



Market-facing, mixed-used, mixed-tenure developments: Snapshot of International Examples.

Informing Project 1.81
Developing a social and affordable housing
investment tool

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May 2022

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Acknowledgements

This research has been developed with support provided by Australia's Sustainable Built Environment National Research Centre (SBEnc). SBEnc develops projects informed by industry partner needs, secures national funding, project manages the collaborative research and oversees research into practice initiatives. Core Members of SBEnc include ATCO Australia, BGC Australia, Government of Western Australia, Queensland Government, Curtin University, Griffith University, RMIT University and Western Sydney University. This research would not have been possible without the valuable support of our core industry, government and research partners.



Mancini F, James A., Perugia F., Glusac T. (2022) Market-facing, mixed-used, mixed-tenure developments: snapshot of international examples, Australia, SBEnc.

1. Background

This report summarises key international examples of market-facing, mixed-used, mixed-tenure developments as a targeted strategy for urban renewal. It has been prepared to inform the development of the SBEnrc social and affordable housing investment tool. The context around social and affordable housing delivery varies internationally, from long-held traditions of providing housing to more recent approaches, and so does its definition.

2. Defining Social Housing

In general, we can safely say that social housing refers to housing provided and managed by a government body or a non-profit entity (i.e., housing associations, community providers etc.). Doling (1997) argues that social housing differentiates from other forms of housing provision because of three main factors:

- social housing landlords are not profit-motivated;
- allocation is based on needs;
- supply is dictated by social demand.

The Organisation for Economic Co-operation and Development (OCDE 2020) defined social housing as "residential rental accommodation provided at sub-market prices that is targeted and allocated according to specific rules, such as identified need or waiting lists" (4).

Sisson and Rogers (2020) state that while "Western Europe and the Nordic states have larger social housing sectors compared to North America, Australia and New Zealand, and Southern and Southwestern Europe" (69), some common trends in responses and management of social housing are identifiable. These include "the tightening of budgetary constraints, the slowing and in some cases halting of new construction, the selling of housing stock and redevelopment of estates, and narrowing of eligibility criteria" (Sisson and Rogers 2020, 69). Below is the definition and understanding of social and affordable housing relative to the Countries where the identified case studies are located.

2.1 European Union (EU)

The definition of social and affordable housing in Europe is not consistent, as each state operates in a different context. The heterogeneity of the European Union's legislative, economic, and social contexts implies that each member has a different definition of social housing concerning the legal status of the landlord, renting methods, funding strategies and target population. While in Latin America and Asia, the concept refers only to owner-occupied housing, in Europe, it includes both owned and rented, with a predominance of the latter.

The Encyclopedia of Housing (2012, 50) proposes two definitions for social housing. The first one includes all forms of housing programs that the public sector funds directly or indirectly through subsidy or social assistance. This general definition includes the participation in social housing projects typically led by the public sector. Within this framework, when the housing is provided by commercial landlords (see Germany and Spain), private developers and end-users receive support through indirect public subsidies. These include tax relief on mortgage interests, tax shelters for homeownership, financial support to building companies, depreciation allowances associated with investments in residential developments or provision of public services such as utilities, sewerage systems and roads at a price rate below market.

The second definition describes a more traditional approach based on public housing as government-owned to guarantee accessibility at a lower rental or ownership price, targeting selected socio-economic groups. This approach today includes the private sector's direct participation in non-profit organisations (Netherlands and United Kingdom), together with innovative, publicly supported strategies, such as rent-geared-to-income, limited-dividend, and non-profit housing that social agencies and cooperatives can offer at a convenient price point.

Within the realm of these two connotations and the diverse meaning from country to country, the notion of social housing relies on three basic principles. The first principle identifies the general interest of the population as its mission. The second focuses on increasing affordable/social housing supply through policies and strategies that enable building, managing and purchasing housing for social purposes. The third principle identifies the target population mainly in terms of socio-economic status and, or in association with other forms of vulnerability such as disability, substance dependency, etc. (2013, 8-9).

