.	Job opportunities (number and diversity)	in ca. 1-2 km (15 min walk)
16.	Main employment hub (number and diversity of jobs)**	in ca.5 km (15 minutes biking)
17.	Elderly day care**	in ca. 1-2 km (15 min walk)

* *Prescribed FAR and Plot Coverage Ratio standards should be plan led.*

** *In the case of early phases of development, these facilities/amenities should either be existing, permitted or planned when applying this matrix to any plan area.*

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2. CASE STUDIES – NEIGHBOURHOOD SCALE

Analysis of case studies at masterplan and overall scheme level in relationship to the liveable neighbourhood and housing matrix. The analysis considered the housing policy context, liveable neighbourhood principles such as transport, open space and urban design, and housing discussing tenure mix, dwelling mix and social mix.

2.1 THE CASE STUDIES SELECTION
European perspectives on housing

The following chapter illustrates how different European cities planned to provide housing that responds to the needs of current and future residents and steer housing production to be sustainable in the long term and deliverable within the economic and market circumstances.

Housing provision is a crucial component to create a new piece of the city that is open to all, promotes social integration and reflects the spectrum of life of the wider city. Facilitate access to housing for the entire demographic spectrum hinges on three main topics highlighted in the following examples: forms of tenure, typologies/unit sizes of the housing stock, and urban design/architectural quality. How to deliver and mix different options to own or rent; units for families, the elderly, students and young professionals; and homes that residents of varying income can enjoy as part of a functional and pleasant wider neighbourhood is a central concern of all the selected case studies.

The chapter collects insights into how different large scale masterplans, King's Cross, Le Trapeze, and Zuidas, provide liveable housing. The discussion highlights the policy context, the wider city housing situation and how the masterplan responds to transport, open space, a mix of uses, design and housing. The following chapter zooms into three buildings from each masterplan to show a detailed analysis of housing standards and unit sizes and typologies mix within one building.

The research acknowledges the urban and national contexts of the case studies; thus, it does not seek to set a comparison. Instead, it highlights the tools and mechanisms that each example used and that might be transferable, with an understanding that direct comparison is difficult between contexts subjected to different policies and socio-economic conditions.

The case studies are reviewed against the liveable city principles highlighted in the previous section. They show successful approaches to creating a liveable city within a large-scale masterplan, including homes, employment, culture and leisure. Different levels beyond planning are mobilised to meet these visions, showing the importance of a holistic approach that encompasses policy, funding/subsidies, and management.

The case studies considered have been selected to provide both a useful comparison for the city edge project and a best practice example, providing transferable knowledge. The parameters for the selection considered:

- relationship to the wider city
- mix of uses
- finished yet contemporary
- large scale
- fits much of the liveable city criteria (established by the liveable city chapter)

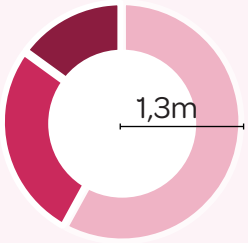
2.2 OVERVIEW
Context Specific Issue and International Case Studies

European cities vary significantly in size, density, and tenure distribution; direct comparison is not meaningful. A long list of comparator masterplan had been identified in advance of compiling this report. The three case study detailed here are chose, in their difference, because they provide a useful comparison in terms of city characteristics (either for the scale of city -Amsterdam- or for similar tenure structure -London, Paris) and because the masterplans are mature, liveable and well connected, part of the city but not in prime locations.

DUBLIN

Population:

1,3m

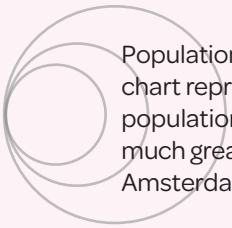


Tenure Structure:

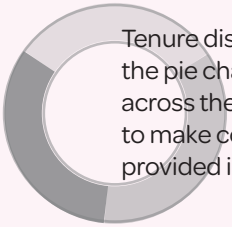
- Home Ownership 58%
- Private Rent 27%
- Social Rent 15%

CITY INFOGRAPHIC READING KEY

Population Density: The thickness of the pie chart represents the density of population the city-region. Paris has the highest density. London Amsterdam and Dublin have more comparable density even though London has a much greater population



Population Size: the diameter of the pie chart represents the size of the city-region population. London and Paris have a much greater population than Dublin and Amsterdam.



Tenure distribution: the different colours in the pie chart represent the tenure distribution across the city. Tenures have been simplified to make comparison and more detailed is provided in the following pages.

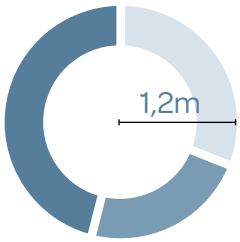
Home Ownership Private Rent Social Rent

Source https://worldpopulationreview.com/world-cities

AMSTERDAM

Population (city-region):

1,2m



Tenure Structure:

- Home Ownership 31%
- Private Rent 29%
- Social Rent 41%

Policy Approach to Housing:

- Large social housing stock and national point based system to determine social rent prices.
- Open market rent is highly regulated with maximum annual increases
- Housing Agenda sets the ratio between social, mid-market and up-market dwellings (40-40-20).

Actors:

- Non-profit Housing Associations - mainly provide social rent (38%), also free rental properties (3%)
- For Profit developer and housing provider: mainly provide free market properties for sale and rent but also rent regulated properties (13%)
- State and municipality have a strong involvement in coordination and with funding

Housing Cost to Income: average 38% of income is spent in housing (41% for private rent)

Case Study: ZUIDAS

- 255ha, 10,000 new homes and 73,000 jobs

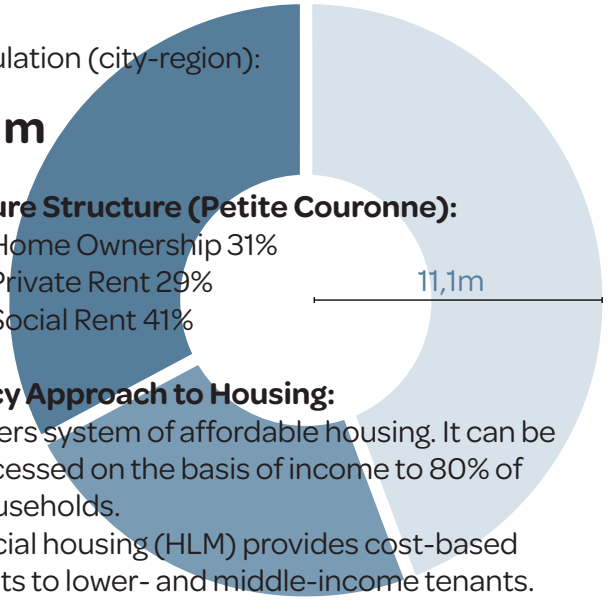
PARIS

Population (city-region):

11,1m

Tenure Structure (Petite Couronne):

- Home Ownership 31%
- Private Rent 29%
- Social Rent 41%



Policy Approach to Housing:

- 3 tiers system of affordable housing. It can be accessed on the basis of income to 80% of households.
- Social housing (HLM) provides cost-based rents to lower- and middle-income tenants. Government set maximum rents in each region.

Actors:

- Municipal bodies or housing associations build and manage social housing.
- Limited-profit housing associations and municipal bodies access grants and public banks loans.
- Private developers build market and affordable housing. 25% of the units built are reserved for social housing

Housing Cost to Income: average 40% for the rented sector and 27% for homeowners**.**

Case Study: ZAC ILE SEGUIN, LE TRAPÉZE

- 74 ha, 5,000 new homes and 12,000 new jobs

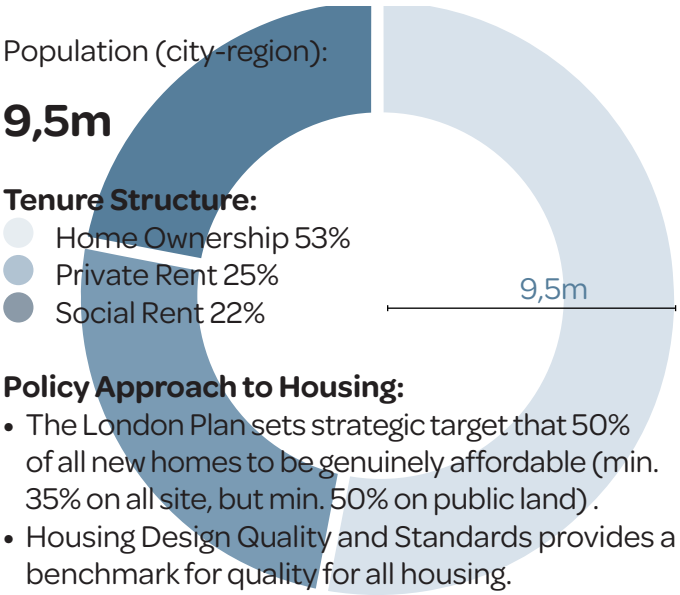
LONDON

Population (city-region):

9,5m

Tenure Structure:

- Home Ownership 53%
- Private Rent 25%
- Social Rent 22%



Policy Approach to Housing:

- The London Plan sets strategic target that 50% of all new homes to be genuinely affordable (min. 35% on all site, but min. 50% on public land) .
- Housing Design Quality and Standards provides a benchmark for quality for all housing.

Actors:

- Private developers build market and affordable housing, required as a planning condition.
- Local Authorities grant planning permission if policy requirements of tenures and sizes mix are met.
- Registered housing providers manage social housing. Housing associations can develop social rent and private market housing.
- National Government provides housing grants.

Housing Cost to Income: 25% of renters spend more than 50% of their income on rent.

Case Study: KING'S CROSS

- 27ha, 1,700 new homes and 8,500 jobs

2.3 LONDON KING'S CROSS
London, UK

MASTERPLAN INTRODUCTION

King's Cross Masterplan, started in 2001 and still under construction, is one of London's most ambitious urban regeneration projects setting out a framework for incremental development embedded in one of the UK's most significant industrial heritage sites. The design is a work of 'urban repair' that respects the existing fabric's character while introducing a diverse mix of new uses. In one of the most accessible locations of the city, the master plan capitalises on the local and international connectivity to create a desirable place for business, education and cultural institutions and living.

NATIONAL CONTEXT

- Since the 80s, there has been a profound restructuring of the tenure split in the UK. At the beginning of the 80s, 30% of the housing stock was socially rented, 60% was owner-occupation and a marginal 10% of private rent. In 2018, the tenure split was 65% home-ownership, 16% social rent and 18% private rent. Affordable rent is provided through council housing or housing association (non-profit). The shift in the tenure structure, the limited regulation on rents and the affordability crisis of some areas brought the discourse around housing to the centre of the political debate.
- Between and third and half of all affordable housing is developed by private developers as a planning condition for commercial developments and is then transferred to housing associations for management. The rest is developed by limited profit housing associations or councils.

CITY SCALE CONTEXT AND POLICY

- In London in 2018, 25% of households have a private rent tenure, 22% affordable rent, and 53% are homeowners.
- Delivery targets: The London Plan (2021) establishes the housing target of 66,000 units per year subdivided per local authority.
- The London Plan Opportunity Areas and the Local Plan of each borough establish suitable areas for large-scale development, capitalising on transport nodes and accessibility.
- Any residential development delivered by housing associations or commercial developers has to provide a range of tenures, including market sale and affordable.
- The London Plan and each borough's Local plan establish housing tenures target quantum. The
- London Plan requires 50% of affordable housing, although targets can be negotiated to maintain financial viability.
- Affordable housing is an umbrella definition that includes social rent, affordable rent and affordable homeownership (including shared ownership). Affordable rent includes every form of rent discounted below 80% of market prices, and it also includes social rent as a subcategory. Social rent must be set at a maximum of 50% of market prices, but it is usually closer to 30%. Councils can set rates.
- The provision of social housing versus other affordable housing products such as shared ownership has a different economic impact on schemes' viability. The flexibility allows to maintain the process viable but delivers homes that disproportionately cater to mid-income.
- The former London Housing Design Guide had a critical role in ensuring design quality in residential developments.
- Across Greater London, in social rent tenures, the number of family units delivered is approximately 20%, and a lower percentage was delivered in the market sector. The market-driven approach to housing types has, between 2014/15, delivered only 20% of family-size units, against a need of 33% according to the housing needs assessment of the Greater London Authority.
- Each council can define the unit size mix in their Local Plan based on housing needs assessment. In Camden in 2003, the recommended unit-size mix for social housing, based on the housing

St Regent Canal, King's Cross, London

needs of the households that are in the social housing system or on the social housing waiting list was: 20% x 1 bed; 30% x 2 bed; 45% 3 bed+ family units. Local authorities require a larger share of family units for social housing, as large families are highly represented. Councils manage social housing allocation; therefore, they seek to ensure that unit size mix delivered meets needs.

- Build to rent schemes are generally supported in London as a managed and professional equivalent of typical buy to let, responding to the growing importance of the private rental sector in the capital. This is developed by commercial developers, housing associations, local authorities (i.e. Newham and Ealing Councils), and other public bodies such as Transport for London. Challenging viability outcomes in build-to-rent developments can form a ground for negotiation on planning requirements, such as unit size mix or tenure mix; however, the schemes still have to provide more than one tenure, including social and affordable homes. A 218 units built-to-rent scheme is under construction in King's Cross. It includes social rent, affordable intermediate homes and built to rent for the open market. The development has 30% affordable (20% social rent and 10% intermediate) and 70% open market rent. The unit size mix across all tenures is 45% 1B, 42% 2B and 13% 3B; however, the social rent tenure units mix has a higher proportion of family units (24% 1B, 49% 2B, 27% 3B).
- Local and regional authorities award planning permission when the conditions set in their local policy are respected; these included tenure split and unit sizes split.

Evolution: 2001 - ongoing.

Site area: 27ha

Estimated Net Density (FAR): ca. 5

Estimated Gross Density (FAR): ca. 3

Estimated Net Residential Density: ca. 450

Estimated Gross Residential Density: ca. 90 dph

Average building height: 8.9 storeys

Estimated Plot Coverage Ratio: ca. 70% (built footprint on net plot)

Estimated Public Open Space Ratio: ca. 40% (excluding railways infrastructure)

Estimated Total Coverage Ratio: ca. 45% (Total built footprint on site area, excluding railways infrastructure)

Uses breakdown: 29% residential, 57% offices, 6% retail, 8% culture, leisure and education

Number of homes: 1,700 completed by 2021 (more than 2,000 expected at completion)

Number of jobs: 40,000 (predicted capacity by 2024)

Tenure mix: ca. 30% affordable/social homes (one third intermediate housing and two thirds social rent), 70% open market (homeownership and rented).

King's Cross masterplan

King's Cross Masterplan

LIVEABLE NEIGHBOURHOOD

TRANSPORT

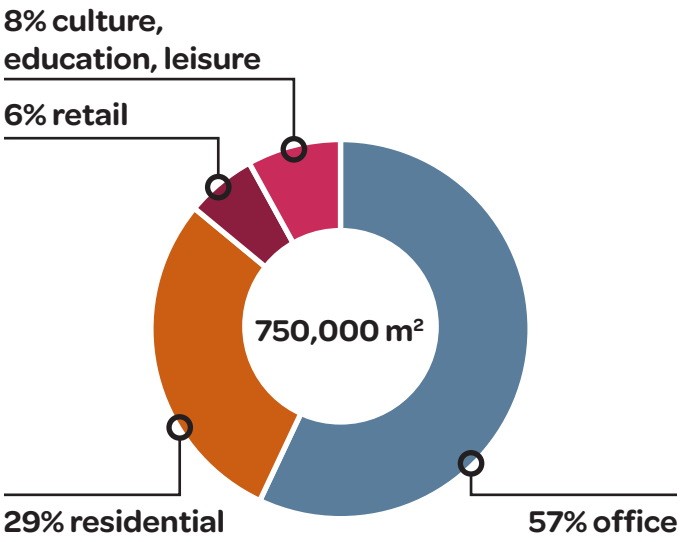
- Access to public transport at the local and regional scale was one of the main drivers behind the redevelopment, including King's Cross and St Pancras Rail Stations.
- King's Cross is connected by six London Underground Lines, two main rail lines and over twenty lines of frequent bus service.
- King's Cross is connected internationally with the Eurostar Trains From St. Pancreas Station, and all five London's international airports are within one hour of the site.
- The area is part of the active travel network. It is crossed by the Regent Canal, a popular East/ West walking and Cycling connection through the city linking Regent's Park to Victoria Park and far beyond.

OPEN SPACE

- The open space plays a central role in the King's Cross and creates the connecting tissue of the development.
- 40% of the site is dedicated to public open space, with a network of exciting places to play and rest. Ca. 30% of the open space is dedicated to green, and 1ha is an urban nature reserve.
- The landscape is varied and creates different characters, including the canal, green space, a large square (Granary Square), twenty streets
- The Regent Canal is a defining feature of the open space. The public space along the canal is extremely popular and busy in the summertime
- Hard landscape areas are also high quality and provide interest with water games and seating.

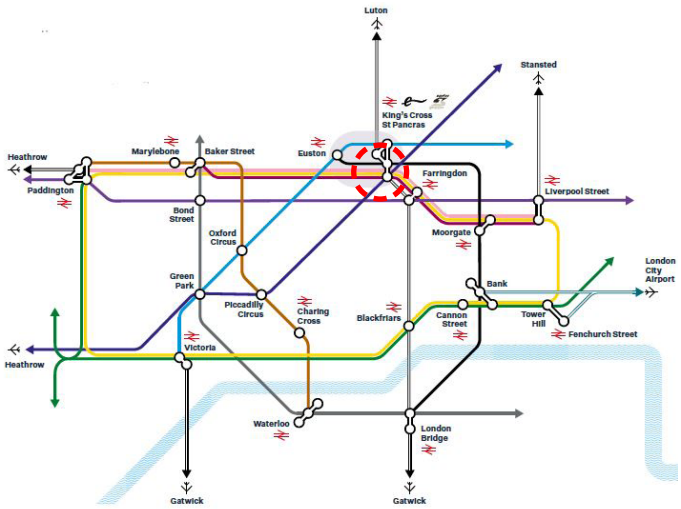
MIX OF USES

- **Established Destination in London:** King's Cross is today, after twenty years since the beginning of the Masterplan, a successful new development in Inner London attracting people for living, working and leisure.
- **Balanced Land Use Mix:** Compared to other areas with a high proportion of office space Open Space and proximity to main transport hubs, such as Canary Wharf and Broadgate at Liverpool Street, the scheme shows an exceptionally balanced mix, with the integration of significant housing, retail and leisure and education opportunities. (57% Offices



Land uses mix in King's Cross

A rich mix of ground floor uses during daytime and night time



Public Transport connections, King's Cross

and Employment, 8% Culture, Leisure and Education,6% Retail, 29% Residential)

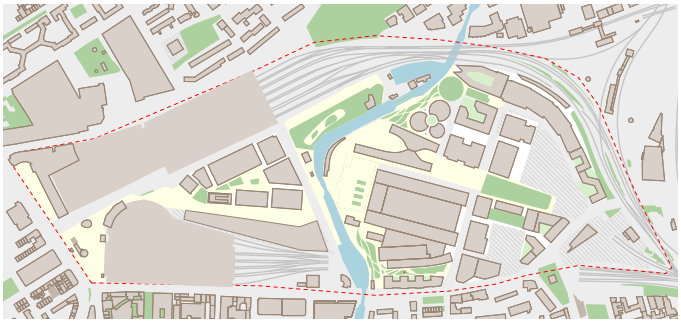
- **Major Anchor:** UAL University, not part of the original brief, played a critical role as a urban anchor and helped establish the area's character from the beginning of the site redevelopment. The University was not part of the initial brief and was included in the plan in 2002, and it significantly impacted the area, bringing in 4,000 students and staff.

DESIGN:

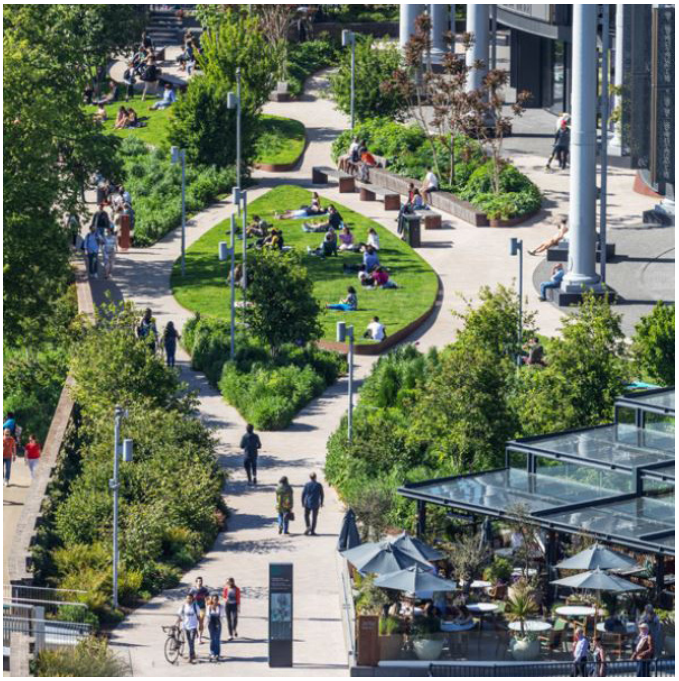
- The master plan was designed with a high degree of flexibility, which accommodated changes in uses during the economic downturn that followed the 2008 Financial Crisis.
- Placeshaping integrates new and existing buildings, creating a strong character and identity.

Urban form:

- The master plan established a vision for a compact city with a street-based place-making typical of historical cities, which was achieved with buildings on average between 8 and 10 storeys with occasional taller elements.
- Tall elements are integrated within urban blocks to create well-defined streets. The reasons for contained height were based on character and economic considerations, as both the building cost and management complexity increase beyond a certain height. Argent, the developer, also favoured the idea of a framework where each office building could be entirely occupied by one company, which facilitates leases but also limits buildings size.
- Affordable housing was distributed throughout the scheme, with tenure blind buildings. It was also agreed that buildings would have one tenure type to make management simple considering the different impacts of service charges.
- **Development**: The scheme was developed in a private-public partnership. A complex land pooling exercise and developer selection process brought King's Cross Central Limited Partnership (KCCLP) to life, including Argent King's Cross Limited Partnership and AustralianSuper, London and Continental Railway Limited (UK-Government owned) and DHL. This entity is the unique landowner and developer, and Argent King's Cross acts ad the commercial developer and asset manager.