2.2 United Kingdom (UK)

An example of social housing system similar to the one present in Australia is offered by the United Kingdom (UK). Here local Councils and non-for-profit organisations—such as housing associations and foundations—endeavour to provide access to social housing by owning, managing, and renting dwellings at a lower price than the current market price. Usually, the tenants who have access to social housing need to meet specific criteria. As a social housing tenant, your landlord could be either a housing association or Council. The mission is common to both government and non-profit agencies.

According to Shelter England—a foundation born to address homeless issues in the UK—social housing is defined as a service providing homes at a rent that is correlated to local incomes to "provide a truly affordable, secure housing option for people across the country". (England Shelter, May 3, 2022). This service has been increasingly offered through subsidised private intervention, especially since the Thatcher Government 1980 introduced the Right to Buy. This policy successfully encouraged social housing tenants to buy the council home they lived in reasonably priced. The policy determined the reduction of the public housing stock and the progressive marginalisation of the social rental sector in the UK in favour of a private-led initiative to provide social housing.

2.3 United States (US)

In the context of the US, social housing could be defined as the totality of affordable housing programs, including public housing, non-profit-managed rentals, privately-run, limited-equity cooperatives, all community land trusts, and income-restricted units delivered through the Low-Income Housing Tax Credit (LIHTC) programme (OECD 2020). The US Department of Housing and Urban Development (HUD) is the administrative body distributing Federal aid to local housing agencies (HAs) that directly manage the housing. In addition, HUD provides technical and professional assistance in planning, developing, and managing public housing across all States.

The major federal funding streams for affordable housing in the US includes Tax Credits, rental assistance programs, operating and capital fund, National Housing Trust Fund, Capital Magnet Fund, Rural Housing Service programs, Qualified Opportunity Zone Designations, competitive grant program from housing renewal (community-led), PPI, Community Development Block Grants.

2.4 Canada

Social housing is housing subsidised by governments (often developed in collaboration with the private and public not-for-profit sector) that is made available to those who would otherwise be unable to afford to live in suitable and adequate housing in the private market.² It is generally distinguished from affordable housing provision because of the long-term operating or rental subsidies that assist low-income households. The provision of social housing aims to meet the basic physical need of shelter, as well as a variety of social and psychological needs. In Canada, social housing has been traditionally funded by multiple orders of government and a web of complicated agreements among different parties. Affordable housing generally refers to programs where the government does not cover ongoing operating costs; instead, tenants pay rents at 80% of the market rent of the area. As a result, affordable housing does not typically serve households with very-low incomes.

3. Diversity in housing provision

Each country has a different housing provision system, and there is a considerable difference in housing patterns, typologies, and conditions in European and North American countries (Tsenkova and French 2011). Nevertheless, the common denominator in housing provisions in these countries has been a move since the early 2000s toward housing policies built on and engaging with market forces to reduce state intervention (Tsenkova 2008). However, as the latest report from Housing Europe¹ (2021) notes, the push for alternative forms of investment is not the only way EU countries have worked to address housing issues. Within the EU, "a plethora of reforms have been adopted across Europe in recent years, related to many different areas from reform of housing benefits (for instance in France), the target group of social housing (Netherlands), planning regulation (United Kingdom), and many more" (Housing Europe 2021, 29).

In the UK, the legislative definition of social housing is "housing to rent at below-market rents or to buy through low-cost home ownership schemes such as shared ownership. It is made available to help those who find it difficult to access housing through the market" (Cromarty, 2022). Social rent levels are typically set at around 50-60% of the market and affordable rents at a maximum of 80% of the local market rent. From the 1980s, tenants were granted the right to buy their homes, council stock was transferred to housing associations for management, and local planning authorities could enter into agreements with developers to deliver community benefits (Malpass, 1994; Gurrán, 2019; Lund, 2006). The Queen's Speech of December 19 2019² contained a reference to supporting the continued supply of social homes and to renewing the Affordable Homes Programme (AHP). The March 2020 Budget announced a £9.5 billion extension of this program, with a total programme allocation of £12.2 billion of grant funding from 2021-22 to build affordable homes across England, potentially attracting a further £38 billion in public and private investment. This five-year programme will help more people into homeownership and those most at risk of homelessness. Funding is expected to support up to 180,000 new homes, subject to economic conditions and will be split 50% to fund homes at a discounted rent and 50% for affordable homeownership products. The government has confirmed that as a condition of receiving AHP funding, newly developed rented homes must have the Right to Shared Ownership attached. In February 2021, the housing minister confirmed that the new AHP "will deliver more than double the social rent than the current programme, with around 32,000 social rent homes due

¹ European Federation of Public, Cooperative & Social Housing. <https://www.housingeurope.eu/>

² <https://www.gov.uk/government/speeches/queens-speech-december-2019>

to be delivered." Crisis and the NHF (2018) have previously called for 90,000 units to be built in England annually for fifteen years to meet new needs and address the backlog.

In Canada, housing is considered "affordable" if it costs less than 30% of a household's before-tax income³. The Investment in Affordable Housing (IAH) began in 2011, with the Federal Government investing over CAD \$238 million annually through to March 2019 to help Canadians with their housing needs. In 2016, the federal government provided almost CAD \$1.7 billion to support over 536,000 households living in social housing. Provinces and territories administer 80% of the agreements with social housing providers. The Canadian Mortgage and Housing Corporation (CMHC) administer the remaining 20%, including on-reserve housing projects in First Nation communities. The CMHC Affordable Housing Centre works with social housing providers to help keep housing projects financially viable for the long term. On November 22, 2017, Canada's first National Housing Strategy⁴ was announced to ensure Canadians can access housing that meets their needs and that they can afford (CMHC 2018).

In Germany, the e3 Apartment Building is an example of the Baugruppen procurement model, a deliberative development, or a collaborative and self-organised development approach. In this model, intending owner-occupiers undertake the development with procurement, finance and management undertaken by intending owner-occupiers to create a product that suits their preferences and offers cost savings for accessing homeownership (Sharam, 2020).

In the United States, Community Land Trusts (CLT) have been developed to help shield low-income renters from increases in housing costs associated with urban renewal and engage residents in solutions. CLT models typically support residents accessing and maintaining homeownership and restrict future sale prices to remain affordable (BBAR, 2018). One example is 11th Street Bridge Park, Washington DC, a new bridge developed across the Anacostia River in Washington DC. The park will include an environmental information centre, amphitheatre, kayak/canoe launch, urban agriculture, café and 21st-century play space (BBAR, nd) and is expected to be completed in 2025. The development plan noted that households near this site were predominately low-income renters. As a result, there was a genuine concern that they would be vulnerable to displacement as the area surrounding the bridge gentrified (von Hoffman and Arck, 2019). The Bridge Park Development Plan sought to ensure that existing affordable housing (rental and ownership) was preserved and that new affordable housing could be expanded (BBAR, 2018).

4. Case study examples

International examples were sought to demonstrate innovative technology and procurement models helping improve delivery rates and address materials/labour shortages by adopting locally resourced construction methods. The examples discussed below and in the Table 1 highlight: the application of prefabrication (Denmark); the establishment of community land trusts (US); the use of low-carbon, passive design to reduce whole-of-life costs for tenants (Canada); collaborative design and partnerships (Canada and Finland); adoption of a social enterprise approach (Finland); and addressing climate change to improve housing system resilience (US, UK, Finland, Denmark, Germany). It is worth noting that, while the range of proposed examples presents qualities that

³ <https://www.homelesshub.ca/solutions/housing-accommodation-and-supports/affordable-housing#:~:text=According%20to%20the%20Canada%20Mortgage,be%20in%20core%20housing%20need.>

⁴ <https://www.placetocallhome.ca/>

change from country to country, most of the examples show a strategic nexus between sustainability and affordability goals. To this end, the implementation of financially competitive construction methods is paired with the adoption of highly performing structures and components. Albeit such an alignment of objectives proves valuable for the developer, the government and the end-user, transferring this approach in Australia has historically been difficult. Furthermore, the size and configuration of the building manufacturing sector and labour market might be the principal hurdles to the wider adoption of this model.