Open Space: hard public open space, soft public open space, communal amenity space in King's Cross



Characters of hard and soft landscape in King's Cross

LIVEABLE HOUSING IN KING'S CROSS

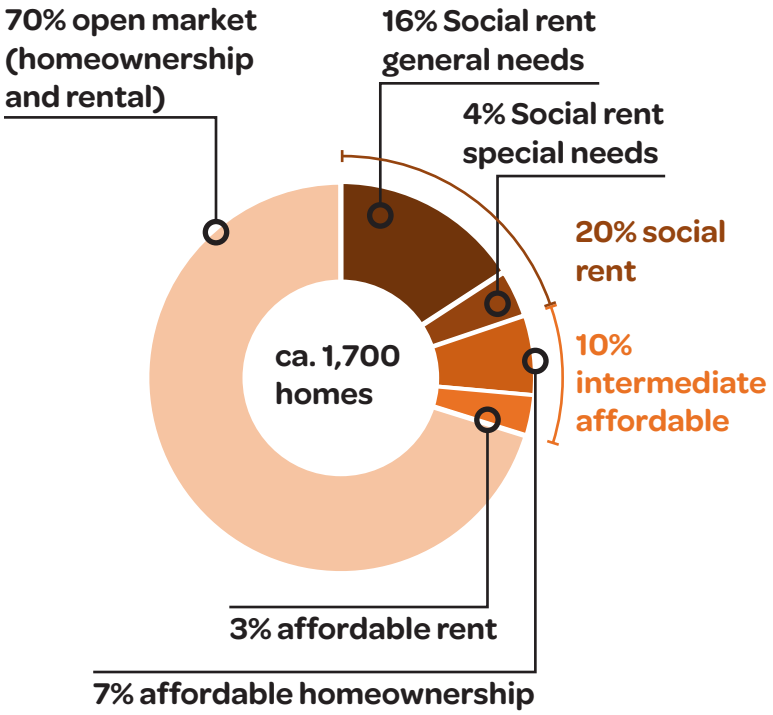
- The housing element was one of the most controversial elements of the scheme and involved lengthy negotiations between the developer group, Argent, and Camden Council.
- Because of the extensive time scale of the delivery, the housing quantum was not fixed in the planning application. However, a minimum of 1,600 housing units is also established, while ca. 2,300 units were expected. To date, 1,700 units have been completed.

TENURE MIX

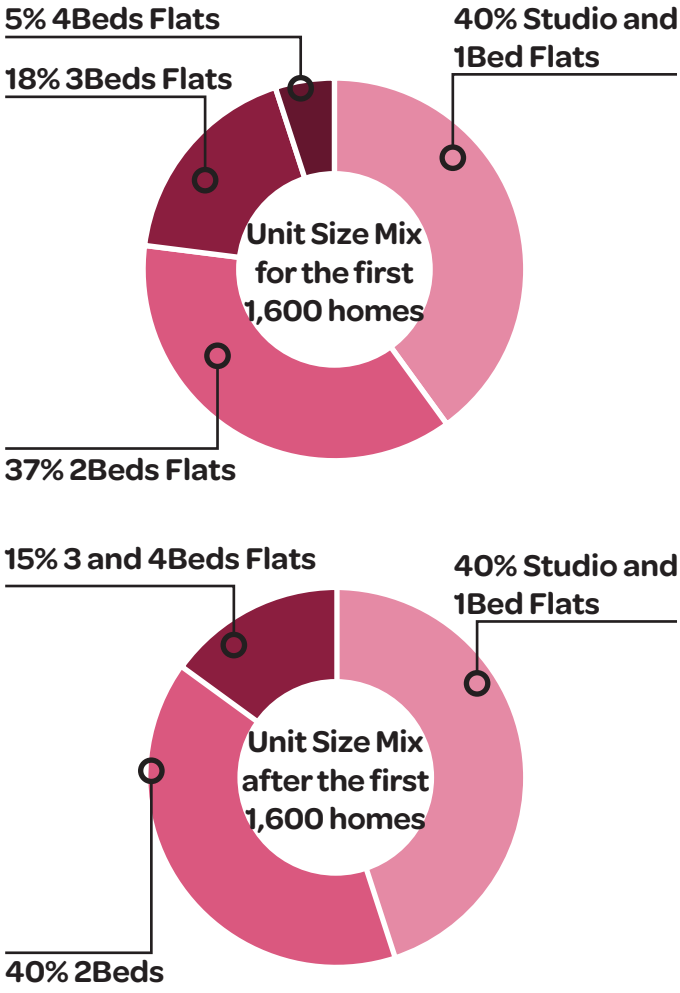
- 70% of the scheme was defined as market sale
- 30% was defined as affordable, of which 66% were allocated as social rent (of which 80% were allocated to general needs, while 20% to specialist needs and extra care homes for elderly residents) and 33% as intermediate housing (including affordable homeownership - 38%, shared ownership - 28%, and affordable rent 34%)
- The section 106 agreement of the Planning Application approved in 2006 established 750 affordable housing units, of which 500 were to be social rent and 250 intermediate.
- The high quality of the development and its position means that housing prices in this area are at the upper end of the market, with sale prices on average more than one and a half times London's average. Therefore affordable housing was vital in achieving a balanced community. The opportunity cost of affordable housing versus market was estimated in 2006 at ca. 250,000£ per unit.
- Following the evolution in the viability position and changes in grants needed for social housing units and the 2008 Global Financial Crisis, the number of affordable units was later reduced to 630.

DWELLING MIX

- The unit mix fixed in the development specification considered: for the first 1,600 units 40% Studio-1bed, 37% 2bed, 18% 3bed, 5% 4bed and for the additional units 45% Studio-1bed, 40% 2bed, 15% 3 and 4bed. This mix substantially departs from the recommended unit size mix for affordable housing quantum in Camden Local Plan in that period.



Tenure Mix in King's Cross.



Unit Size Mix in King's Cross.

SOCIAL MIX

- **Social Mix Policy:** Camden Council's social mix policy at the time of the masterplan development was that no housing development in the borough should have more than 30% of the units at the upper end or at the lower end of the market to guarantee a healthy social mix.
- **Limited Family Units:** The scheme's child density (children between 0 and 17) is defined in the Section 106 Agreement at a maximum of 23%. Despite the need for larger family units, especially in the affordable sector, a low percentage of large units was agreed to provide a higher total number of affordable units and to avoid management problems due to too many young children, as advised by an independent study commissioned to the Rowntree Foundation (Bishop and Williams 2016
- **Student Housing:** 650 student housing units were also included in the Planning Application, and eventually, 800 were built, responding to growing demand in the wider area. Despite this not being a traditional tenure type had the merit to alleviate the pressure on the housing stock elsewhere and diversify the area. The units are privately rented. Student housing was not included in the housing calculation for tenure and size mix. This is specialistic accommodation was considered separately in the planning application and through the housing negotiation.
- **Later Living:** Senior accommodation that is classified as social housing special needs. In total 88 units were designated in this way in the planning application approved in 2006. (40 units designed by ML for active senior residents that integrate care services and independent living).

Street Activity, King's Cross

Public Programme, King's Cross

King's Cross Summary Matrix

	Parameter	Assessment Criteria	Y/N	Note
1.	Minimum Housing Density	> 70dph (gross) > 100 dph (gross) high intensity areas		ca. 90 dph gross and 450 dph net High share of non residential uses.
2.	Exceptional quality threshold for higher density	> 150dph (net) - required high design quality triggers assessment row 9 (Equitable Dwellings Standards).		450 dph net density. High quality required for high density especially in open space and public realm provision. There is little communal amenity space.
3.	Built Density (all uses)	Efficient use of land for character and location (mixed use transport hub)		Estimated Net Density (FAR)= ca. 5 Estimated Plot Coverage Ratio = ca. 70%
4.	Compact Urban Form	Perimeter block, main datum 4-8 storeys		Average height between 8 and 10 storeys, main datum ca. 8 storeys.
5.	Mix housing types	Variety of: flats, houses, own door ground floor units, duplex		Apartment blocks. Mostly standard one-storey units. Ground floors are not residential.
6.	Mix of unit sizes	Balance of units sizes: 1B, 2B, 3B, 3+B Presence of family size units and not disproportionately of smaller units		Planning condition: 40% Studio-1bed, 37% 2bed, 23% 3 and 4 bed for the first 1,600 units. Limited share of family units.
7	Mix of tenures	Balanced mix of: market sale, affordable/social rent, private rent.		ca, 20% social rent, 10% intermediate affordable (including affordable rent, affordable homeownership and shared ownership) and 70% free market sale.
8.	Social mix	Families, singles/couples, multi-occupation-households, multi-generation households, senior and assisted living, students		Student housing, senior housing, family homes limited by child-density limits.
9.	Equitable dwelling standards	Outlook and privacy, storage, private outdoor amenity, communal space		Outlook is limited across buildings gaps, storage space is compliant to policy, private outdoor amenity is not provided consistently throughout the masterplan. Limited communal outdoor amenity on plot but generous public open space.
10.	Life long neighbourhoods	Homes flexibility and different types of homes in the area		10% wheelchair adaptable units, 4% senior care homes and ca. 23% family size units, student housing.
11.	Tenure blindness	Same design standards across tenures		Consistent design quality across tenures. Same space standard, materials and details. The unit size mix includes more family units for social housing.
12.	Access to open green space	Neighbourhood Green within 5 minutes walk and large park within 15 minutes cycle.		ca. 40% of the area is dedicated to public open space. Main green space located in the central area. Regents Park within 15 minutes cycle.
13.	Access to Sport and Play	Within 5 minutes walk		Access to indoor sport facilities only within the area.
14.	Access to transport nodes	Within 15 minutes walk		National and international connections from King's Cross St Pancras. Six underground lines.
15.	Active travel	Connected to walking and cycling routes		Well connected with active travel, including Regent Canal Path
16.	Mix of Uses	Mix of Residential, employment, commercial and social infrastructure		57% Offices and Employment, 8% Culture, Leisure and Education,6% Retail, 29% Residential.
17.	Major Anchor	Metropolitan or regional scale		UAL University.

Excellent according to livable housing definition
Performing well according to livable housing definition
Performing well with some issues
Not performing well according to livable housing definition

Adelfio, Marco, Iqbal Hamiduddin, and Elke Miedema. "London's King's Cross redevelopment: a compact, resource efficient and 'liveable' global city model for an era of climate emergency?." Urban Research & Practice 14.2 (2021): 180-200.

Bishop, Peter, and Lesley Williams. Planning, Politics and City-making: A Case Study of King's Cross. Routledge, 2019

Planning Application 2004/2307/P, King's Cross Central, Granted Subject to a Section 10 Agreement 22/12/2006 by Camden Council, Accesses on the 26/01/2022, https://planningrecords.camden.gov.uk/

King's Cross Overview, 2022, Accesses on the 26/01/2022, https://www.King'scross.co.uk/about-the-development

https://www.King'scross.co.uk/

Making the most of built to rent, Future of London Report 2017

2.4 PARIS ILE SEGUIN RIVES DE SEIN - LE TRAPÉZE
Boulogne Billancourt, Paris, France

MASTERPLAN INTRODUCTION

Urban regeneration project aimed at the full re-qualification of the Renault factory site and creating a mixed and vibrant piece of the city. The master plan covers 74 ha divided into three neighbourhoods, each with its own identity. The area of le Trapéze was the first phase and was designed as a city park with 50% open space, 50% of which is dedicated to nature. The masterplan approach to geothermal energy and district heath network, water management, green spaces, and the social mix made the new neighbourhood an example of sustainability and one of the first awarded eco-districts.

NATIONAL CONTEXT

- In France, the social and private rent sectors represent a large portion of the housing choices. In 2004 the French social rented sector made up 17% of the country's housing stock and the private rented sector about 20%. The remaining 67% of the housing stock is in owner-occupation. Subsidised housing is proposed in a tier system that makes it available to a large population segment. It is subdivided into upper (intermediate rates) standard and lower (targeting high priority needs). Income thresholds for access are elevated 35% of households are eligible for lower social housing, 71% for standard social housing, and 80% for the two types of upper social housing.
- 76% of the social housing stock is family units with three or more bedrooms.
- Social housing is provided by public bodies connected to municipalities and non-profit housing associations through access to public funding and loans from public banks. In exchange for the subsidies, housing providers guarantee rents caps and income limits for allocation.
- Policy targets to reach 25% social housing within the housing stock by 2025
- Social housing is regulated by a national law (Loi SRU), which forms part of Code d'Urbanisme. This establishes, since 2013, that for all development of more than 10 units, developers must resale at loss 25% of their units to Social Housing Operators.
- Homeownership has been supported with numerous attempts to create affordable ownership schemes, consisting of incentives on loans.
- Intermediate affordable rents were facilitated with tax incentives (e.g. the 'Borloo Populaire'). In exchange for a tax deduction, dwellings are rented for at least nine years to households who would qualify for 'upper' social housing, charging rents 30% below the market rate. Reduced land purchase price and reduced construction VAT for social-housing projects
- Intermediate affordable housing is encouraged with financial incentives: lower purchasing VAT, allowances for property-tax exoneration and the ability to incorporate units into social-housing projects.

CITY SCALE CONTEXT AND POLICY

- Boulogne Billancourt municipality, where the masterplan is located, is one of the wealthiest local authorities in France, with an average income double of the French medium income.
- In Boulogne Billancourt, 44% of the housing stock is home ownership and 56% is rented (both socially and at market rates)
- Delivery targets: Growing targets for the Ile de France region of 70,000 dwellings/year
- Iles de France proposed that regional housing stock should be 30% social by 2030, starting from 23.5% in 2015.
- New development is regulated by national and local policy. The Plan Local d'Urbanisme (PLU) is the main policy document prepared by the

Open space, Le Trapeze, Boulogne Billancourt

Open space, Le Trapeze, Boulogne Billancourt

municipality that, according to land zoning, defines changes in use, permitted heights and massing, minimum distances, architectural requirements, maximum density, and tenures. " Le Trapeze" Boulogne Billancourt was a ZAC (Zone D'amenagement Concerte or buildable zone) and had first only a draft PLU, which was modified several times to align with the development of the masterplan by Patrick Chavannes-Ferrier.

- A public development agency (SAEM) was set up to overlook the development and negotiate with the site owner (Renault) and the developer consortium (DBS). This was a public-private partnership, in which the city did not own the site but did control the quality of the architecture & urban planning
- The Boulogne Billancourt PLU defines that 30% of all new dwelling in developments of more than 15 homes needs to be socially rented. This is a higher share than required by national policy.
- The PLU provides design guidance for each land zone; however, policy is informed and reinforces the masterplan for large masterplans like the Ile Seguin.

Evolution: 2001 - ongoing.

Site area: 74 ha Ile Seguin, 34 ha Le Trapeze

Estimated Net Density (FAR): ca. 4

Estimated Gross Density (FAR): ca. 2

Estimated Net Residential Density: ca. 300 dph

Estimated Gross Residential Density: ca. 150 dph

Average building height: 8 storeys

Estimated Plot Coverage Ratio: ca. 55% (built footprint on net plot)

Estimated Public Open Space Ratio: ca. 40%

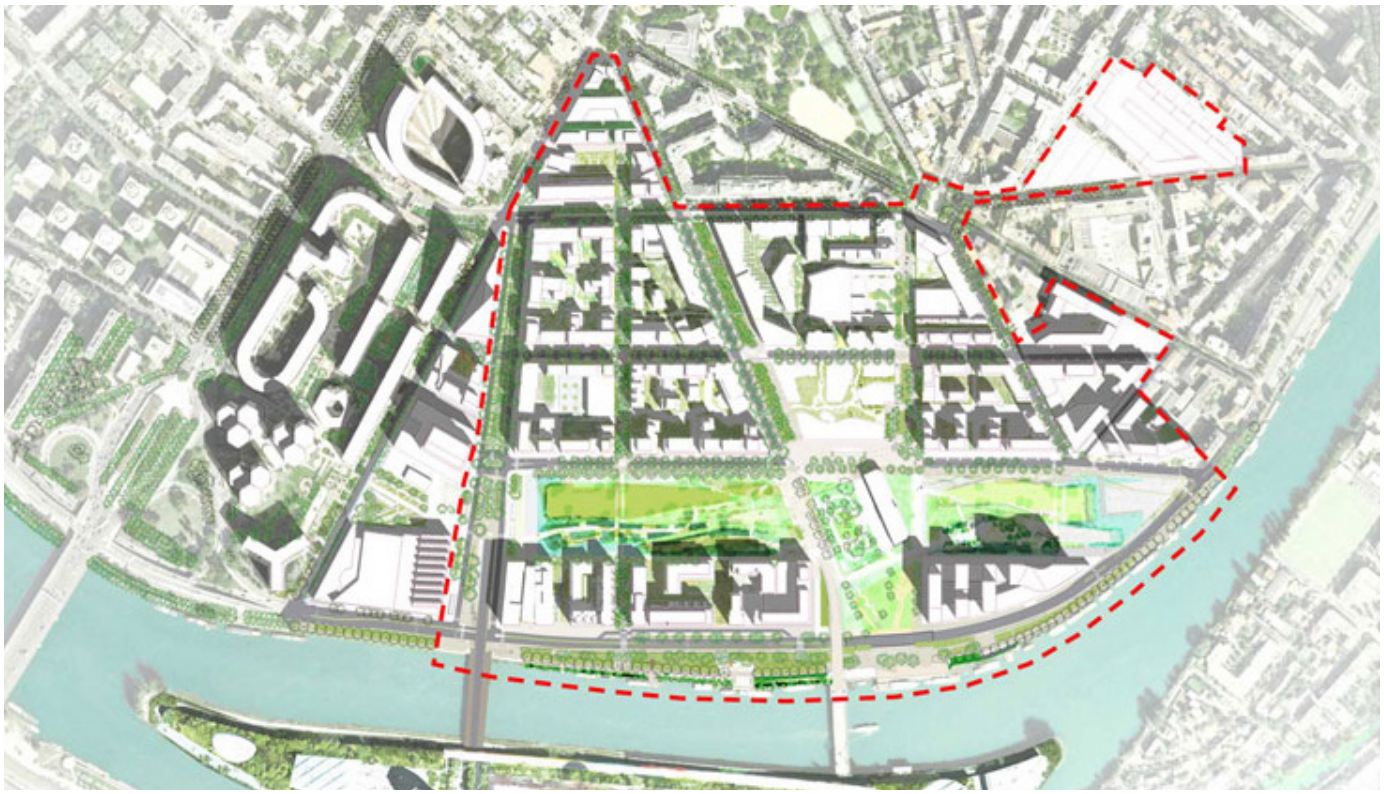
Estimated Total Coverage Ratio: ca. 50% (Total built footprint on site area)

Uses breakdown: 54% residential, 34% offices, 12% retail, civic functions

Number of homes: 5,000 (Le Trapeze)

Number of jobs: 12,000

Tenure mix: ca. 30% affordable/social homes (1,600 units), 70% market sale homes (rental and homeownership).



Master Plan, Le Trapeze, Boulogne Billancourt

Le Trapéze Masterplan

LIVEABLE NEIGHBOURHOOD

TRANSPORT

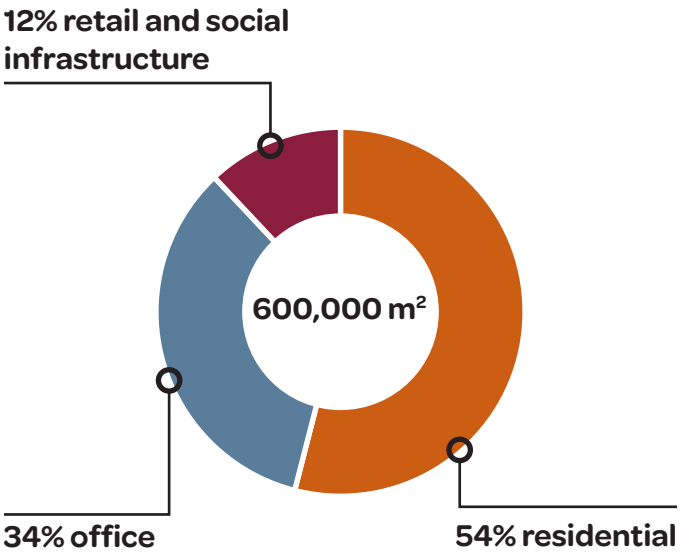
- Le Trapèze is well integrated into Greater Paris with the public transport network.
- The area is connected to the city centre with one metro line with two stops within the area and well served by around ten bus lines.
- Active travel network is supported by safe and pleasant cycle and pedestrian routes integrated with green and SuDS.
- The area is favourably located halfway between the poles of La Défense and the Orly airport. Both can be reached within an hour journey by public transport.

OPEN SPACE

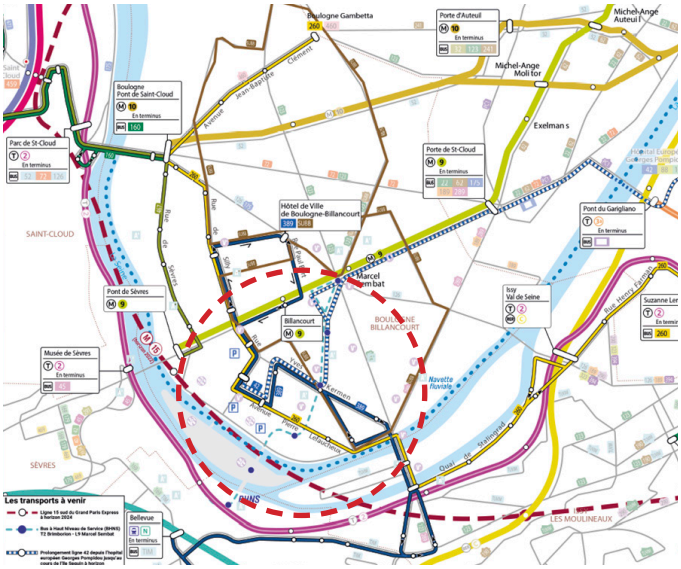
- 50% of the site area is dedicated to open space, 50% of which is dedicated to nature. There is a 7-hectare park, generous, planted courtyards, and a network of landscaped routes within the masterplan.
- Water management is a key theme, which has been incorporated throughout the whole site, with SuDS and water retention.
- The public realm, adopted by the city of Boulogne-Billancourt, is exceptionally high quality and is used to create the canvas in which buildings catering for different groups are nested.
- High sustainability objectives with water management strategy and district heating embedded in the design. Central Park is used as a stormwater retention pond.