The two highlighted examples have been chosen as they best represent addressing all three pillars of sustainability: economic, social, and environmental.

4.1. Väänölä, Espoo, Finland (Y-Foundation)

Established in 1985, Y-Foundation builds, renovates and leases buildings in towns and cities across Finland. Homes are provided using the Housing First model through partnerships with municipalities and non-governmental organisations. Y Foundation also owns social rental housing and has built apartments targeted for special purposes. It has 18,000 affordable rental apartments located across 30 cities and municipalities. These include 7420 apartments for specific target groups and 10,580 affordable rental options leased following the tenant selection criteria of the Housing Finance and Development Centre of Finland ARA.

The Väänölä is one example of a supported housing unit developed by Y-Foundation and is situated by a lake in Espoo. Innovative design and construction methods provide high-quality space to those exiting homelessness. This project demonstrates that a traditionally state-dependent service could run as a social enterprise by providing quality services, making a profit and reinvesting the profit in new projects. The project uses innovative design and construction methods and efficient use of space to support the integration of homeless people and families. It consists of 31 36m² studio apartments and two 50m² one-bedroom apartments on two levels. According to A home of your own (2017, 47), "all apartments are accessible for people with disabilities".

The main features of the building are:

- **Natural ventilation** –apartments are located on either side of a central distribution corridor. These are designed to allow for direct ventilation when windows on either north or south are open. In addition, each apartment has a glazed balcony.
- **Natural lighting** – natural light penetrates deep into the apartments on the southern façade due to extensive glazing and atmospheric lighting permeating residences on the northern facade.
- **Acoustics** –acoustics has been considered, drawing from several testimonials that report on the importance of music in daily life.
- **Private outdoor space** – all apartments have a small and enclosed private balcony.
- **Provision of services** – with apartments being self-contained in line with the Y-Foundation goal-oriented service plan supporting residents toward independent life-management, communal services are minimal. Sauna is one of the communal spaces provided.
- **Privacy and community** – each apartment being self-contained, residents enjoy total privacy.

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In the early years, the Y-Foundation purchased scattered housing from the private housing market and converted temporary accommodation into permanent housing. The main funding source is rents used to cover the costs of running the organisation, repayment of loans and housing maintenance. The surplus is used for investment in buying new properties. Its business model provides significant surpluses, which are reinvested into new homes to enable the foundation to continue to grow. In 2013, it invested €12.7 million in buying and building new properties.⁵ Interest subsidy loans and grants for funding new construction and renovation investments are also received through the Housing Finance and Development Centre of Finland (ARA)⁶ and STEA, the Funding Centre for Social Welfare and Health Organisations has granted funds both for buying scattered housing for the homeless as well as various development projects. Loans from banks and other financial institutions are also used.

4.2. The Vienna house Vancouver, Canada

Vienna House is an example of low-carbon, passive design affordable housing. The project focus on offering environmentally sustainable, socially equitable, affordable housing. It will offer secure affordable housing for a minimum of 60 years after completion (BC Housing 2021a). The project is currently under construction. The site is located near Trout Lake in Vancouver Kensington – Cedar Cottage. This housing is designed to accommodate tenants from a range of incomes, including affordable housing tenants (30%), tenants whose rent is determined by their income (50%) or those with the lowest incomes (20%) (BC Housing 2021a).

The multi-residential development includes 123 studio and one-bedroom units over seven storeys of affordable rental accommodation.⁷ It also includes vehicle and bicycle parking spaces and has received Passive House certification.⁸ The prefabricated wood construction system ensures a high-quality design (BC Housing 2021). The prefabricated wall, floor, and ceiling components will be constructed off-site from renewable materials delivering efficacy and maximising the development's affordability without compromising quality (BC Housing, 2021a). According to the designers, Canadian firm PUBLIC Architecture+ communication (BC Housing 2021b), the building uses the following feature and strategies to reduce its carbon footprint:

- **Massing:** minimising and simplifying built form decreases surface area, reduces construction cost, and improves energy performance.
- **Stacking:** to simplify structural complexity and provide a more efficient servicing design (pipes, electricity ducts etc.).
- **Light-weight construction:** reduce embodied carbon and emission of wood.
- **Reducing penetrations:** to maintain the integrity of the building envelope's sealing, minimising energy loss.
- **Thermal bridging:** reduce by simplifying the structure and avoiding structural and detailed design that creates gaps in the envelope.
- **Envelope:** to meet the passive house requirement the building is targeting an airtightness value of equal to or less than 0.6 air changes per hour.

⁵ [Y-Foundation - World Habitat \(world-habitat.org\)](http://world-habitat.org)

⁶ [Y Foundation Jan Jun H1 2021 EN.pdf \(ysaatio.fi\)](#)

⁷ [2009-2037 Stainsbury Ave rezoning application | Shape Your City Vancouver](#)

⁸ [2009-2037 Stainsbury Ave rezoning application | Shape Your City Vancouver](#)

- **Mechanical:** to reduce fossil fuel, the building will be 100 per cent powered by electricity.

Vienna House is a collaborative project including not-for-profit affordable housing providers (Vancouver Affordable Housing Agency and More than a Roof) and state and local government agencies (BC Housing and City of Vancouver) (BC Housing 2021a). Once completed, More Than a Roof Housing Society will own and operate Vienna House⁹. Together they are implementing the project, which is to be located on five city-owned lots at 2009-2037 Sainsbury Avenue¹⁰ (BC Housing, 2021a).

The project is funded through BC Housing with contributions from the Canada Mortgage and Housing Corporation under the National Housing Strategy Demonstrations Initiative. The project is committed to incorporating innovative procurement methods. Therefore, all partners will participate in the development process, and experts will be consulted to identify the best alternative contracting methods.

4.3. Summary of other projects


Table 1 presents a summary of another international project, including details such as tenure mix and layout, partnering and finance, and sustainability measures/innovative features:

- i. 11th street Bridge Park, Washington DC. US
- ii. e_3 Apartment Building, Berlin
- iii. The Dortheavej Residence, Denmark
- iv. Agar Grove Estate, Camden, UK
- v. New Beginnings TMH building, Vancouver, BC

⁹ <https://viennahouse.ca/about-the-project/>

¹⁰ Vienna House and BC Housing (2021). Vienna House Innovative Affordable Housing Demonstration Project. British Columbia, BC Housing.

Table 1: A summary of mixed tenure examples Internationally



Case study example	Social housing / Affordable housing/ Private Housing	Background	Tenure mix and layout	Partnering and Finance	Sustainability measures/ Innovative features
<p> 11th Street Bridge Park, Washington DC.  von Hoffman and Arck (2019 p6) </p>	<p>Affordable housing (rental and home ownership)</p>	<p>A new bridge is proposed across the Anacostia River in Washington, DC – known as Bridge Park. The households close to this development site were predominately low-income renters. As a result, there was a genuine concern that they would be vulnerable to displacement as the area surrounding the bridge gentrified. Accordingly, the Bridge Park Development Plan sought to ensure that existing affordable housing (rental and ownership) was preserved, and that new affordable housing could be expanded¹¹. One of the ways this is being achieved is by creating a community land trust (CLT) which will shield residents from increased housing costs and engage residents in the solution¹².</p>		<p>The creation of a community land trust was a collaborative process involving several partners, including Building Bridges Across the River, City First Enterprises, Inc and the Washington Area Community Investment Fund, Inc Land access was achieved by the Community Land Trust, which purchased dilapidated land at a low cost and maintained affordable housing options in the area. The CLT hopes to acquire land underlying such property "improvements" from donors, the government in joint ventures with developers, and in partnership with homebuyers. Whether investing equity in homes or small businesses, the Douglass CLT ensures the goal of making them affordable to people at or below a targeted median family income." ¹³</p>	<p>The low socio-economic demographic group with high levels of unemployment will benefit from the access to affordable homeownership and rental, but also the resources being added to the bridge space, including "outdoor performance spaces, playgrounds, urban agriculture; an Environmental Education Centre [...] public art [...] and kayak and canoe launches" (BBAR, 2018,5). Overall, this was a community-driven process that would support small business enterprises and offer the community arts, culture, and entertainment. ¹⁴</p>