MIX OF USES

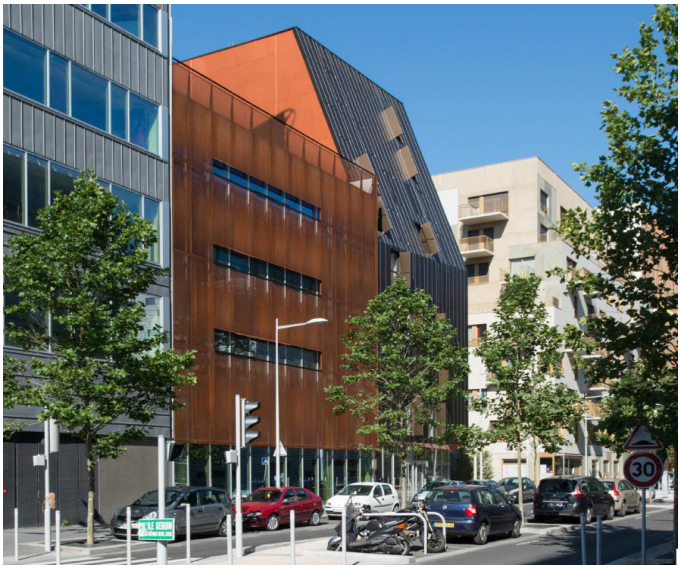
- **Balanced Land Use Mix:** The phase 01 area of Le Trapeze form a varied and balanced mix of uses, while the area is residential led. Total of 671,258 m^2, of which 364,680 m^2 of residential (54%), 230,068 m^2 of offices (34%) and 76,810 m^2 of public facilities, activities and shops (12%). This translates into 5,000 units, 12,000 new jobs, around 12 public facilities (including schools, nurseries and media-library) and around 60 retail units.
- **Major Anchor:** Ile Seguin, in front of Le Trapeze and part of the same wider master plan includes major cultural activities, for instance, the Seine Musical music performance space.



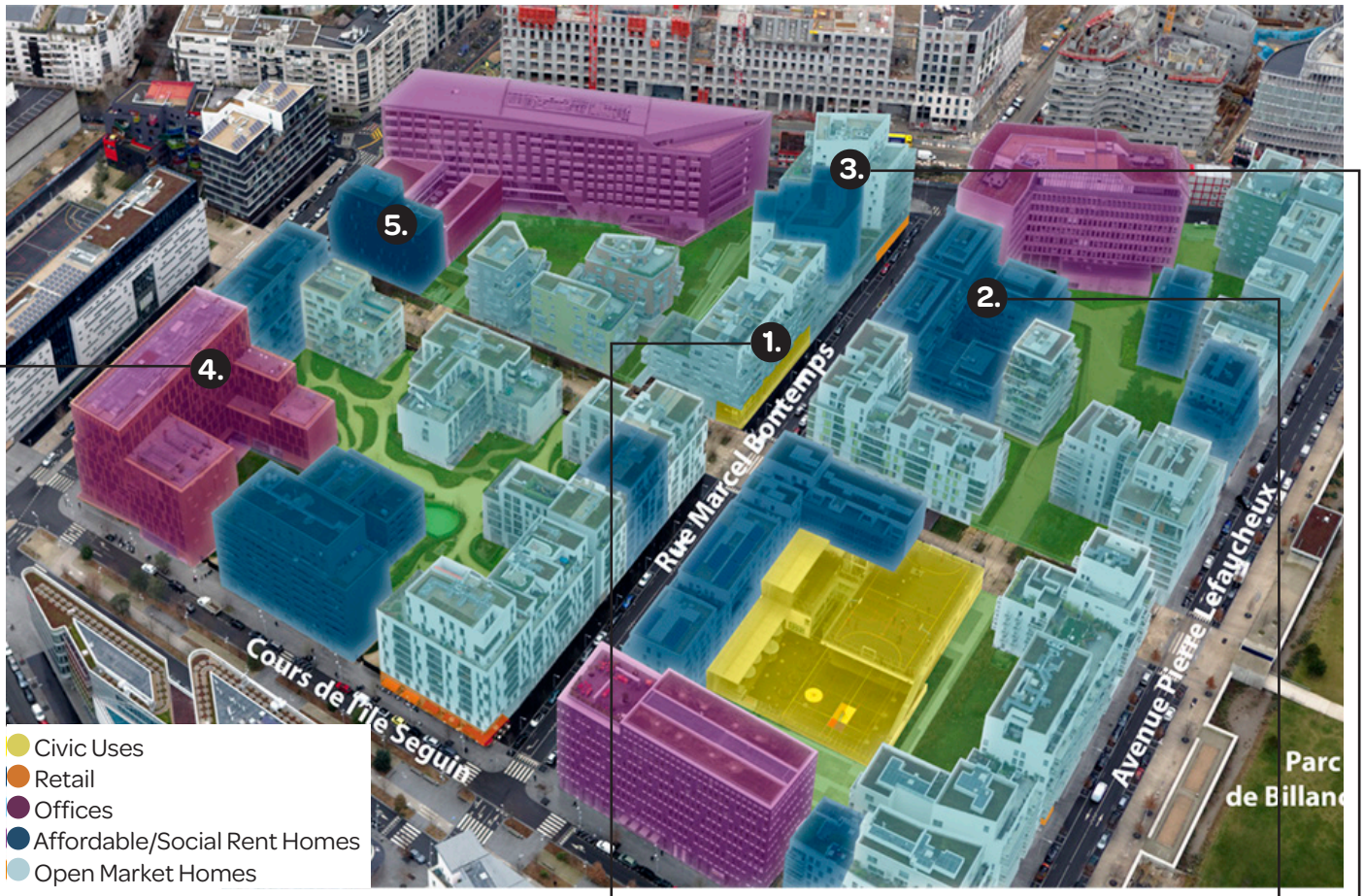
Uses mix in Le Trapeze.



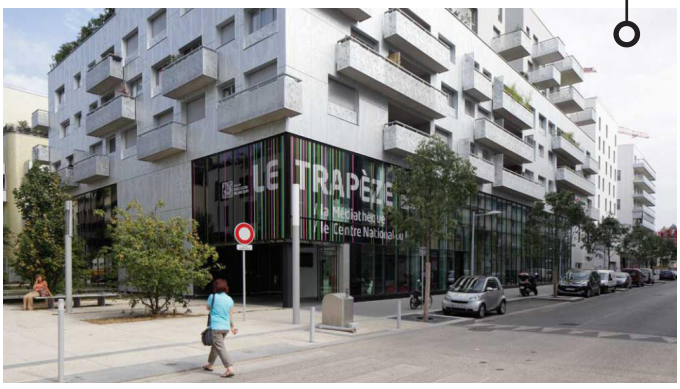
Public transport network.



5. Renault affordable homes for young workers



Mix of functions and housing typologies in the macro-lot A2, B2, A3, B3.



1. Housing and Social Infrastructure Multimedia library and 53 market units

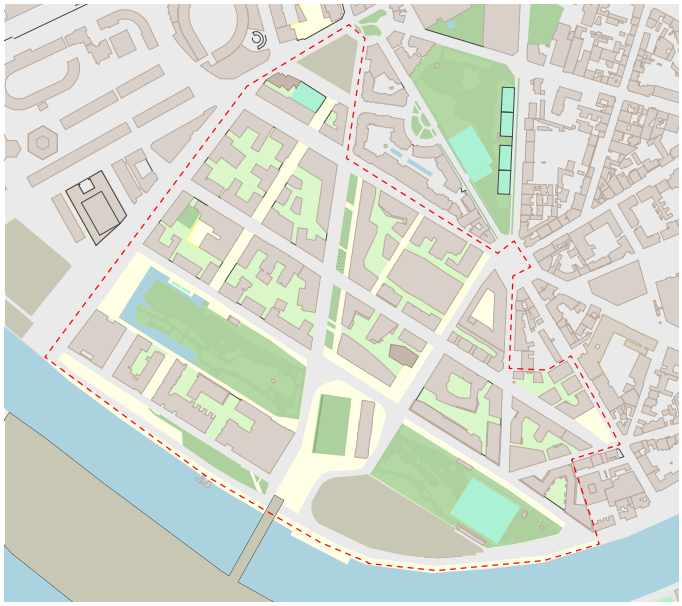
2. Social housing and free market units, total of 127 units

4. Offices

3. Housing and Retail 42 social housing +53 market units

DESIGN

- The neighbourhood is organised in macro-lots further subdivided into smaller plots. The smaller scale allows variety in the typologies/ mix of units and prices offered and in a mix of functions within each block. Social infrastructure and employment are mixed at a fine grain with different types of homes.
- High-quality of affordable/social rent units that are indistinguishable from the market units. This is demonstrated with the building example case study, which integrates open market and social rent homes into the same design.
- **Urban Form:** The macro-lots are formed as generous perimeter blocks of individual buildings sharing party walls. Different architects coordinate each macro-lot.
- The main building datum is eight storeys; however, setbacks at the upper floors create a higher density.
- Example Macro-lot A2, B2, A3, B3 show the integration in each urban block of subsidised and non-subsidised housing that share the same high quality and publicly managed open space and retail, office space and social infrastructure (refer to page 39)
- **Development:** SPL Ile de Sein Aménagement is the overarching body that acts as a developer and is controlled by the municipality. It follows operations and the delivery of the public space that remains in the city's ownership. Renault, previously occupying the site, retains the land ownership, leased to a consortium of developers DBS Development Boulogne Seguin.
- This legal construction allows an ad hoc land transfer process that requires strict architectural, urban, landscape, sustainability and programme provisions. The system allows the Local Authority to implement high aspirations such as the City Park, sustainability parameters, and desired housing mix.



Open Space: hard public open space, soft public open space, communal amenity space, sport

Active Travel and SuDS, Le Trapeze, Boulogne Billancourt

HOUSING IN LE TRAPÉZE

- The urban quarter of Le Trapèze comprises ca. 5,000 units and is the home of ca. 12,000 new residents.

TENURE MIX

- 70% of the scheme was defined as open market sale.
- 30% was defined as affordable/social housing, as required across the municipality of Boulogne Billancourt.
- The affordable quota is subdivided into three tiers, low income, known as lower social housing (1.2% of total dwelling), intermediate, known as traditional social housing (18%) and high-intermediate, known as upper social housing (10.8%) (Machline et al., 2020).

DWELLING MIX

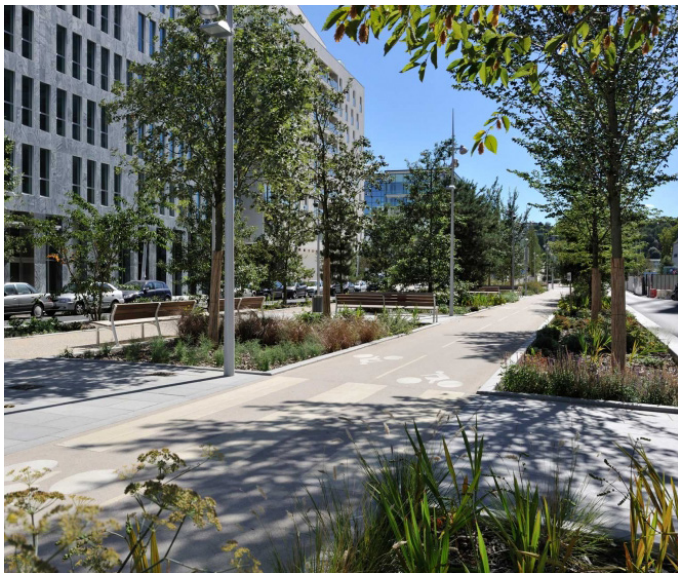
- Part of the oversight mechanism that controls land allocation is also a negotiation on units mix. After 2008-2009 the market favoured developing smaller units; however, larger family units were needed in the municipality.
- For instance, a 64 dwelling project part of Macro Lot A2 was subdivided as 1Bedrooms - 12%; 2Bedrooms - 46%; 3Bedrooms - 31%; 4Bedrooms - 11%. Overall unit size mix is not provided for the whole development.

SOCIAL MIX

- Eco-district labels strongly emphasise social mix, and proposals are evaluated for how they prevent social segregation. The Observatoire des inequalities in 2011 noted that Boulogne-Billancourt is a relatively wealthy area. The development is largely middle class with a limited social mix due to a low proportion of lower social housing (1.2%) and greater emphasis on intermediate affordable social rent (Machline et al., 2020).

Courtyard communal space, Le Trapeze, Boulogne Billancourt

Park, Le Trapeze, Boulogne Billancourt



Active Travel and SuDS, Le Trapeze, Boulogne Billancourt

- The masterplan includes specialist housing for different groups such as students, young people. Examples of such housing typologies are:
  - Renault Workers Residency: The project of 96 subsidised housing for young professionals promoted by Renault, who has strong links with the area, being the previous site of one of their factories. The building provides shared facilities to complement the standardised individual studio flats.
  - The Golden Cube Building: 156 student homes with a shared dining hall and facilities. The eight-storey buildings provide individual studios flat, each with a private outdoor space.

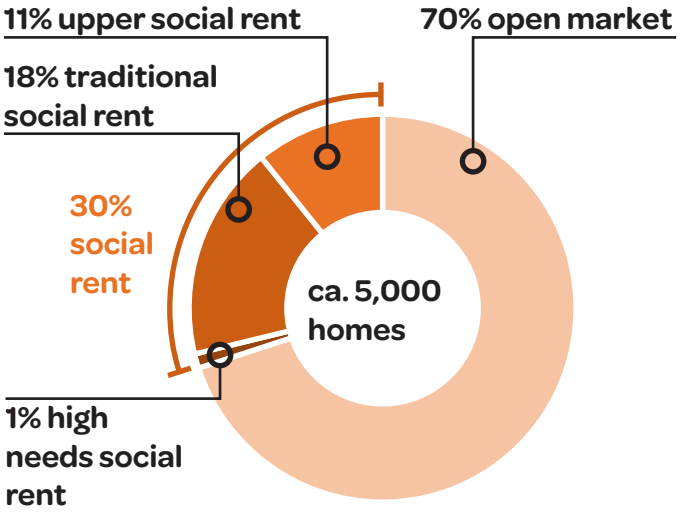
https://www.ileseguin-rivesdeseine.fr/fr/le-programme

Machline, Elise, David Pearlmutter, and Moshe Schwartz. "Social mix policies in the French eco-districts: discourses, policies and social impacts." Energy and Environment research 10.1 (2020): 36-54.

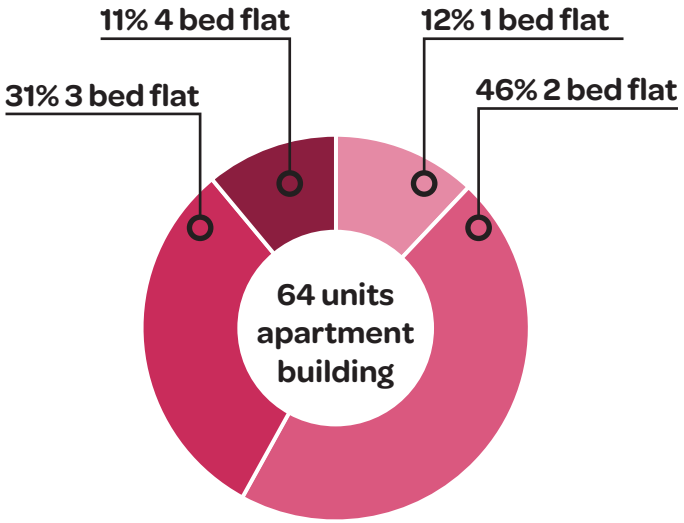
https://www.geoportail-urbanisme.gouv.fr/

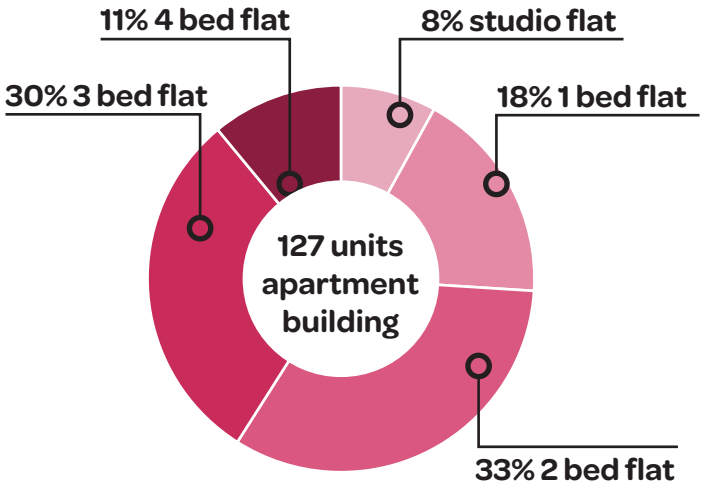
Ville de Boulogne Billancourt, Plan Local d'Urbanisme map/# tile=1&lon=2.240441389227518&lat= 48.82771290879407& zoom=17&mlon=2.235868&mlat=48.827591

Goulden Building 156 student housing units



Tenure mix - Le Trapeze.





Unit size mix in two example buildings in Le Trapeze. Unit size mix is not prescribed by policy.

Le Trapéze Summary Matrix

	Parameter	Assessment Criteria	Y/N	Note
1.	Minimum Housing Density	> 70dph (gross) > 100 dph (gross) high intensity areas		ca.150dph gross density and ca. 300dph net density. Mixed use ca. 50% residential.
2.	Exceptional quality threshold for higher density	> 150dph (net) - required high design quality triggers assessment row 9 (Equitable Dwellings Standards).		ca. 300dph net density. Highest quality of public realm, integrated SuDS and green streets.
3.	Built Density (all uses)	Efficient use of land for character and location (mixed use urban quarter)		Estimated Net Density (FAR)= ca. 4 Estimated Plot Coverage Ratio = ca. 55%
4.	Compact Urban Form	Perimeter block, main datum 4-8 storeys		Main Datum 8 storeys with set backs. The development is high density however the urban form is compact and height limited.
5.	Mix housing types	Variety of: flats, houses, ground floor units with independent access, duplex		Apartments in blocks. Ground floor mostly allocated to retail and employment. Few ground floor apartment, raised from street using communal access (no own door on street)
6.	Mix of unit sizes	Balance of units sizes: 1B, 2B, 3B, 3+B Presence of family size units and not disproportionately of smaller units		The building examples analysed provide a balanced share of large and small units as shown in the pie charts on the opposite page.
7.	Mix of tenures	Balanced mix of: market sale, affordable/social rent, private rent.		ca. 30% social and affordable rent and 70% market sale, limited number of low social rent units (very social social rent) (1.2%).
8.	Social mix	Families, singles/couples, multi-occupation-households, multi-generation households, senior and assisted living, students		Significant number of family size units. Housing dedicated to young workers and students. (No information available on wheelchair accessible and senior units)
9.	Equitable dwelling standards	Outlook and privacy, storage, private outdoor amenity, communal space		Generous shared courtyards and streets provide privacy and daylight. Most buildings have generous private balconies. Generous landscaped courtyards provide communal amenity for each macro-lot (No information available on storage and private amenity).
10.	Life long neighbourhoods	Homes flexibility and different types of homes in the area		Good provision of family size units. (No information available on wheelchair accessible and senior units)
11.	Tenure blindness	Same design standards across tenures		Consistent design quality across tenures. Same space standard, materials and details.
12.	Access to open green space	Neighbourhood Green within 5 minutes walk and large park within 15 minutes biking.		50% open space, 50% of which dedicated to nature. Good provision of communal open space in courtyards. Bois de Boulogne Park within 15 minutes by bike.
13.	Access to Sport and Play	Within 5 minutes walk		Sports fields are part of the central park and within walking distance to the site edge
14.	Access to transport nodes	Within 15 minutes walk		Two underground stops are within the site boundary
15.	Active travel	Connected to walking and cycling routes		Extensive network of segregated bike lanes with landscape buffer (see images page 40-1)
16.	Mix of Uses	Mix of Residential, employment, commercial and social infrastructure		Balanced mix of uses integrated into each macro-lot
17.	Major Anchor	Metropolitan or regional scale		Seine Musical, Ile Seguin

Excellent according to livable housing definition
Performing well according to livable housing definition
Performing well with some issues
Not performing well according to livable housing definition

2.5 AMSTERDAM ZUIDAS
Amsterdam, Netherlands

MASTERPLAN INTRODUCTION

Zuidas is a major development area in Amsterdam, aiming to create a centre of national significance that integrates new homes, jobs, institutions, and social infrastructure. The 250-hectare site is strategically located on one of the main highway and rail access into the city and already hosts one university, research facilities and a convention centre. The area is well connected to the centre, which can be reached in a 20-minute bike journey and Schipol Airport. The project aims to function as a major business district, and the transformation started when ABN AMRO decided to move its headquarters to the area.

NATIONAL CONTEXT

- In 2014, the Dutch housing stock was 60% owner-occupied, 40% rented, of which 80% social rent (ca. 30% of total), and 20% open market rent (ca.10% of total). Over one-third of all household has a social rent tenancy.
- The Netherlands, with around 155 social housing units per 1,000 inhabitants, has one of the most extensive social housing stocks in Europe. Ca. 75% of all rented properties are owned and managed by a housing association as social rented properties, and municipalities also own a small portion of social rented units.
- The maximum rent for social housing was fixed at 710euro/month in 2017. A point system based on the quality of the home allows to establish the maximum rent for each property. Social rent homes are allocated on the income base; 85% of the stock is allocated to lower-income households.
- Rent increase is controlled at the national level for both social rent and private rent; the private rent maximum annual increase in 2022 was set at 3.3%.
- The taxation aims to incentivise young first-time buyers (18 to 35 years old), discounting the transfer tax amounting to 2% of the selling price. The same logic aims to disincentivise buy-to-let and private investment real estate, increasing the transfer tax for properties purchases of these types.

CITY SCALE CONTEXT AND POLICY

- Over recent years, the Amsterdam population has grown by 11,000 Amsterdammers per year.
- Amsterdam's tenure structure reflects a large component of rented accommodation. In 2019, in Amsterdam, 31% of units were owner-occupied, 41% were social rent units, and 29% were private rent. (Hochstenbach,2020).
- The owner-occupied sector has increased constantly, from being less than 10% in the 80s. Social housing peaked in the 90s when it reached 57%, and the private rented sector shrank from representing around 50% in the 80s (Jonkmand, 2020).
- Access to housing in Amsterdam remains a concern despite the large portion allocated through social rent contracts due to long waiting lists for those who qualify, high prices and small private rental sector. The city limited the use of rental homes as holidays rentals to maintain the stock for private rent (Jonkmand, 2020).
- In the policy paper Housing Agenda 2025 (Woonagenda 2025), the municipality sets the house-building targets. The aim is to build 52,500 homes by 2025, an average of 7,500 per year, including 17,500 social housing (ca. 2,500 per year); 11,690 medium-priced rental properties (ca. 1,670 per year); 10,500 affordable homes and rooms for students and young people.
- Mixed-Income city: The Housing Agenda 2025 sets the target to ensure that Amsterdam remains a mixed city. Amsterdam is divided into 22 areas; in each area must be provided open

Aerial Photo, Zuidas, Amsterdam

market housing (rents above 970Euro/month, sales above 249,000 Euro), mid-market housing including intermediate affordable rents (between 710 and 970 Euro/month) and affordable homeownership (sales between 152,000 and 249,000 Euro) and low-income housing, including social rent (rent up to 710 Euro/month), and homeownership (sales below 152,000 Euro). The Housing Agenda outlines these ratios for new developments. Zuidas follows the proportion of 40% low-income (as social rent), 40% mid-market rent and 20% open market.

- The municipality prepares land-use plans that prescribe the density range, uses and building heights for each development plot. For large areas for which is envisioned substantial change, like Zuidas, the land-use plans are based on the development of a masterplan.
- A shared policy document provides building standards, including minimum space requirements, outdoor private amenities and storage space.
- Outdoor amenity minimum requirements in the Netherlands are substandard compared to the Iris context. The requirement is for a minimum of 4m^2 and a minimum width of 1,5m for dwellings above 50 m^2; smaller units can rely only on shared amenity space. It is left to developers the decision to provide additional space.
- Unit size mix is not prescribed by policy. Dwelling space standards allow for smaller units for student accommodation; other standards are uniform across different tenures.

Evolution: 2002 - ongoing.

Site area: 255 ha (210 excluding railway)

Estimated Net Density (FAR): on average 6

Estimated Gross Density (FAR): ca. 2-3

Estimated Net Residential Density: ca. 450 dph in residential led sub-areas

Estimated Gross Residential Density: ca. 40 dph

Average building height: main datum 8-9 floors with taller elements.

Estimated Plot Coverage Ratio: ca. 65% (built footprint on net plot)

Estimated Public Open Space Ratio: ca. 35% (excluding rail line and including sport facilities)

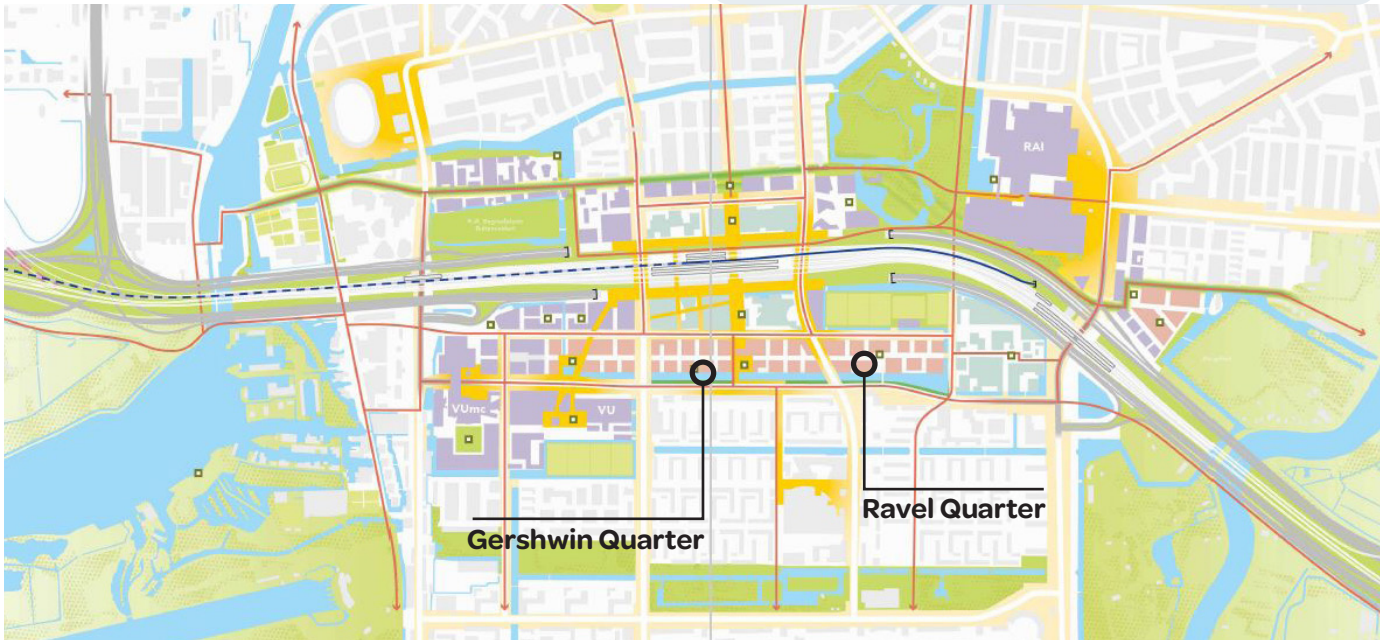
Estimated Total Coverage Ratio: ca. (Total built footprint on site area)

Uses breakdown:29% residential, 38% offices, 33% services, amenities, institutions

Number of homes: 2,700 built so far (of which 800 student accommodation). 7,000 homes are in the pipeline and 20,000 residents are expected at completion

Number of jobs: 73,000 and 26,000 students

Tenure mix: 30% social and affordable rent and 70% open market achieved up to today. New policy: 40% social rent, 40% intermediate (rented and ownership), 20% open market



Master plan, Zuidas, Amsterdam

Zuidas Masterplan

LIVEABLE NEIGHBOURHOOD

TRANSPORT

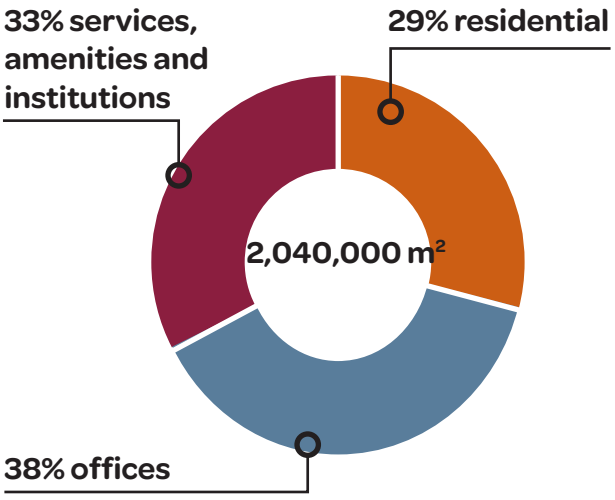
- Amsterdam Zuidas is located on motorway A10, which constitutes one of Amsterdam's key access to the South.
- The area passes one rail line with two stops, three metro lines, eight bus lines and five tram lines. Every day 80,000 people transit through the Zuidasdok Station. The area is five minutes from Schipol Airport and well connected to the city centre.
- The street scene is varied and attractive for cyclists and pedestrians, and the area is well connected to the city-wide active travel network.
- There are three underground bike parking spaces in the area, counting more than 8,000 bike parking spaces.
- The public space between the building blocks is to be completely car-free.

OPEN SPACE

- More than one-third of the site is dedicated to public open and green spaces. This is calculated to date and will be reduced with future development.
- A large portion of the area is dedicated to sports facilities, also associated with the university. The site has a network of small scale local squares and green areas and an extensive network of canals.
- The site is located in an area with an abundance of large parks, like Amstelpark, Amsterdam Boss, Buitenveldert park and Gijsbrecht Aemstelpark, which can all be reached in a 15 minute walk from the edge of the site.
- Beatrix Park is the only large park part of the site. Open green space in the central area masterplan is limited beyond the canals network with the argument that good access is provided to large metropolitan parks from the site.

MIX OF USES

- **Balanced Land Use Mix:**
- The master plan aimed at a truly balanced mix of uses and proposes introducing housing in every new plot and 40% of the total. The final uses quotas, including retained uses on-site, are 29% residential, 38% offices, and 33% services, amenities and institutions.
- In 2019, had been established in Zuidas over



Mix of uses in Amsterdam Zuidas, including the uses existing on site before 1998 and retained in the new masterplan

Main public transport connections in Zuidas, Amsterdam

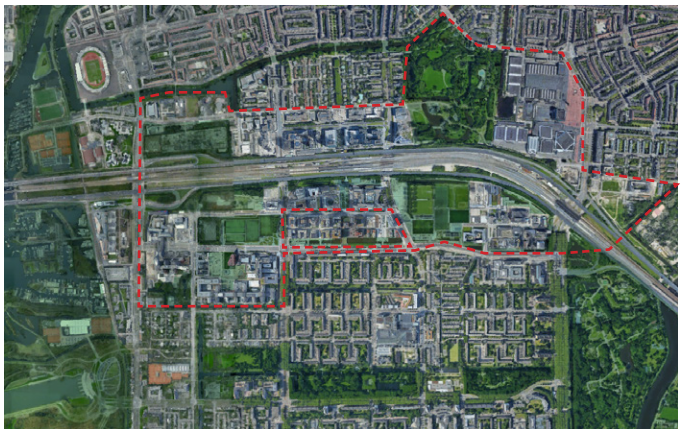
2,000 businesses, below is listed the number breakdown per sector:

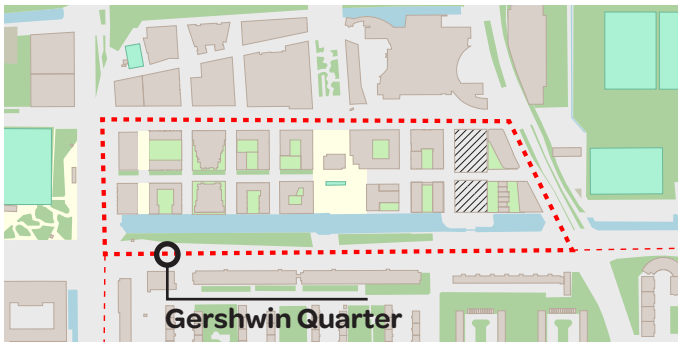
- Culture, leisure, other services: 155 businesses
- Commercial services: 790 businesses
- Financial services and real estate: 820 businesses
- Transport, information, communication: 225 businesses
- Trade and hospitality/catering: 265 businesses
- Industry and energy: 80 businesses

- **Major Anchor:** The Free University of Amsterdam with around 26,000 students in the area. The strategic location of the financial institution ABN/AMRO in Zuidas shifted the perception of the area and triggered the future development of the office quarter.

DESIGN

- The long development span required the creation of a flexible framework that could be adapted in time and detailed for each masterplan.
- The planning framework established a range of densities for each block and the percentage of floor space that should be dedicated to housing within each block. The minimum residential quantum across the framework was set at 40%, and at least 25% had to be allocated to housing. In this way, the design could ensure flexibility and a mix of uses at each design scale while creating a significant number of new houses.
- Variation is achieved through urban blocks that are different in size and height.
- Standard ceiling height of 3.30 metres and ground floors ceiling height 4.50 meters to ensure flexibility and adaptability of uses
- The main building datum is 8-9 storeys with taller elements. The height of taller elements is adjustable and provides flexibility.
- Comfort and a wide choice of housing types are essential criteria for prospective residents and design flexibility. The plan aims to achieve a high degree of privacy, adequate sunlight and private outdoor space.
- The design is encouraged to avoid long corridors or gallery access buildings and create active fronts with windows and doors on the ground floor.
- Housing density calculations were based on the Gershwin Quarter as one almost completed residential-led sub-area.





Open Space: hard public open space, soft public open space, communal amenity space, sport

Site area in the large scale green and blue infrastructure network

LIVEABLE HOUSING IN ZUIDAS

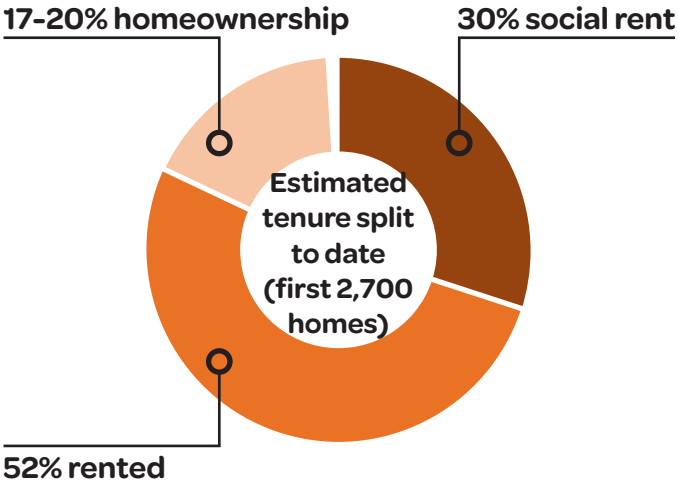
- In 2020 there were 2,774 completed new homes and 4,000 residents.
  800 units were socially rented temporarily to students (Ravel Residence).
- The remaining housing programme will be completed by 2030, reaching ca. 7,000 homes and 20,000 new residents.
- The first phases of development, located at the centre and having higher density, were more focused on employment than residential.

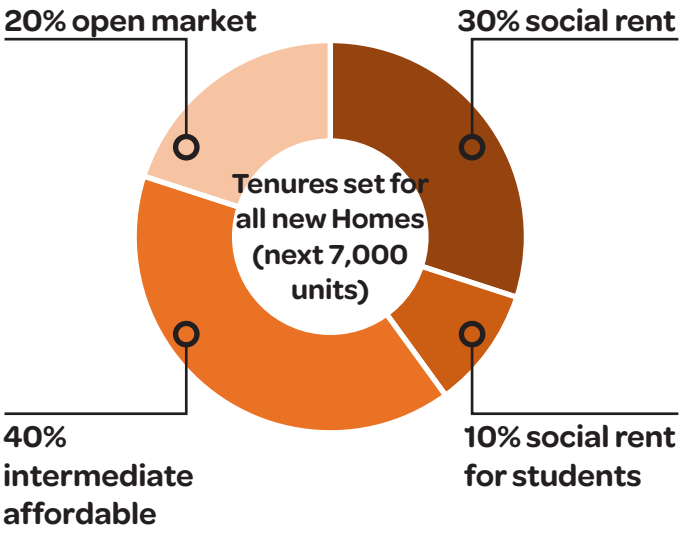
TENURE MIX

- To date, 30% of the homes in Zuidas are allocated to social rent units, and 70% are allocated to open market rent; of those rented units (subject to rent control) are estimated to be 52%, and homeownership is estimated to be 17%. (source https://allcharts.info/the-netherlands/borough-zuidas-amsterdam/#house_characteristics)
- The Amsterdam Housing Agenda establishes the 40-40-20 rule for new developments (40% low-income housing provided as social rent - 40% mid-market (intermediate affordable rent and affordable homeownership) -20% free market (rent and sales).
- The tenure breakdown for the housing-led masterplan of Ravel (see map on page 43) within the larger framework comprises:
  - Low-income housing (Social Rent): 40%. These units are divided into traditional social rent (ca. 83 m^2 on average) 30% and students/youngster rental properties (ca. 40 m^2 on average) 10%.
  - Mid-market (intermediate affordable rent and affordable homeownership) : 40%. Divided between standard market mid-segment (ca. 65 m^2) 13% and larger units (ca. 110 m^2) 26%. This includes both affordable rent and affordable homeownership.
  - Higher segment: 20% free market dwellings (ca. 125m^2).
- Housing standards are consistent across tenures; smaller dwellings are accepted for student housing.

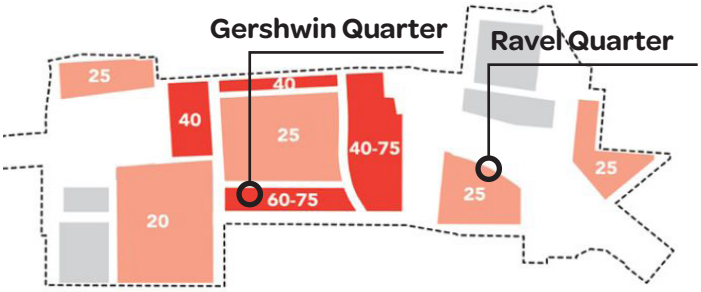
SOCIAL MIX

- The plans for Zuidas set out to cater for a wide range of residents but maintain a focus on family homes.

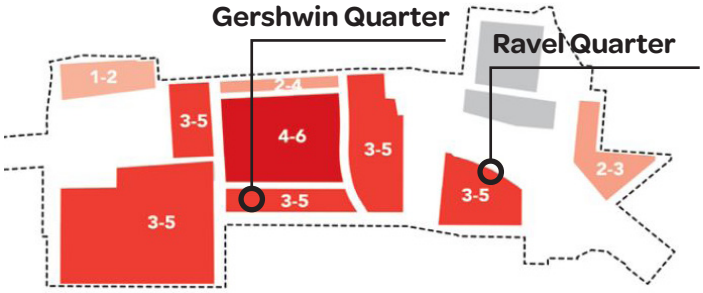




New policy requirements implemented with the Housing Agenda 2025

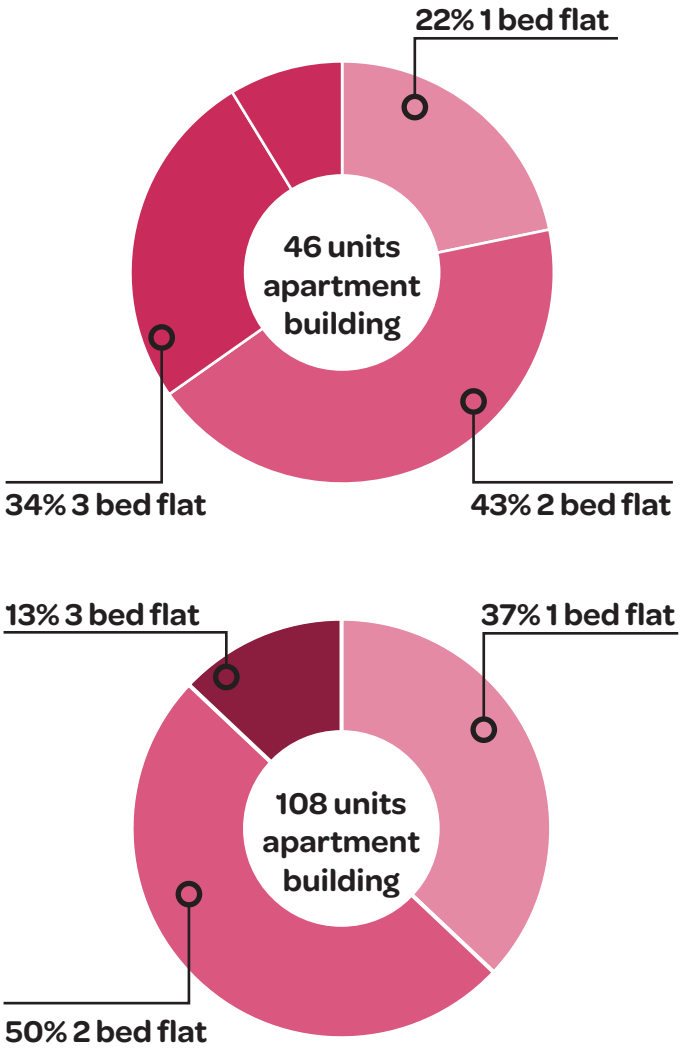


Minimum housing percentage per urban quarter



Density range per urban quarter (Net FAR)

- The plans include:
  - Senior accommodation.
  - Students and young people housing (known as transitional housing schemes).
  - Homes for multi occupation households (co-living friends) and family homes.
- Later phases, currently under construction, include 50% of family units. In Ravel, for instance, 750 of the proposed 1350 new units are family units.
- Transitional Homes projects provide housing transition between studying and working and offer 100% socially rented homes. These units are available for young people up to 28 years old for a maximum of 5 years, and they provide typologies between 30 and 60 m^2.
- The High quality makes them undistinguishable from private market homes.
- The units share facilities such as social spaces and gyms.
- A mix of housing types and financing categories is promoted at the plot level to foster a diverse community in each sub-area.
- Unit size mix is not set across the masterplan or by policy, and the ratios of large units may vary for different buildings; however, in the building case studies analysed, there are always a minimum of around 15% of large units of three or more bedrooms. The case study does not perform well in terms of housing diversity compared with other case studies; however, it still shows a decent variety of unit sizes and adequate space within dwellings.



Unit size mix in two example buildings in Zuidas. Unit size mix is not prescribed by policy.

View of Amsterdam Zuidas from the Amsterdam Boss Park

Open Space, Zuidas, Amsterdam

SuDS network, Zuidas, Amsterdam

Street Activity, Zuidas, Amsterdam

https://www.ruimtelijkeplannen.nl/viewer/view

https://www.rijksoverheid.nl/onderwerpen/huurwoning-zoeken/vraag-en-antwoord/wat-is-het-verschil-tussen-een-sociale-huurwoning-en-een-huurwoning-in-de-vrije-sector

Gemeente Amsterdam, 2016, Visie Zuidas 2016

https://zuidas.nl/en/

https://allcharts.info/the-netherlands/borough-zuidas-amsterdam/#house_characteristics

https://www.government.nl/topics/housing/documents

Jonkman, Arend. "Patterns of distributive justice: social housing and the search for market dynamism in Amsterdam." Housing Studies 36.7 (2021): 994-1025.

Hochstenbach, Cody, and Richard Ronald. "The unlikely revival of private renting in Amsterdam: Re-regulating a regulated housing market." Environment and Planning A: Economy and Space 52.8 (2020): 1622-1642.

Zuidas Summary Matrix

	Parameter	Assessment Criteria	Y/N	Note
1.	Minimum Housing Density	> 70dph (gross) > 100 dph (gross) high intensity areas		ca. 40dph gross density. Above 250 dph gross density and 500 dph net density for residential-led quarter (Gershwin and Ravel). The high footfall generated by other uses allows to sustain many of the liveable city uses identified in chapter 1
2.	Exceptional quality threshold for higher density	150dph (net) - required high design quality triggers assessment row 9 (Equitable Dwellings Standards).		High quality required in the public realm and in the private amenity provision. Limited green space integrated in residential-led quarters.
3.	Built Density (all uses)	Efficient use of land for character and location (mixed use transport hub)		Estimated Net Density (FAR)= ca. 5-6 Estimated Plot Coverage Ratio = 65%
4.	Compact Urban Form	Perimeter block, main datum 4-8 storeys		Main Datum 8-9 storeys with taller elements. High density areas of the masterplan feel quite enclosed
5.	Mix housing types	Variety of: flats, houses, ground floor units with independent access, duplex		Apartments, maisonettes, penthouses (large rooftop apartments with roof terraces) and a few houses.
6.	Mix of unit sizes	Balance of units sizes: 1B, 2B, 3B, 3+B . Presence of family size units and not disproportionately of smaller units		More than 50% are family-size units in new masterplan areas (i.e. Ravel) while some rental building in the initial phases have a low proportion of family size units (see diagrams on page 47).
7.	Mix of tenures	Balanced mix of: market sale, affordable/social rent, private rent.		40-40-20 Mixed City Policy: 40% social rent, 40% mid segment (rent and ownership) and 20% upper market (rent and ownership).
8.	Mix of users	Families, singles/couples, multi-occupation-households, multi-generation households, senior and assisted living, students		Including student housing and transitional housing for young people
9.	Equitable dwelling standards.	Outlook and privacy, storage, private outdoor amenity, communal space		Storage and private amenity space standards lower than other best practice examples analysed; however some buildings substantially exceed minimum requirements. Limited communal amenity.
10.	Life long neighbourhoods	Homes flexibility and different types of homes in the area		Good provision of family size units in the future masterplan phases. Transition housing for young people. (Not found information on wheelchair accessible units and senior accommodation)
11.	Tenure blindness	Same design standards across tenures		Same dwellings space standards and architectural quality applies to all tenures.
12.	Access to open green space	Neighbourhood Green within 5 minutes walk and large park within 15 minutes biking.		Open space is lower than in other case studies, however the site is close to two large parks (less than 15 minutes walking from the edge of the site). Limited communal outdoor amenity on plot.
13.	Access to Sport and Play	Within 5 minutes walk		Sports field belonging to the university and free access sports fields
14.	Access to transport nodes	Within 15 minutes walk		Rail, metro and tram connections, including to Airport and North of the Ramstad
15.	Active travel	Street section		Well linked into the bike lanes network to the city centre and permeable pedestrian network.
16.	Mix of Uses	Residential, employment, commercial and civic uses		Balanced mix of uses, minimum of 25% housing integrated into each quarter to provide mix
17.	Major Anchor	Metropolitan or regional scale		Free university, RAI conference centre, Law Court.

Excellent according to livable housing definition
Performing well according to livable housing definition
Performing well with some issues
Not performing well according to livable housing definition

3. CASE STUDIES – BUILDING SCALE

Analysis of building typologies at the block level with focus on unit size mix, dwellings standards and layouts.

3.1 PLOT R5 - KING'S CROSS
London (2017)

Saxon Court, Roseberry Mansion and Fenman House, Maccreanor Lavington

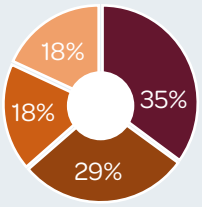
An urban block consisting of 220 apartments divided into three buildings with different tenures: Roseberry Mansions provides 40 assisted care apartments and one market home. Saxon Court provides 63 social rental apartments owned by a housing association and 40 affordable shared ownership homes, and Fenman House provides 76 market apartments.

The three main buildings address four very different environments: a large park to the west, a small garden square to the south and York Way, a main road to the north, and each building has its formal expression well harmonised within the urban block.

The block has communal amenity space located in the courtyard and on the terraces of the building.

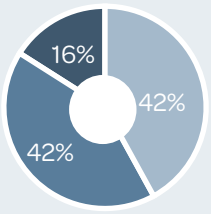
Tenure mix:

- Affordable units: 143 = 65%
  - Social Rent: 63
  - Shared Ownership: 40
  - Extra Care: 40
- Market units: 77 = 35%



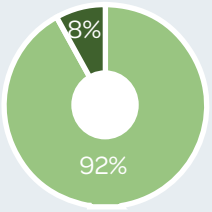
Unit size mix:

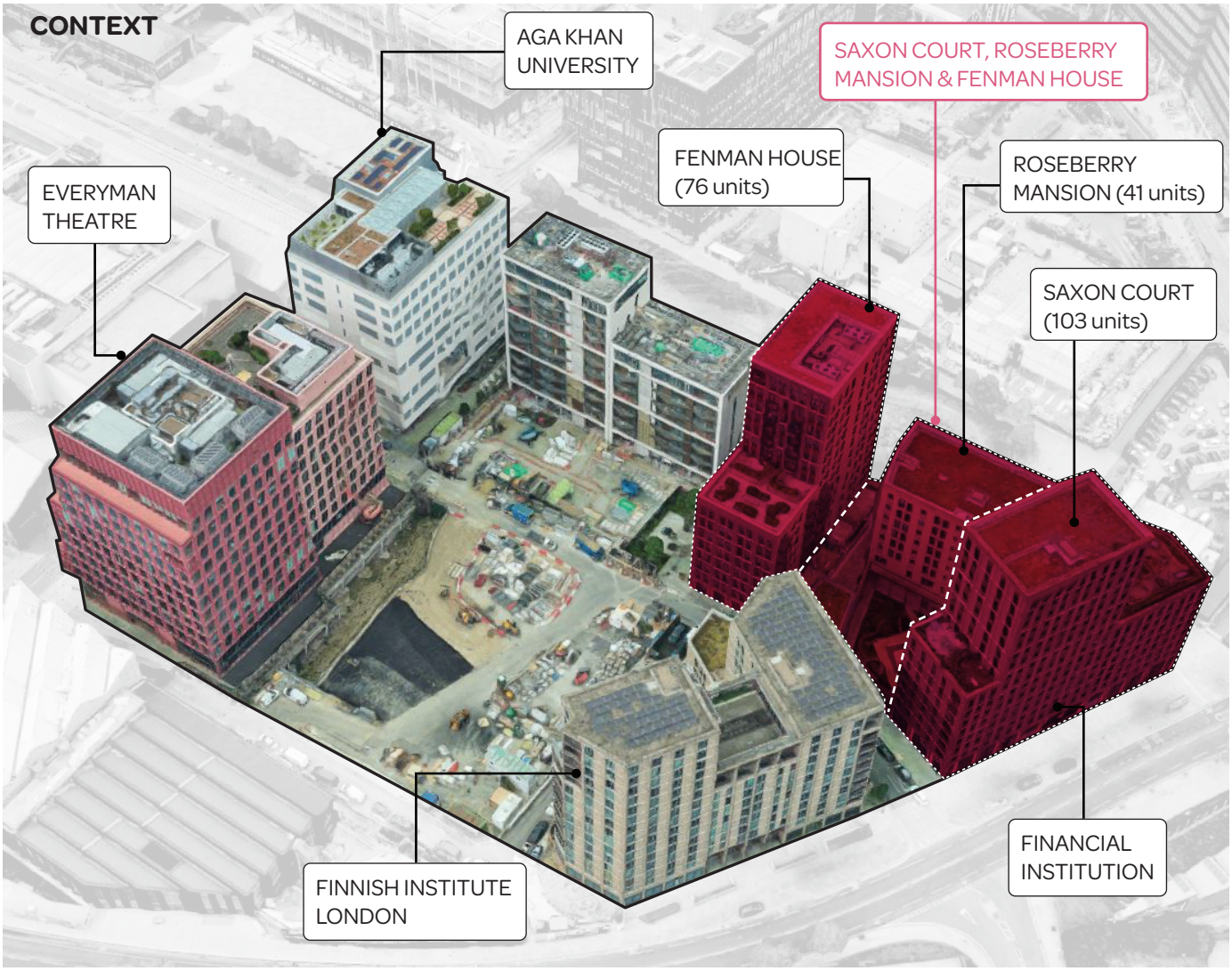
- 1bed 92 = 42%
- 2bed 92 = 42%
- 3bed 36 = 16%



Uses mix:

- Commercial GF = 8%
- Residential upper floors





Fenman House: Market Price and Commercial Space, which is located on the ground floor

- Market Units: 76 units
- 1bed-1person 7 = 9%
- 1bed-2people 6 = 8%
- 2bed-4people 48 = 63%
- 3bed-6people 15 = 20%

- Wheelchair adaptable units: 7 = 9%
- 92% of the units have a Balcony or Terrace

Saxon House: Affordable Homes including Social Housing and Shared Ownership and Commercial Space , which is located on the ground floor

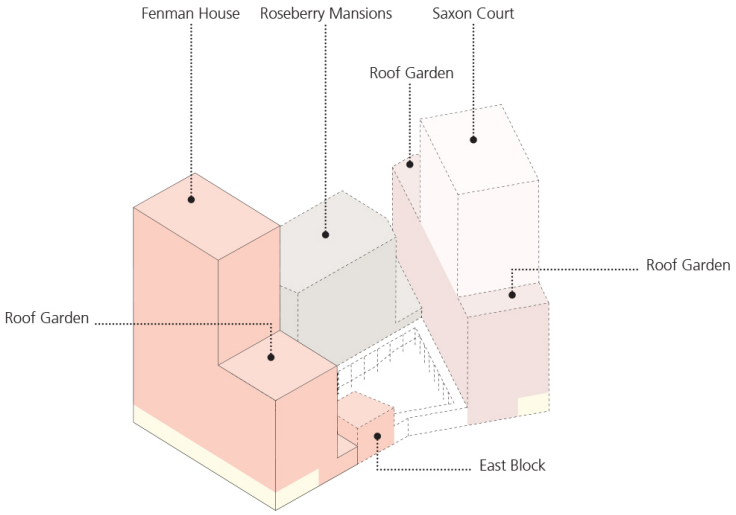
- Social Housing General Needs: 63 units
- 1bed-2people 21 = 34%
- 2bed-4people 21 = 33%
- 3bed-5people 21 = 33%

- Wheelchair adaptable units: 14 = 22%
- 50% of the units have a Balcony or Terrace

- Shared Ownership: 40 units
- 1bed-2people 24 = 60%
- 2bed-4people 16 = 40%

- Wheelchair adaptable units: 0
- 1% of the units have a Balcony or Terrace

Communal Amenity Space: ca. 2,000 m² of communal amenity space is provided in the courtyard and on the roof terraces, ca. 9 m² per unit.



- Commercial
- Market Units
- Social Rent
- Shared Ownership
- Extra Care Home

TYPICAL UNITS FENMAN HOUSE

1 Bedroom-2People Apartment;
Min. 50 m²
Private outdoor amenity space ca. 5 m² (additional to communal amenity space)
Storage space by the entrance ca. 1,5 m²

2 Bedroom - 4 People Apartment;
Min. 70 m²
Private outdoor amenity space ca. 5 m² (additional to communal amenity space)
Storage space by the entrance ca. 2 m²

3 Bedroom - 5 People Apartment;
Min. 86 m²
Outdoor amenity ca. 5 m² (additional to communal amenity space)
Storage space by the entrance ca. 2,5 m²

Fenman House

Fenman House section

Fenman House typical floor plan

Saxon Court unit

Fenman House

Fenman House Summary Table

Net Density (FAR)	for the block	ca. 6.5
Net Density (dph)	for the block	ca. 550dph
Height	(main datum 8 storeys, tall element 15)	8 Storey
Tenure		
Affordable		0%
Market Sale	76 units	100%
Social Mix		
	Adaptable Units	9%
	Family Accommodation (3+ bedrooms)	20%
Unit Size Mix		
	Studio (min 39 m^2)	9%
	1Bed-2People (min 50 m^2)	8%
	2 Bed- 4People (min 70 m^2)	63%
	3 Bed (min 85 m^2 for 5 people)	20%
Private Outdoor Amenity Space	min. 5 m^2 per unit	92% of units
Communal Outdoor Amenity Space	ca. 2,000 m^2 shared in the plot (ca. 9 m^2 per unit)	ca. 9 m^2 per unit
Storage Space	min. 1.5 m^2 per 2 people, 0.5 m^2 additional per each additional person no remote storage is provided	100%
Dwelling Types		
	Apartments (no duplex)	100%
Uses Mix		
	Residential	92%
	Commercial Ground Floor	8%

Planning Application 2004/2307/P, King's Cross Central Development Zone R5 North, Granted 31/01/2011 by Camden Council, and Planning Application 2013/1573/P, dated 23/05/2013, as amended by 2015/2891/P, dated 03/08/2015, King's Cross Central Development Zone R5 South, Accessed on the 26/01/2022, https://planningrecords.camden.gov.uk/

Fenman House, Roseberry Mansion , Saxon court Summary Table

Net Density (FAR)	for the block	ca. 6.5
Net Density (dph)	for the block	ca. 550dph
Height	(main datum 8 storeys, tall element 15)	8 Storey
Tenure		
Affordable		65%
	Social Rent	29%
	Shared Ownership	18%
	Extra care	18%
Market Sale		35%
Social Mix		
	Senior Accommodation (Extra Care)	18%
	Family Accommodation (3+ bedrooms)	16%
Unit Size Mix		
	1 Bed (min 50 m^2 for 2 people)	42%
	2 Bed (min 61 m^2 for 3 peep. 70 for 4)	42%
	3 Bed (min 85 m^2 for 5 people)	16%
Private Outdoor Amenity Space	5 m^2 per unit (senior accommodation does not have any provision as well as the shared ownership units, because of their location)	64% of units
Communal Outdoor Amenity Space	ca. 2,000 m^2 total (ca. 9 m^2 per unit)	ca. 9 m^2 per unit
Storage Space	min 1.5 m^2 per 2 people, 0.5 m^2 additional per each additional person No remote storage is provided	
Dwelling Types		
	Apartments (no duplex)	100%
Uses Mix		
	Residential	92%
	Commercial Ground Floor	8%

Saxon Court

Roseberry Mansion

Fenman House

Fenman House

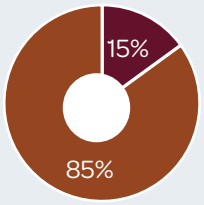
3.2 127 LOGEMENTS ZAC SEGUIN - LE TRAPEZE Boulogne Billancourt, Paris (2012)

127 logements ZAC Seguin Rives de Seine, Philippe Dubus Architects

The building houses 127 units, designed by Philippe Dubus Architects and was completed in 2012. The building includes 105 social rent units in a social rent building and 18 homeownership market units in an open market building. The units in the open market building can be acquired through a location-accession scheme that allows purchase after a first fixed period of renting to facilitate access to the housing market. The building is organised as 'fake twins' in two neighbouring T shapes that allow views onto the shared green space of the plot. 93% of units have outdoor amenities in the form of a balcony of at least 5 m^2, with some providing between 15 and 30 m^2 of private outdoor space. The building demonstrates indistinguishable quality and standards across tenures; apartments have generous terraces and are set in a green communal courtyard shared by the macro-lot B3.

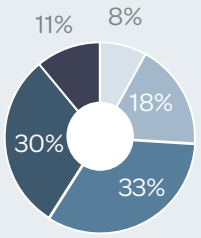
Tenure mix by units:

- 105 social rent
- 18 private market (location accession)



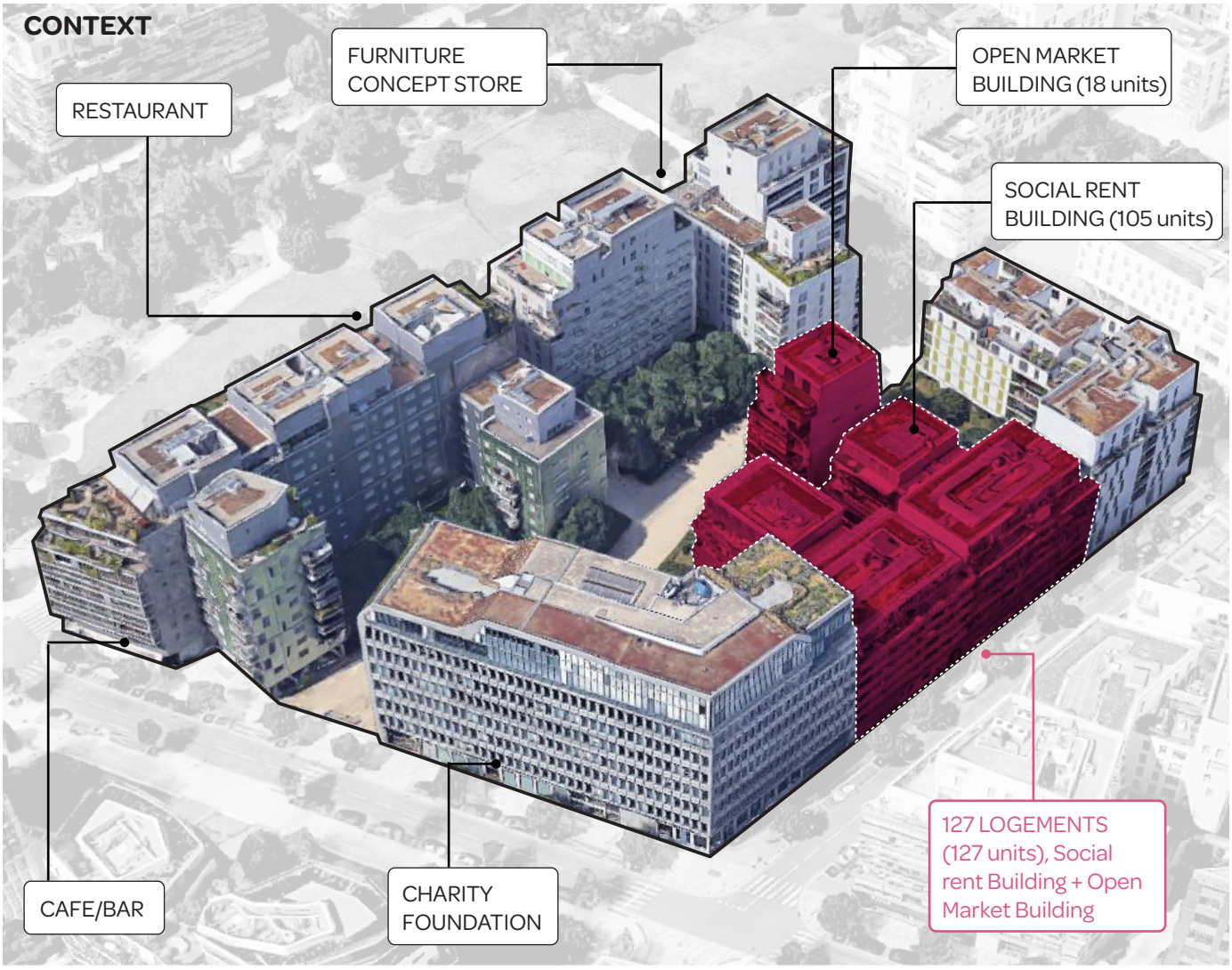
Unit size mix:

- Studio 10 = 8%
- 1bed 23 = 18%
- 2bed 43 = 33%
- 3bed 37 = 30%
- 4bed 14 = 11%



Uses mix:

- Residential 100%

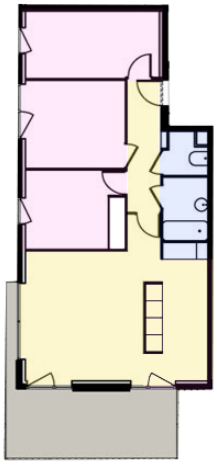


127 Longements - Social Rent Building

TYPICAL SOCIAL RENT UNITS

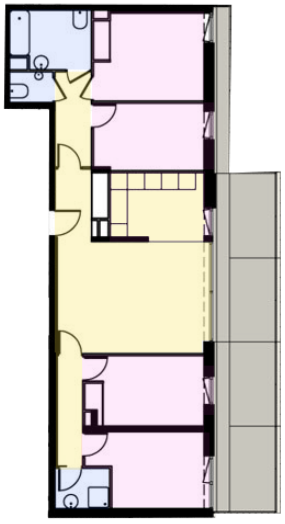
1Bed Apartment

ca. 45 m² GIA
15 m² Outdoor Amenity space provided by balcony, additional to communal outdoor amenity
1.5 m² Storage



3Bed Apartment

ca. 85 m² GIA
15 m² Outdoor Amenity space provided by balcony, additional to communal outdoor amenity



4Bed Apartment

ca. 105 m² GIA
20 m² Outdoor Amenity space provided by balcony (dependant upon articulation) additional to communal outdoor amenity
1.5 m² Storage

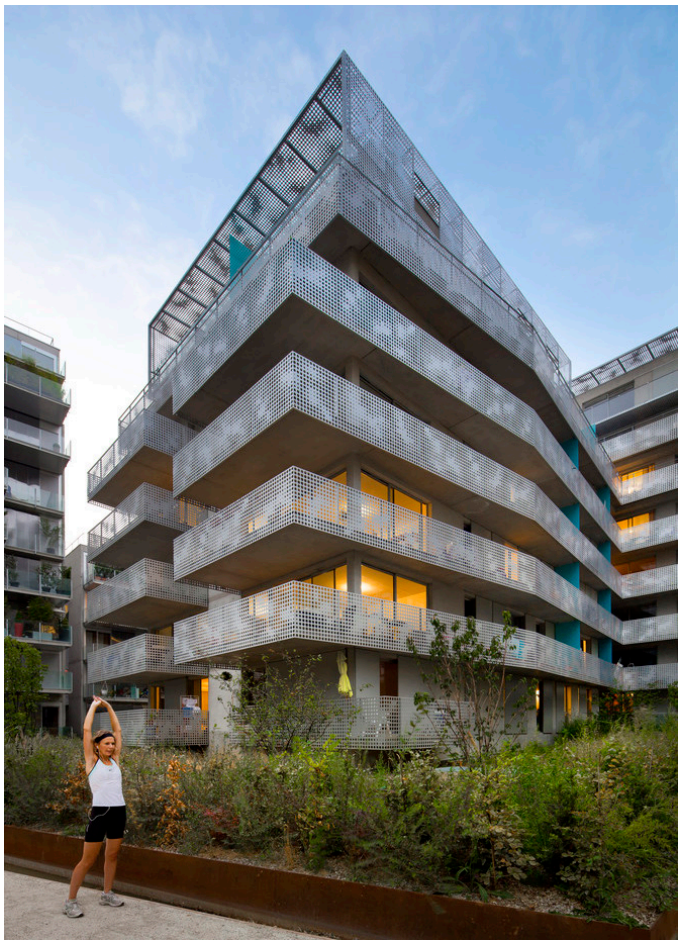
2Bed Apartment

ca. 70 m² GIA
25 m² Outdoor Amenity space provided by balcony, additional to communal outdoor amenity
1.5 m² Storage

Communal Outdoor Amenity: ca. 700 m² communal outdoor amenity related to the two buildings part of ca. 5,500 m² courtyard areas of the macro-lot B3, ca. 9 m² per unit.

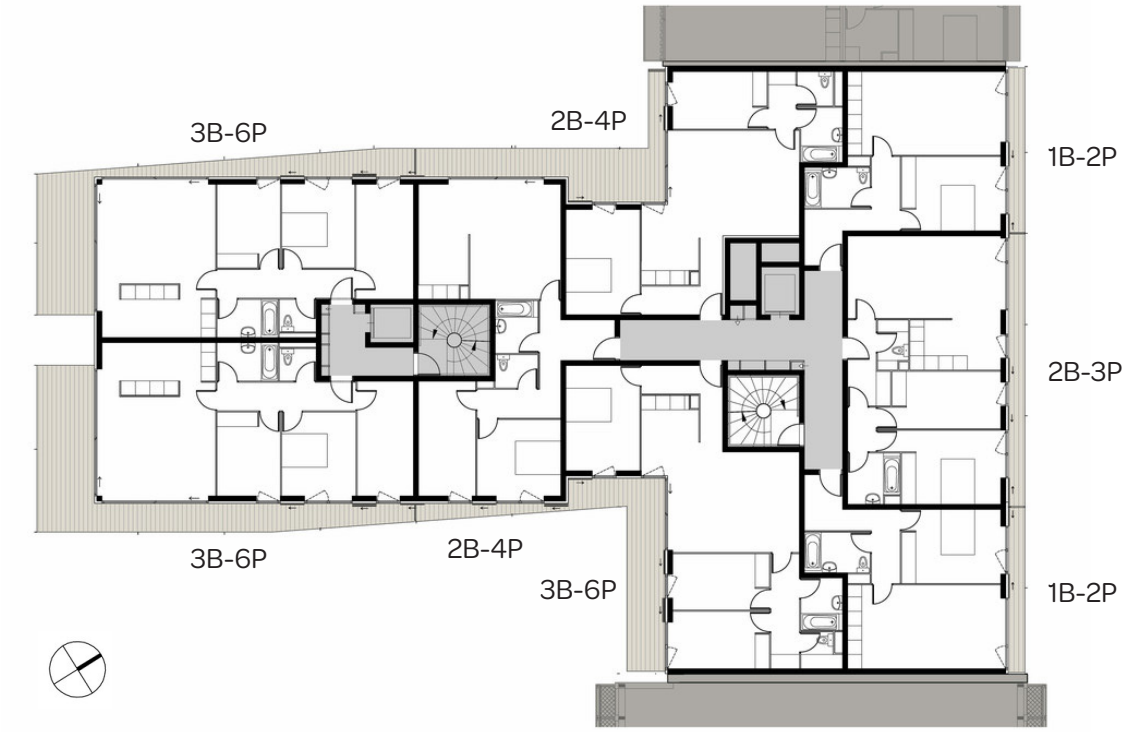
Social Rent Building: Fully residential scheme

- Social Rent Units: 105 units
- 1bed-1person ca.11 = 10%
- 1bed-2people ca.21 = 20%
- 2bed-4people ca.31 = 30%
- 3bed-6people ca.31 = 30%
- 4bed-7people ca.11 = 10%



Social Rent Building, Lot B3c ZAC Seguin Rives de Seine (105 social rent units)

TYPICAL FLOOR PLAN AND SECTION OF SOCIAL RENT BUILDING



Zoom in typical floor plan of the Social Rent Building, Lot B3c ZAC Seguin Rives de Seine

East - West Section of the Social Rent Building, Lot B3c ZAC Seguin Rives de Seine

Social Rent Building Summary Table

Net Density (FAR)	For Macro-lot B3	ca. 4.6
Net Density (dph)	For Macro-lot B3	ca. 450dph
Height	(main datum 8 storeys to street, smaller elements 6-7 storeys)	8 Storey
Tenure		
Affordable	105 units	100%
Social Mix		
	Family Accommodation (3+ bedrooms)	40%
Unit Size Mix		
	Studio	10%
	1Bed	20%
	2 Bed	30%
	3 Bed	30%
	4 Bed	10%
Private Outdoor Amenity Space	Balcony dimensions does not depend on unit size (5 m^2 for some smaller unit 1B and 2B, on average 15 m^2, some units have no balcony)	67% of units
Communal Outdoor Amenity Space	Macro-Lot Courtyard: ca. 700m^2 related to the building part of 5,500 m^2 courtyard of macro-lot B3	ca. 9m^2/ unit
Storage Space	Min 1 m^2 (limited provision)	100%
Dwelling Types		
	Apartments (no duplex)	100%
Uses Mix		
	Residential	100%

127 Longements, Open Market Building

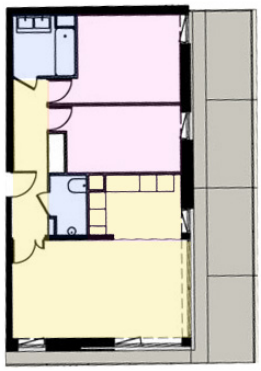
Social Rent Building: Fully residential scheme

- Open Market Units: 18 units
- Studio ca.1 = 5%
- 2bed-4people ca.9 = 50%
- 3bed-6people ca.8 = 45%

TYPICAL OPEN MARKET UNITS

Studio Apartment
(only one unit of this type located on the ground floor)

ca. 30 m² GIA
1.5 m² Outdoor Amenity space provided by balcony



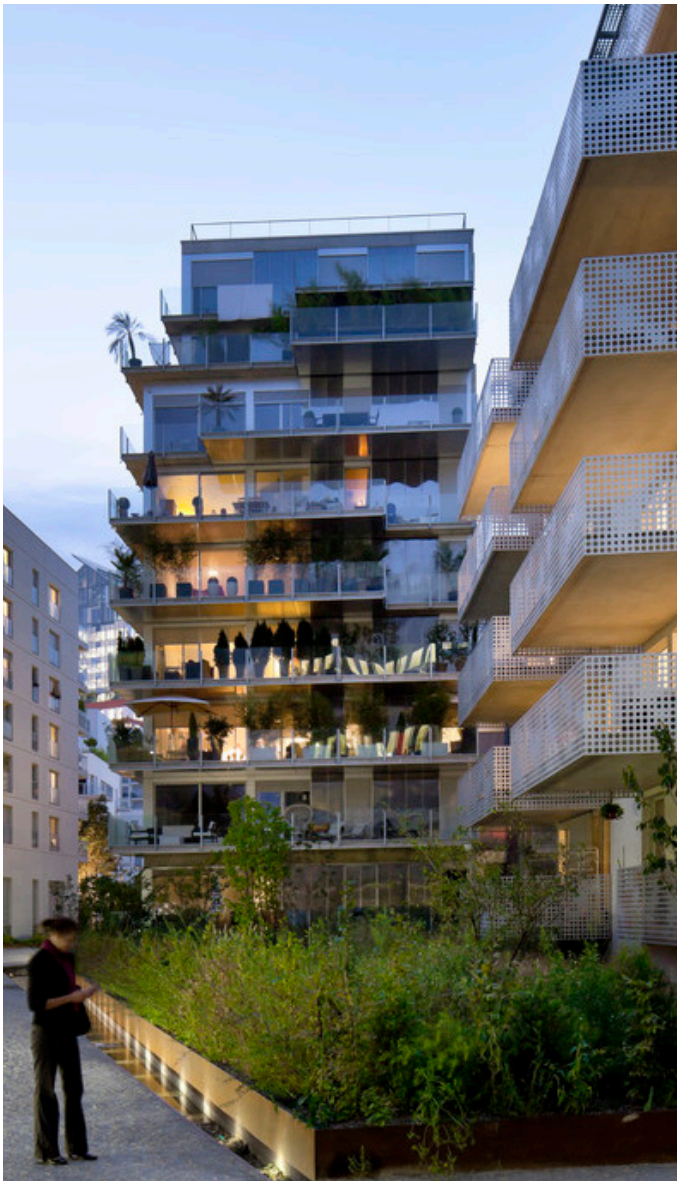
2Bed Apartment

ca. 75 m² GIA
25 m² Outdoor Amenity space provided by balcony
1.5 m² Storage

3Bed Apartment

85 m² GIA
30 m² Outdoor Amenity space provided by balcony (dependant upon articulation)

Communal Outdoor Amenity: ca. 700 m² communal outdoor amenity related to the two buildings part of ca. 5,500 m² courtyard areas of the macro-lot B3, ca. 9m² per unit.

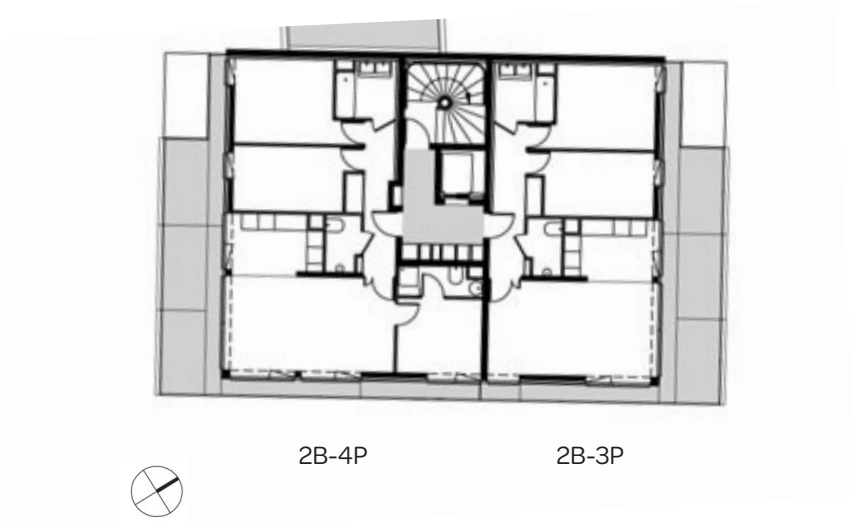


Private Market Building - Lot B3b ZAC Seguin Rives de Seine (18 open market units)

Open Market Building Summary Table

Net Density (FAR)	For Macro-lot B3	ca. 4.6
Net Density (FAR)	For Macro-lot B3	ca. 450 dph
Height		9 Storey
Tenure		
Market Sale	18	100%
Social Mix		
	Family Accommodation (3+ bedrooms)	45%
Unit Size Mix		
	Studio	5%
	2 Bed	50%
	3 Bed	45%
Private Outdoor Amenity Space	Balcony dimensions does not depend on unit size (5 m² for some smaller unit 1B and 2B, on average 15 m²)	95% of units
Communal Outdoor Amenity Space	Macro-Lot Courtyard: ca. 700m² related to the building part of 5,500 m² courtyard of macro-lot B3	ca. 9m2/ unit
Storage Space	Min 1.5 m² (limited provision)	100%
Dwelling Types		
	Apartments	100%
Uses Mix		
	Residential	100%

TYPICAL FLOOR PLANS OF OPEN MARKET BUILDING



Zoom in typical floor plan and ground floor plan of the Open Market Building - Lot B3c

127 Logements Summary Table (Social Rent & Open Market Building)

Net Density (FAR)	For Macro-lot B3	ca. 4.6
Net Density (FAR)	For Macro-lot B3	ca. 450 dph
Height		8-9 Storey
Tenure		
Social Rent	105	85%
Open Market	18	15%
Social Mix		
	Family Accommodation (3+ bedrooms)	ca. 40%
Unit Size Mix		
	Studio	8%
	2 Bed	18%
	3 Bed	33%
	4 Bed	11%
Private Outdoor Amenity Space	Balcony dimensions does not depend on unit size (minimum 5 m^2 for some smaller unit 1B and 2B, on average 15 m^2)	ca. 70% of units
Communal Outdoor Amenity Space	Macro-Lot Courtyard: ca. 700m^2 related to the building part of 5,500 m^2 courtyard of macro-lot B3	ca. 9m^2/ unit
Storage Space	Min 1.5 m^2 (limited provision)	100%
Dwelling Types		
	Apartments	100%
Uses Mix		
	Residential	100%

127 logements ZAC Seguin Rives de Seine, Social Rent (left) and Open Market (right) Buildings - Lot B3b

Permeability and circulation of the ground floor Private Market Block - Lot B3b

3.3 OPZUID - ZUIDAS Amsterdam (2014)

OPZUID; Diederendirrix architecten

The OpZuid building is a seven-storey building with 46 open market units, which provide a variety of typologies, including ground floor maisonettes, apartments, and penthouses with generous roof terraces.

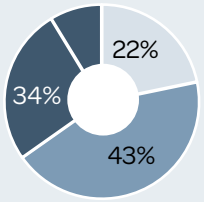
The profile of the building steps down on the south side, opening toward the sun and creating a sequence of terraces. The building is made of two arms that enclose a communal courtyard, which is edged with balconies that connect the two arms of the building on the north side.

Tenure mix:

- Free market units (rent and ownership): 46= 100%

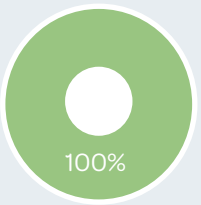
Unit size mix:

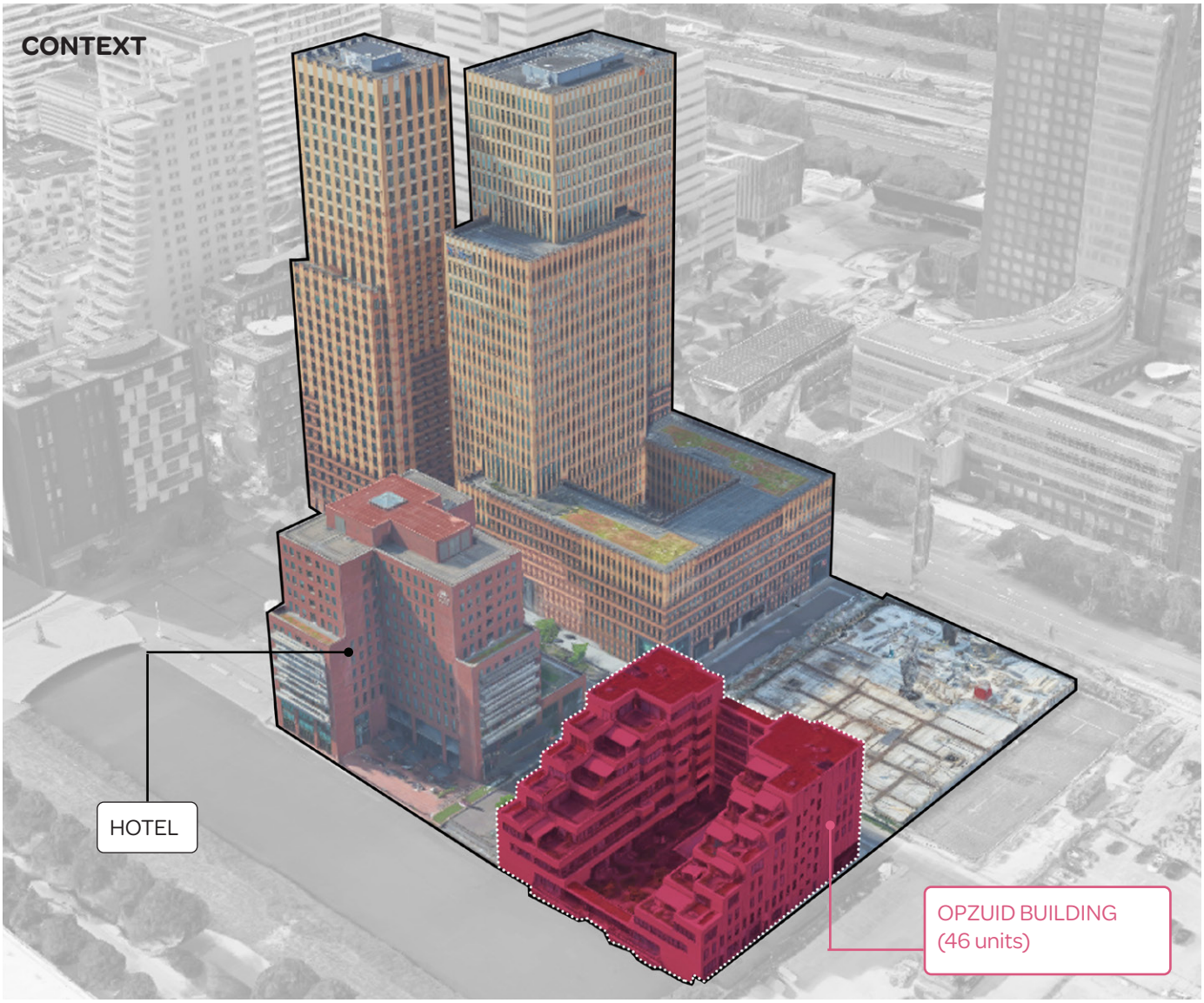
- 1bed 10 = 22%
- 2bed 20 = 43%
- 3bed 16 = 34%



Uses mix:

- Residential: 100%



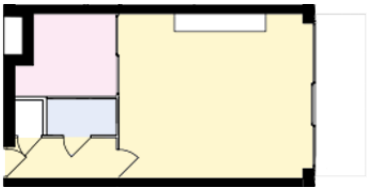


OpZuid: Fully residential scheme

- Open Market Units: 46 units
- 1 Bed: 10 units = 22%
- 2bed: 20 units = 43%
- 3bed+: 16 = 34%

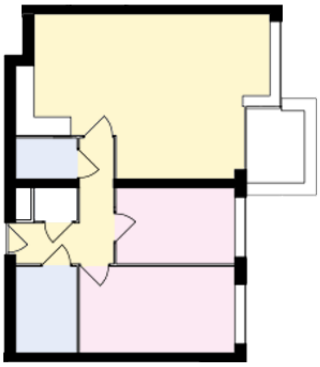
Communal Outdoor Amenity: ca. 400 m^2 of communal court provide additional amenity space to residents, ca. 8.6 m^2 per unit.

TYPICAL UNITS



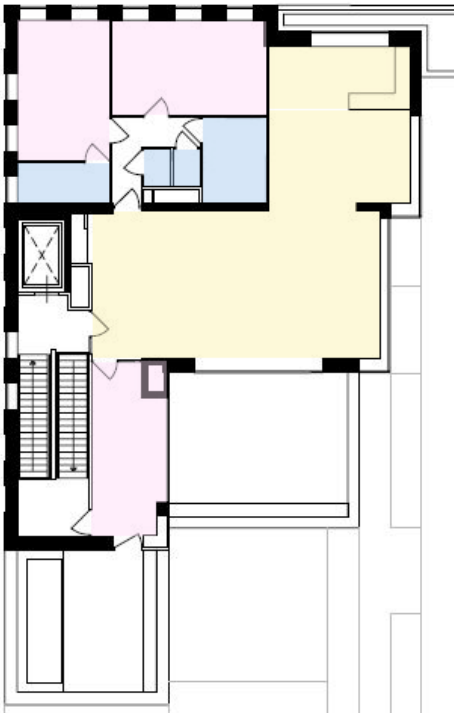
1 Bedroom Flat (22%):

Ground to Second Floor
Gross Areas: ca. 51 m^2
Storage: 1 m^2
Private Amenity: ca. 11.5 m^2 , additional to communal outdoor amenity



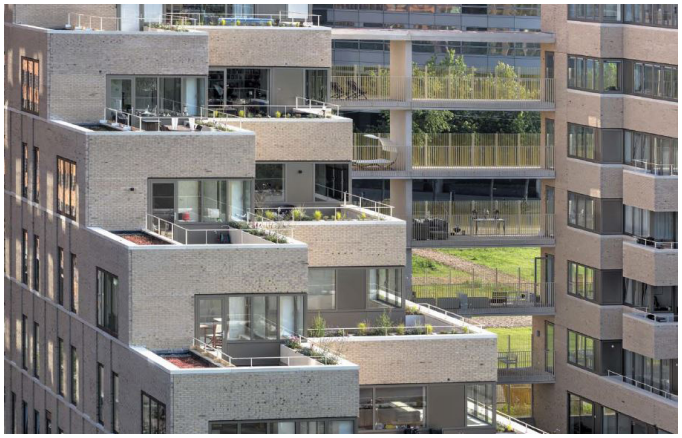
2 Bedroom Flat (43%):

Gross Areas: ca. 84 m^2
Storage: 2.5 m^2
Private Balcony: min ca. 4.5 m^2 and up to ca.10m^2 , additional to communal outdoor amenity

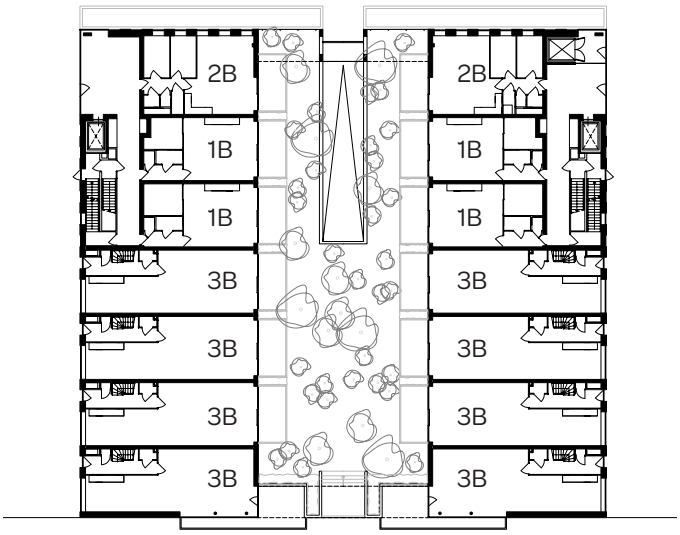


3 Bedroom Flat (8%):

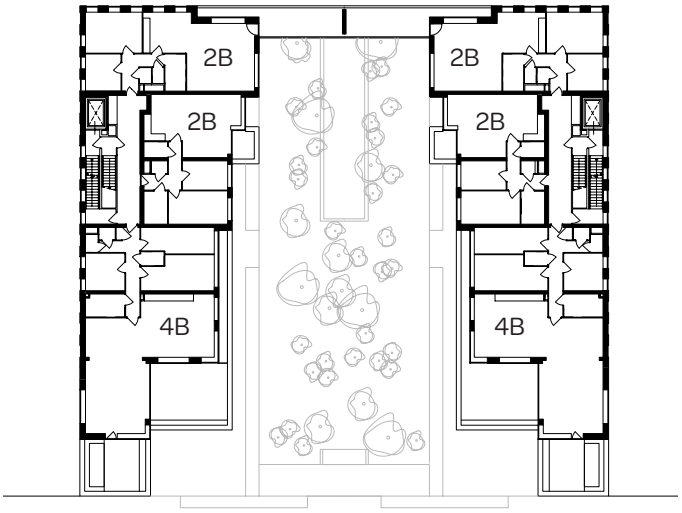
Gross Areas: ca. 130 m^2
Storage: ca. 2.5 m^2
Private Balcony: ca. 60 m^2, additional to communal outdoor amenity



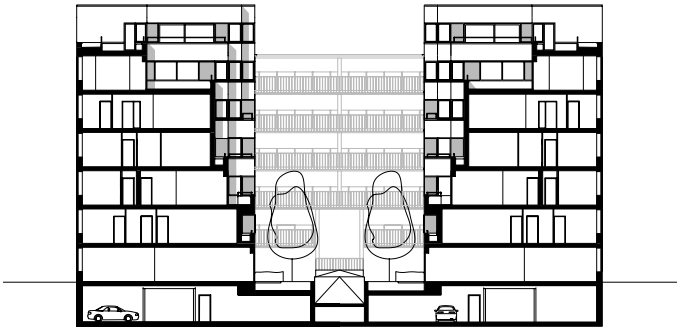
OPZUID Building pictures of courtyard and roof terraces, Zuidas, Amsterdam



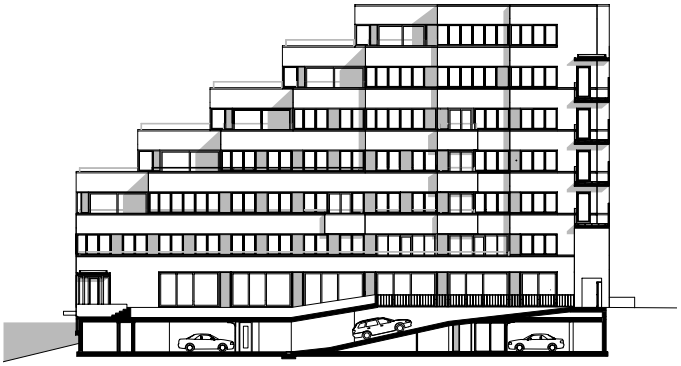
Ground floor Plan



Second floor plan



Section looking North



Section looking West

OPZUID Building pictures, Zuidas, Amsterdam

Op-zuid Summary Table

Net Density (FAR)		ca. 3.6
Net Density (dph)		ca. 230 dph
Height	(Stepping profile with three storeys on the souther edge of the plot)	7 Storey
Tenure		
Open Market	46	100%
Social Mix		
	Family Accommodation (3+ bedrooms)	34%
Unit Size Mix		
	1 Bed	22%
	2 Bed	44%
	3 Bed	34%
Private Outdoor Amenity Space	Balconies provided for all the units (min 5m^2) Upper storeys units have two roof terraces and ground floor flats and maisonettes have a terrace in the courtyard	100% of units
Communal Outdoor Amenity Space	Communal courtyard ca. 400 m^2	ca. 8.6 m2/ unit
Storage Space	1 m^2 for 1Bed units and min 2.5m^2 for larger units. Additionally outside of dwelling regulation requires min. 5m^2 that needs to be usable also as a bike storage	100%
Dwelling Types		
	Ground Floor Maisonettes	17%
	Standards Apartments	62%
	Penthouse with 50m^2 roof terrace	21%
Uses Mix		
	Residential	100%

4.GUIDELINES

Recommendations for approach to housing standards, scale, urban form, density, open space,unit size mix and tenure mix, and to typological variety for the City Edge project area.

4.1 LESSONS LEARNT & RECOMMENDATIONS

The following section summarises lessons learnt from the literature review and best practice review and from case studies analysis against the criteria that form the liveable housing matrix developed in the document's first section. The liveable housing and the liveable city matrix create a methodology for comparing case studies and can offer a helpful point of departure to form a framework to assess proposed schemes in City Edge.

The following section summarises key learnings from the literature review and the case studies. It does not aim to provide conclusive recommendations; instead, it highlights the key components that can be further developed into site-specific guidance for City Edge.

DISTRIBUTION OF TENURES, UNIT TYPES AND SIZES

Achieving a well-balanced community is a critical component of liveable and fair neighbourhoods. For this to be possible, an adequate range of units should be provided to cater for different household compositions, including families, singles and couples, young people and students, sharers and senior residents. Ideally, different typologies should be provided and accessible for households of different socio-economic levels.

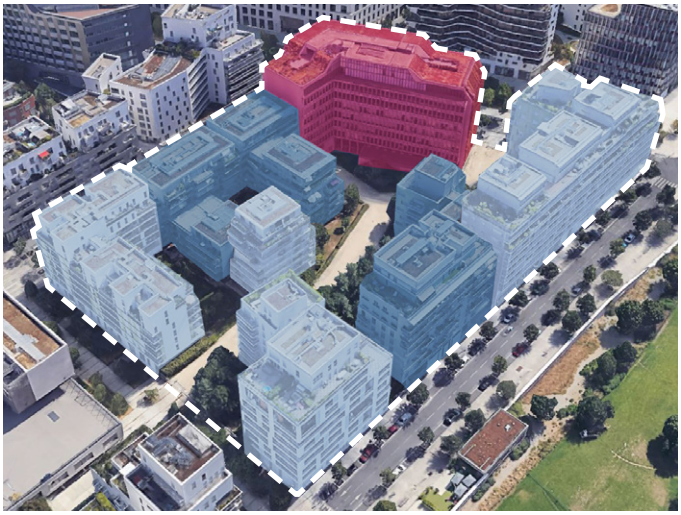
The high-density masterplans analysed as case studies show a majority of flats of different sizes, which are also adapted to cater to students, young people and elderly residents. Across the case studies, family units are successfully integrated into apartment buildings, and they are provided, although in different ratios, with a minimum of ca. 15%, in every building. The analysed masterplans provide valuable examples of how integration between different tenures and unit types/sizes can be achieved at the scale of the building, the urban block, or the urban quarter (a small cluster of blocks).

The key learnings from the analysis of the precedent examples at the neighbourhood and building scale are:

- **Tenure and size mix targets:** Targets for units size and tenure mix should respond to local housing needs. These can be prescribed through policy; masterplans that are realised over a long time scale should be able to adapt and respond

Tenure Mix - Urban Block / Quarter Scale, examples of social rent open market mix

Plot R5, King's Cross, example block



Macro-Lot B3, Le Trapeze, example block

Gershwin Quarter, Zuidas, example cluster

- Offices
- Senior Accommodation
- Affordable/Social Rent
- Open Market Homes

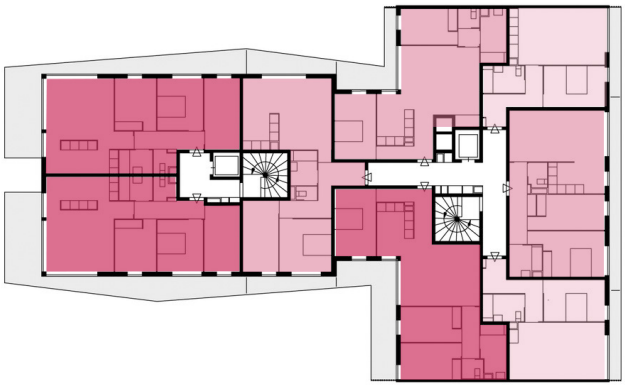
to changing needs. Affordable/social rent homes and large units with three or more bedrooms are essential to cater to the needs of families.

- **Spatial principles of mixing:** Mono-tenure and mono-size development do not foster balanced communities. Avoiding tenure and typology segregation requires developing spatial mixing principles at different scales.
  - **Urban Block/Urban Quarter Scale - Mix of unit sizes and tenures:** Different types of tenures are mixed in close proximity and the same urban block if the urban block comprises multiple buildings. Masterplans should identify on a case by case basis how the mix of tenures is achieved in the urban grain, respecting the principle of mixing tenures in each urban block or quarter. For instance, this prevents large areas formed by homes allocated to transient tenures (such as rent), hindering a sense of community. Examples review (i.e. Le Trapeze and King's Cross Plot R5) show how tenures can be mixed in one urban block and share services and amenities, for instance, communal courtyards.
  - **Building Scale - One tenure and mix of unit sizes:** The case studies review shows that different tenures are usually not mixed in the same building for practical reasons related to management. However, units of different sizes are provided within one building, including family size units. A mix of units sizes is shown across all the case studies, with family size units provided in every building.

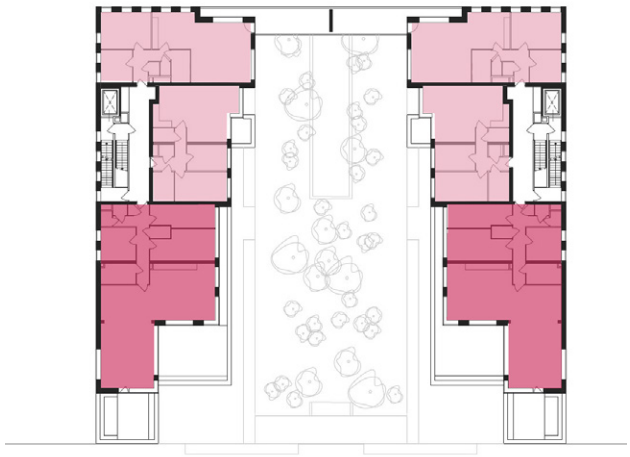
- **Tenure blind development:** The quality of development does not depend on tenure. The housing stock often changes tenure type over time; high quality and a balanced mix of units sizes in every area are critical to ensure flexibility in the long term. Tenure blind principles require that the same design standards - materials and details, layouts, and a balanced unit type and size mix are applied irrespective of tenures. It is noted that the unit size mix needs to respond to local housing needs assessments, and therefore, often, social housing tenures have a larger share of family-size units.

Unit Size Mix - Building Scale, examples of unit sizes mixed on a typical floor

Fenman House, King's Cross, typical floor



127 Longements, Le Trapeze, Boulogne Billancourt, typical floor



Op-Zuid, Zuidas, typical floor

1 Bed
2 Bed
3 Bed

DENSITY FOR A LIVELY NEIGHBOURHOOD

The analysis discusses the importance of density to achieve liveable urban growth within the framework of the 15-minutes city. Density is a crucial element to ensure a critical population mass that sustains various daily needs near dwellings, promoting sustainable journeys, well-being and access to opportunities in every neighbourhood. Section 01 identified critical residential densities to achieve this through a literature review.

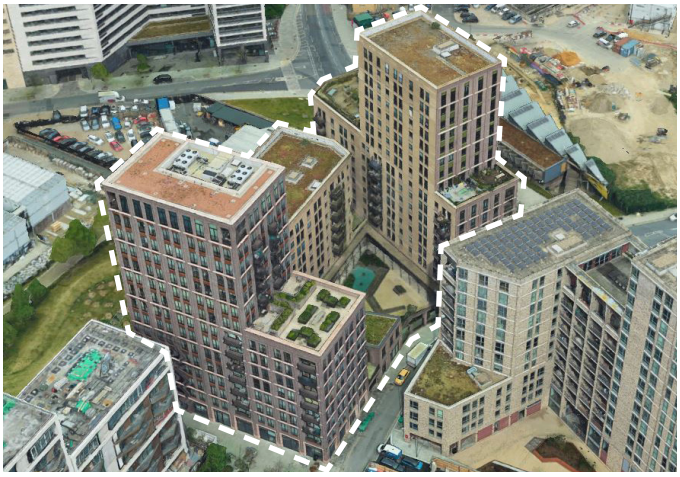
- **Minimum:** 70 dwellings per hectare (gross) is the minimum density to support 15-minute neighbourhoods, and this should be considered the inferior limit of low-density areas.

- **Transport corridors and centres:** 100 dph (gross) is the recommended minimum density in high intensity areas, in the proximity of transport hubs, along main movement corridors and around neighbourhood hubs (cluster of retail and services like town centres and local centres).

- **High-density threshold:** Higher densities above 150 dph (net) can be positive from a social, economic and, depending on the urban form, environmental sustainability. However, they can pose challenges to the liveability of the homes and residents' perception. As highlighted in the subsection on the next page, the design quality is critical at these higher densities, and development proposals should be further scrutinised.

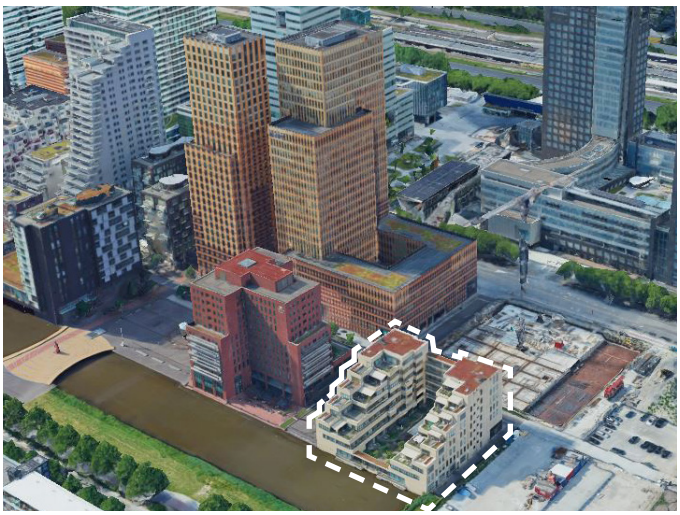
The three masterplans analysed are comparable in scale and type of development and show consistent plot ratio and plot coverage. These indicate an efficient use of land and compact urban development. Adequate built density (FAR) should be established based on the character area and location of each development and tested during masterplan development phases, as introducing ranges for built density (FAR) and plot coverage influence what building typologies can be developed. These density parameters should be established as case-specific. In the City Edge Project context, they should align with what is indicated for each character area in the Strategic Framework. The case study masterplans also demonstrate that the interplay of different land uses can provide the critical population to support a liveable mix of uses.

Zuidas - Example Block Urban Form



King's Cross - Perimeter Block formed of three buildings around amenity courtyard. 7/8 storeys main building height datum with taller elements up to 16 storeys.

Le Trapeze - Large Perimeter Block (macro-lot) formed of around multiple building around generous amenity courtyard. 8 storeys main building height datum with set-backs up to 11 storeys.



Zuidas - Small perimeter blocks formed of one building. Main building datum 8 storeys with some taller blocks, up to 20 storeys.

URBAN FORM - HEIGHT MORPHOLOGY AND TOWNSCAPE

The case studies highlight a consistent approach to liveable urban form, which creates, even at higher density conditions to develop a mix-use city with a placeshaping based on a traditional network of streets that have:

- **Plot Coverage Ratio:** The plot coverage is above 50% in all case studies. Making good use of the building footprint contributes to limiting heights while achieving high density. The main building datum across the three projects is set at eight storeys.

- **Urban Form:** Well defined perimeter blocks, with continuous fronts on the edge of the plot, forming a legible network of streets.

- **Ground Floor:** Ground floor level, visible and accessible from the street, integrates retail and services. At higher densities, the ground floor space can contend between ancillary uses for the residents and commercial space/services. Perimeter blocks with clear fronts and backs efficiently organise uses competing for space.

- **Townscape:** A recognisable shoulder height, preferably 4/8 storeys, creates a recognisable urban townscape typical of European cities. This allows maintaining a well-proportioned street section, with taller elements integrated to achieve higher density without compromising the experience of the public realm. Taller elements can be integrated as setbacks or as towers part of a perimeter block.

- **Compact development:** A compact urban form of 4-8 storeys perimeter blocks offers advantages from an environmental sustainability perspective:
  - Smaller building envelopes (good ratio between the area of the facade and the enclosed volume). This ensures reducing heat gain in summer and heat loss in winter due to shared walls;
  - Less material is required for the façade and the façade superstructure and simpler structural elements, resulting in less embodied carbon.

Density Comparison Table for the Masterplan Case Studies

ESTIMATED VALUES	King's Cross	Le Trapeze	Zuidas
Net Density (dph)	ca. 450 dph	ca. 300 dph	ca. 500 dph
Gross Density (dph)	ca. 90 dph (housing less than 50% of land uses)	ca. 150 dph	ca. 40 dph (housing less than 50% of land uses)
Net Built Density (FAR)	ca. 5	ca. 4	ca. 6
Gross Built Density FAR	ca. 3	ca. 2	ca. 2-3
Average Plot Coverage Ratio (net)	ca. 0.7	ca. 0.55	ca. 0.65
Site Coverage Ratio (gross)	ca. 0.45	ca. 0.4	ca. 0.35 (to date)

RELATIONSHIP BETWEEN DENSITY AND DESIGN ABOVE 150 DPH

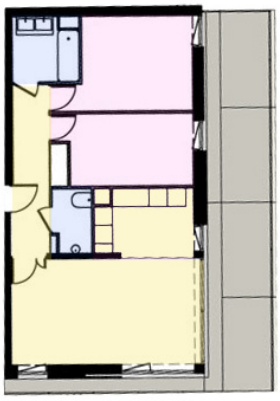
The relationship between design, density and sustainability becomes central at increasing densities. A review of qualitative studies of living in high density schemes highlights the following as sensitive areas of building design, as detailed in Section 01. Some of the following issues encompass all apartment buildings; however, they become critical, especially at higher densities:

- Creating a sense of community through stable tenancies and design elements that foster interactions.
- Providing flexibility within dwellings with adaptable layouts that allow for play space.
- Ensuring adequate comfort and dimension for outdoor amenities.
- Providing Playspace that is overlooked, easy to reach and well-oriented to maximize its use.
- Integrating functional - transport and waste ancillary spaces.
- Ensuring privacy, outlook and daylight access.
- Including building management and management plans.
- Mitigating overheating and noise.

Typical Case Studies Examples

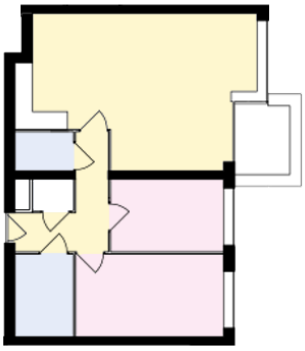
- Min. 70 m^2
- 5 m^2 Private outdoor amenity space
- Additional communal amenity space, ca. 9 m^2 per unit
- Storage space by the entrance ca. 2 m^2

King's Cross, Typical 2Bed Flat



- ca. 75 m^2
- 25 m^2 Outdoor Amenity space provided by balcony
- Additional communal amenity space, ca. 9 m^2 per unit
- 1.5 m^2 Storage

Le Trapeze, Typical 2Bed Flat



- ca. 85 m^2
- Private Balcony: min ca. 4.5 m^2 and up to ca.10 m^2
- Additional communal amenity space, ca. 9 m^2 per unit
- Storage: 2.5 m^2

Zuidas, Typical 2Bed Flat

DWELLING STANDARDS

Dwellings and rooms sizes, storage, the layout of functional spaces (kitchens and toilets), and private outdoor amenities are critical to achieving liveable housing. Housing standards are prescribed differently by policy across the case studies analysed. Provision of storage space within dwellings is included in the case studies analysed; however, it has been noted that the standard dimension observed, which are between 1.5 and 3 m^2, are below the requirements of the Irish Space Standards.

Storage space in dwellings is usually at the entrance and should be proportional to the number of rooms. Importantly, it should be demonstrated that unit layouts allow additional storage space with furniture if needed without blocking windows and passages. Remote storage space, located, for instance, in basements or on the ground floor, could be considered to improve provision without impacting units layouts (this was not observed in case studies).

OUTDOOR AMENITY SPACE

Provision of outdoor amenity space is critical for liveable housing and, more importantly, for high density schemes.

- In all case studies, between a quarter and a half of the site area is dedicated to open space, including parks, squares, communal gardens, play, sport, blue infrastructure and pedestrian areas or linear parks.

Outdoor amenity spaces should be organised to provide a hierarchy of spaces and a granular distribution throughout plan led areas, which incorporate different scales of open spaces that include, communal/semi-private, and public open spaces, as follows:

- **Private outdoor amenity space:** Private outdoor amenity space should be provided to all units. The size can be related to the number of rooms, and it should have a minimum dimension to allow the use of the space. National Space Standards prescribe the minimum quantum in the Irish context.
- **Small scale outdoor amenity space at the urban quarter level:** Pocket parks, communal gardens, courtyards or neighbourhood squares

near homes are critical for daily access to outdoor amenity space, especially in apartment schemes. Outdoor amenity space should be easy to access from every home, being part of the block in communal courtyards, on buildings' doorstep, or near homes within 400m or 5 minutes walk. These spaces can be small in scale and intimate in nature, but they should be distributed across each neighbourhood. Part of these should be public open spaces to provide a social space where residents of different blocks can meet.

- **Large scale public open space at the neighbourhood or city level:** Larger public open spaces such as larger parks, squares, and playing fields, with opportunities for active spaces and contact with nature, are also critical and should be provided within a 15-minute cycle.
- The balance between communal/semi-private amenity space and public open space can differ between plans; however, open space should be made available at different scales close to homes for everyday use.

Amenity space should cater to different age groups, including children, teenagers, adults, elderly residents and for different uses encompassing play, rest, socialise, and sports and should include the following:

- **Playspace:** Playspace should be provided to cater to different age groups. It is recommended that adequate play, especially for small children, is integrated into the block or the immediate vicinity and is well overlooked and exposed.
- **Sports fields:** Opportunities for sport and an active lifestyle can significantly contribute to health and well-being and should be easy to reach within a 15-minute cycle to make efficient use of outdoor amenity space and ensure a good balance between biodiversity, passive open space and active open space, sports fields should be shared between different clubs and sports codes..

The high-density case studies analysed suggest that generous open space is critical, although it can be designed differently.

Quality and Character: To sum up the case studies show the importance of a varied public realm, providing:

- spaces of different scales, from intimate pocket parks or courtyards to larger parks,
- opportunities for a range of activities,
- a varied character, including hard squares, green landscape and linear parks, or greenery integrated into the street,
- In addition, water features to add character to the public realm (e.g. canals, rivers, SuDS, retention ponds)

Open Space examples

King's Cross, London

Le Trapeze, Boulogne Billancourt

Zuidas, Amsterdam

5. APPENDIX

5.1 APPENDIX A - DENSITY CALCULATION METHODOLOGY

Density throughout the document is calculated according to the methodology illustrated below. It is essential to note that the different ways to calculate density affect the results and the ability to formulate meaningful comparisons.

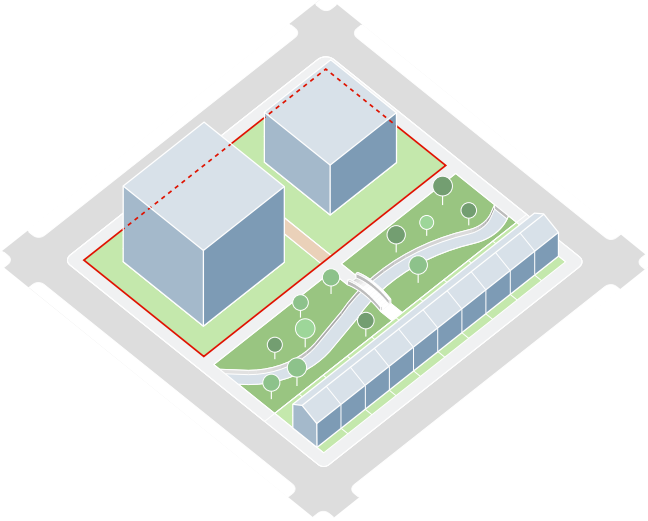
The first difference is between gross and net density; this difference refers to the site area accounted for in the density measure.

Net Density

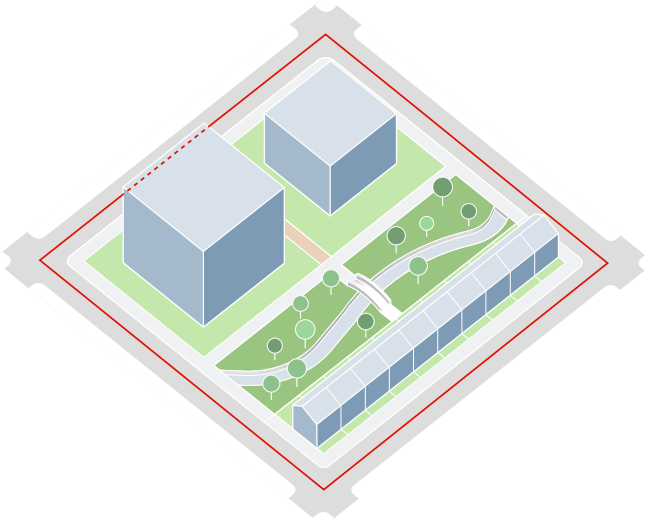
Net density considers the net site, defined as the developable land or plot. It broadly refers to the area that can be built and often reflects the difference between private land and the public realm. This density account is helpful for designing a singular urban block or a cluster of buildings with a defined plot layout and for the architectural design scale.

Gross Density

Gross density refers to the gross site, which includes the developable area or plots and the amount of land and amenities needed to serve a specific area's population. It is debatable if gross density should include or not include open space, which is classified as a non-buildable area. In the view of this study, it is appropriate to include open space at the neighbourhood level but exclude regional scale open space (parks over 50ha) and regional transport infrastructure (e.g. national rail lines). This reflects the holistic approach of the study, which considers various uses, active travel connections, and open space integral to housing liveability. Gross density is suitable for larger areas at the neighbourhood level. As it includes the streets, it can well represent areas that does not have a defined plot structure or when comparing different typologies, which may have different access requirements. The gross site boundaries are drawn at the street centre line or up to the edge of large scale open space features or infrastructure excluded from the calculation. Unless specified, the study refers to gross densities.



Net Site Area including the developable land or plot.

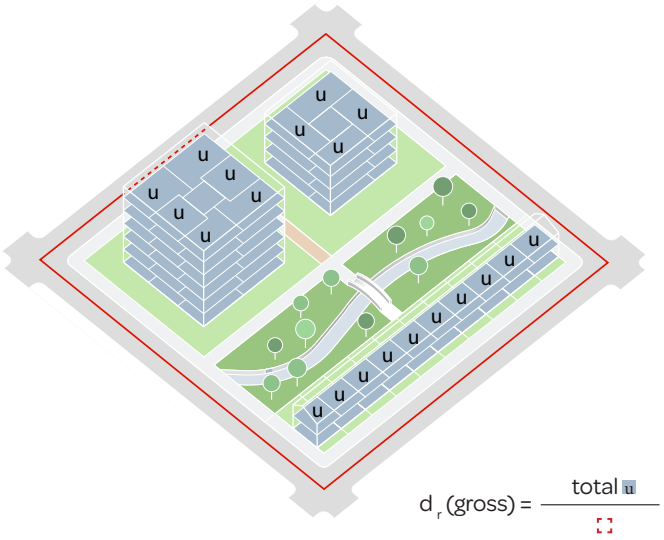


Gross Site Area calculated to the street centreline and including neighbourhood scale public realm.

Residential density

Residential density in the study is calculated as dwellings per hectare, which represents the factor between the number of dwellings in a defined site and the site area (either net or gross). This way of expressing density is preferred because it correlates directly with population density, a useful parameter for planning services and amenities. It also provides a parameter that can be used for planning future developments. The limitation of this density measurement is that it represents only the residential part of a neighbourhood. Net residential density (net dph) refers to a net site area; gross residential density (gross dph) refers to a gross site area (example across).

$$d_r = \frac{\text{number of dwellings}}{\text{site area}}$$

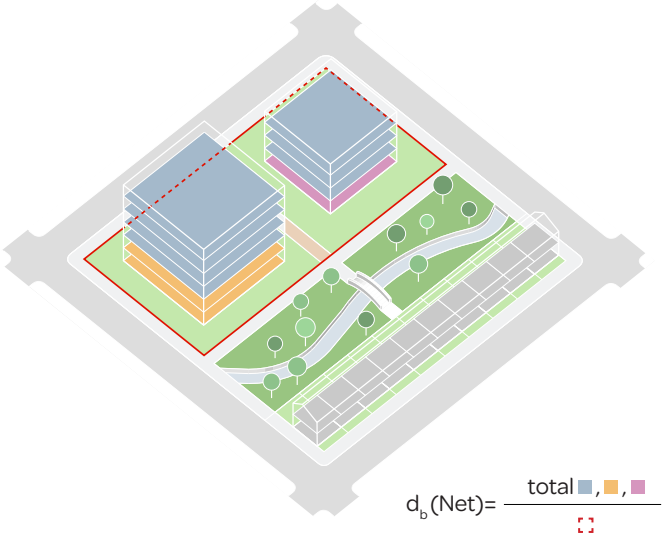


Gross residential density (gross dph)

Built density

Built density is calculated in the study as a plot ratio or FAR, representing the factor between the gross built floor area encompassing any use in a defined site and the site area (either net or gross). This density measurement can account for a mix of uses and refers more directly to an area's built form and general development quantum. Net built density (netFAR) refers to a net site area (example across); gross built density (grossFAR) refers to a gross site area.

$$d_b = \frac{\text{total GIA (all uses)}}{\text{site area}}$$

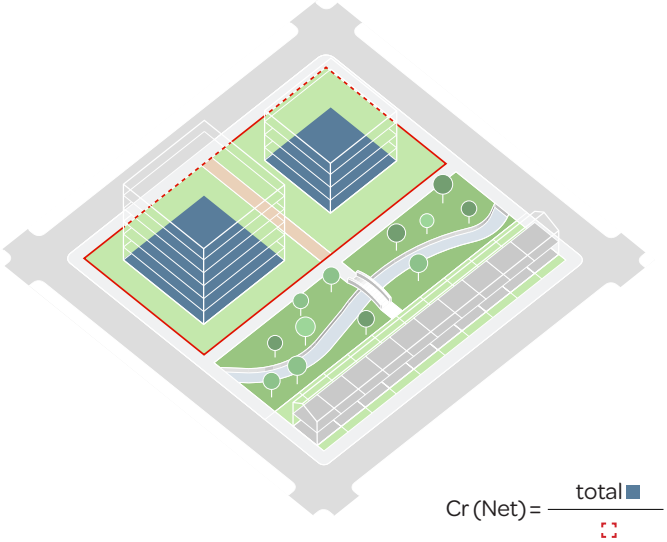


Net Plot Ratio (net FAR)

Coverage ratio

The coverage ratio is the factor between the building footprint and the site area. This measure represents how a specific quantum of development is distributed across the site and helps to correlate plot ratio and building heights. Net coverage ratio is referred to as plot coverage ratio and refers to a net site area; gross coverage ratio is referred to as site coverage and refers to gross site area.

$$Cr = \frac{\text{total building footprint}}{\text{site area}}$$



Plot Coverage Ratio (net).

5.2 APPENDIX B - GLOSSARY

The terminology associated with housing provision and especially affordability can be context-specific. However, the document makes an effort to refer to the terms as per the following definitions:

Family-size units: homes with three or more bedrooms located in apartment buildings or houses.

Affordability: broadly the ability of a household to cover its living expenses within the constraints of its income. It is generally considered unaffordable living accommodation that requires more than 30% of the household income.

Private Rent or Free Market Rent: rent negotiated individually between household and landlord. In some countries, rents are limited in cost or annual increase by law; in others, they are a private negotiation.

Homeownership or Owner-Occupation: The unit's residents are the legal owners of the unit. The dwelling can be owned outright or with a mortgage.

Social/affordable housing: Social/affordable housing of any tenure type is provided at a price lower than market rates. The discount point, rent mechanisms and allocation are context-specific.

Types of social/affordable housing

Social Rent/ Social Housing: broadly understood as housing provided for those who can not serve their own housing needs. The definition is context-specific; in the Netherlands, France and Austria, it refers to accommodation provided by public bodies and limited profit housing associations, in the UK to housing provided at below-market rates, in France and Germany to the streams of funding available for its delivery. Rental rates and eligibility criteria are decided at the state or regional level in most countries. In this research, the term has been used to identify housing provided below-market rate, to a target population according to access criteria, and broadly to the lower-income households.

Intermediate affordable housing: rented or shared equity tenures that are affordable for the mid-income segment of the demographic. These schemes often target middle-class young people who struggle to access the housing market, key workers, or households narrowly above the threshold to qualify for social housing. These schemes often have eligibility caps on income.

Municipal/council/public housing: Housing that is built and managed by local authorities or public bodies directly controlled by them. Form part of social housing provision.

Limited profit housing associations: providers that build and manage housing non for profit. Usually, they have the mission of providing social and affordable housing.

Cost-rental: A rental arrangement in which secure, quality accommodation is provided at rates that cover the cost of such accommodation (cost of design, site acquisition, building and long-term maintenance) in full but avoid the inclusion of a profit margin in the overall cost of renting.

5.3 APPENDIX C - TYPOLOGIES MIX - SOUTHERLAND ROAD
Waltham Forest, London

Levitt, Bernstein

To help inform suggestions in the City Edge Strategic Framework around providing a mix of dwelling typologies in higher density areas (including own door units, houses and duplexes), the following case study provides an example of how this can be achieved.

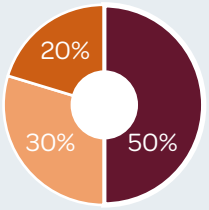
The design of Southerland Road incorporates a range of typologies and uses into an urban block completing the existing urban fabric and carefully integrating the scale of the new buildings with the surroundings. The project was analysed for its mix of housing typologies in one urban block; however, it was not included in the main discussion of the study as it does not form part of one of the large scale masterplan selected.

The project provides 64 new homes in the form of mews houses and apartments and a health centre located on the ground floor. 50% of the units are affordable (including affordable/social rent and shared ownership), and 50% are free-market units. The example demonstrates how different typologies can be successfully integrated into one plot with different tenures in the same building. However, it does not perform well in terms of its unit size mix overall, with only 11% family homes provided as part of the affordable/social rent units

Southerland Road - Mix of houses and apartments (above) and stacked land uses (below)

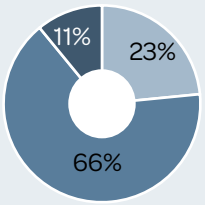
Tenure mix:

- Free market units: 32= 50%
- Social/affordable units: 19= 30%
- Shared Ownership: 13= 20%



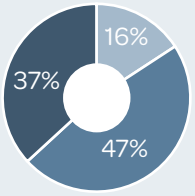
Unit size mix - All tenures:

- 1bed 15 = 23%
- 2bed 42 = 66%
- 3bed 7 = 11%



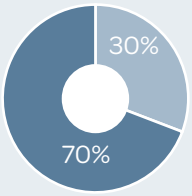
Unit size mix - Affordable/Social Rent:

- 1bed 3 = 16%
- 2bed 9 = 47%
- 3bed 7 = 37%



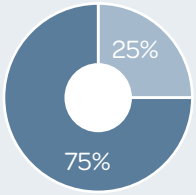
Unit size mix - Shared Ownership:

- 1bed 4 = 30%
- 2bed 9 = 70%
- 3bed 0 = 0%



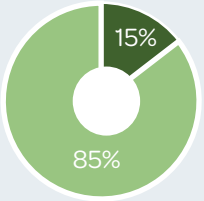
Unit size mix - Free Market:

- 1bed 8 = 25%
- 2bed 24 = 75%
- 3bed 0 = 0%



Land uses mix:

- Residential: 85%
- Health Centre: 15%

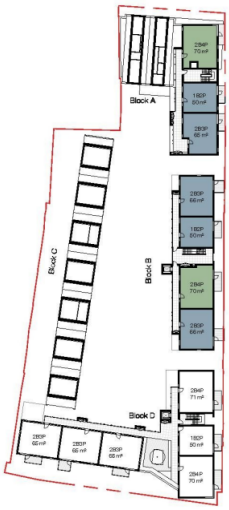


Levitt Bernstein Planning Application for Southerland Road https://builtenvironment.walthamforest.gov.uk/planning/index.html?fa=getApplication&id=19143

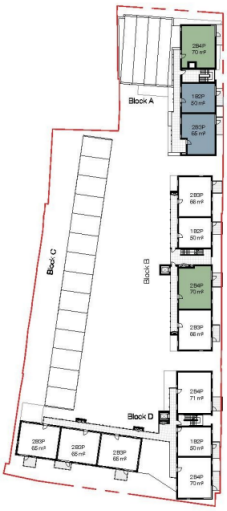
https://www.levittbernstein.co.uk/project-stories/sutherland-road/

Ground floor plan

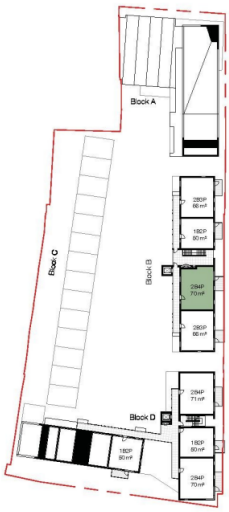
First floor plan



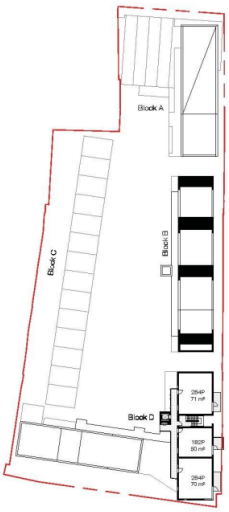
Second floor plan



Third floor plan



Fourth floor plan



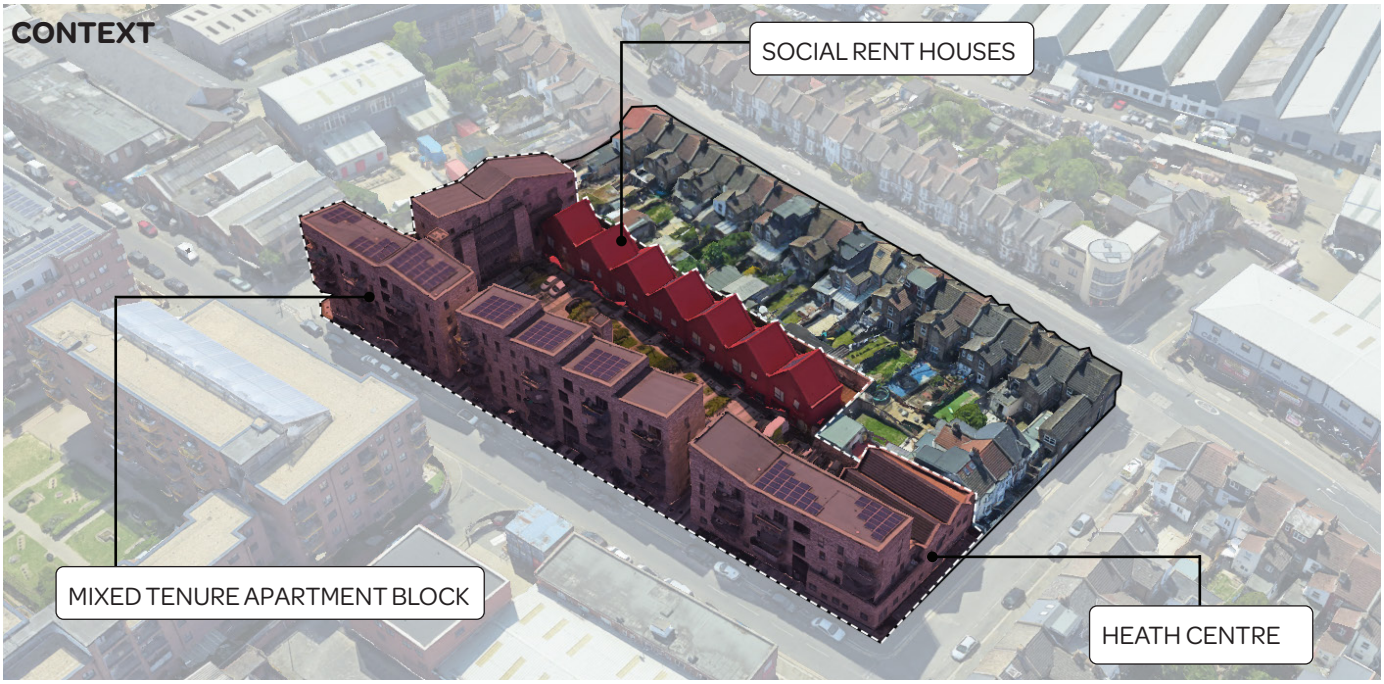
Fifth floor plan

Mix of tenures on the block:

Houses provide three bed units which are all allocated to social/affordable rent.

Social/affordable rent, shared ownership, free market apartments are mixed in the remaining apartment blocks.

KEY
- Social/affordable rent
- Shared ownership
- Free market
- Health centre



TYPICAL UNITS

1 Bedroom Flat (15%):

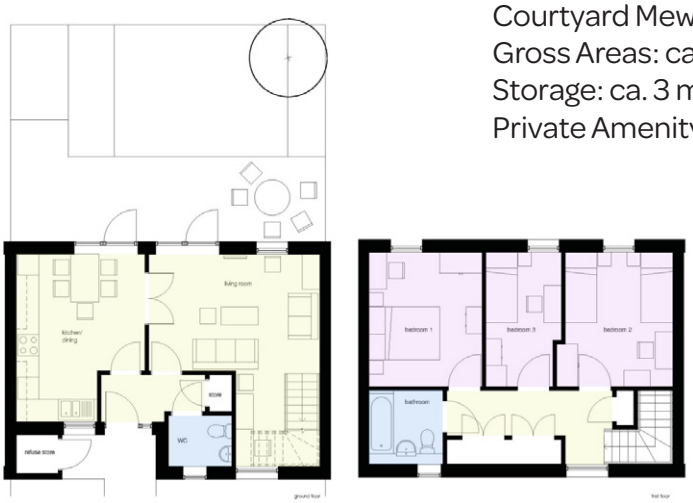
Ground to Fifth Floor
Gross Areas: ca. 50 m^2
Storage: ca. 1,5 m^2
Private Amenity: ca. 6 m^2

2 Bedroom Flat (66%):

Ground to Fifth Floor
Gross Areas: ca. 70 m^2
Storage: ca. 2 m^2
Private Amenity: ca. 7 m^2

3 Bedroom House (11%):

Courtyard Mews
Gross Areas: ca. 98 m^2
Storage: ca. 3 m^2
Private Amenity: ca. 70 m^2



Communal Outdoor Amenity: ca. 780 m^2 of communal courtyard ca. 60 m^2 of terraces at the second floor provide additional amenity space to residents, ca. 13 m^2 per unit.

Southerland Road - Mews Houses

Southerland Road Summary Table

Net Density (FAR)		ca. 1.2
Net Density (dph)		ca. 140 dph
Height	(Stepping profile with three storeys on the souther edge of the plot)	5 Storey
Tenure		
Open Market	32	100%
Shared Ownership	13	20%
Affordable/Social Rent	19	50%
Social Mix		
	Family Accommodation (3+ bedrooms)	11%
	Wheelchair Accessible Units	10%
Unit Size Mix	(all tenures)	
	1 Bed : 15 units	23%
	2 Bed: 42 units	66%
	3 Bed : 7 units	11%
Private Outdoor Amenity Space	Balconies provided for all the units. 1B units have a 6 m^2 balcony and 2B have 6 and 7 m^2 balconies. Houses have ca. 70 m^2 of garden area.	100% of units
Communal Outdoor Amenity Space	Communal courtyard ca. 840 m^2	ca. 13 m^2/ unit
Storage Space	ca. 1,5 m^2 for 1B units, ca. 2 m^2 for 2B units and ca. 3 m^2 for 3B units	100%
Dwelling Types		
	Houses	11%
	Standards Apartments	78%
	Apartments with front doors on street	11%
Uses Mix		
	Residential	85%
	Health Centre	15%

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