¹¹ [Equitable-Development-Plan_09.04.18_compressed.pdf \(d3h55oe312fhj3.cloudfront.net\)](#)

¹² [PRO Neighborhoods: Innovative Strategies for Affordable Housing \(harvard.edu\)](#)


¹³ [PRO Neighborhoods: Innovative Strategies for Affordable Housing \(harvard.edu\)](#)

¹⁴ [11th Street Bridge Park – Building Bridges Across the River \(bbardc.org\)](#)


Case study example	Social housing / Affordable housing/ Private Housing	Background	Tenure mix and layout	Partnering and Finance	Sustainability measures/ Innovative features
<p>e_3 Apartment Building, Berlin</p>  <p>Status: Completed</p>	<p>Affordable private housing</p>	<p>e_3 is an example of a procurement model known as Baugruppen, where intending owner-occupiers undertake the development. 7 Storey timber structure Completed in 2008.</p>	<p>Individual ownership tenure. The e_3 project consists of seven full-floor units located on the southwest side of the lot, with the vertical circulation tight against the opposite side. The apartments are connected to the stairs using a walkway. The units on the 1st, 3rd and 4th floors have a corner for terraces adjacent to the walkways. In addition, each has a rear balcony.</p> <p>The units are designed around a central living space overlooking the main street, services located on the south-east wall and bedrooms facing the rear communal courtyard</p>  <p>THIRD FLOOR PLAN</p>	<p>The final cost is €1.48 million¹⁵</p> <p>The main benefit of this model is that it removes two of the most impactful elements in project costing: -the profit margin (required in venture-driven) - marketing and sales budget (necessary in speculative developments). Moreover, residents invest equity into the project contributing to the general project viability. This removed the requirement for external investors and allowed future owners (and investors) to benefit from less risky premiums when lending money from financial institutions. However, this increases the personal financial risk overall. This is mitigated by the structure of the group</p> <p>As this is an investor-occupier model, the property/apartment acts as collateral on the loans and investment. For these reasons, Baugruppen is considered a low-risk investment.</p>	<p>The building structure comprises an innovative, recyclable timber frame consisting of low weight, low energy and co2 neutrally processed load-bearing solid timber beams and columns that provide effective high-stress resistance. Thermal insulation and a high level of joint connection detailing guarantee an energy requirement of less than 40 kWh/m². The construction of the external shell is completed and stabilised through solid insulated timber façade panels. A reinforced concrete central core complements the outer frame, providing the necessary structural rigidity and fire protection to the service shaft while reducing the length and cost of the horizontal beams, making the realisation more affordable. Equally, the prefabrication of all the key building components enabled construction completion within 8 weeks, thus reducing the construction cost and time of delivery. The implementation of sophisticated structural solutions in collaboration with the fire protection engineers enabled the construction of a seven-story timber building pushing the boundaries of the existing fire regulations which previously capped the maximum height of timber building to three stories.</p>

¹⁵ [e3 Residential Building, Berlin - Design Build Network \(designbuild-network.com\)](http://designbuild-network.com)


Case study example	Social housing / Affordable housing/ Private Housing	Background	Tenure mix and layout	Partnering and Finance	Sustainability measures/ Innovative features
					<p>Notwithstanding the innovative yet inexpensive construction methods and materials, the aesthetic and spatial result is high quality. It complements the historical context of its location in central Berlin.</p> <p>https://architectureindevelopment.org/project/318 e3 Residential Building, Berlin - Design Build Network (designbuild-network.com)</p>

Case study example	Social housing / Affordable housing/ Private Housing	Background	Tenure mix and layout	Partnering and Finance	Sustainability measures/ Innovative features
<p>The Dortheavej Residence, Denmark</p>  <p>Status: Completed 2018</p>	<p>Affordable Housing</p>	<p>The Dortheavej Residence in Copenhagen consists of 66 affordable housing units made from prefabricated modules stacked over five storeys¹⁶. Located in one of the most multi-ethnic, low-income neighbourhoods in Copenhagen, the apartments offer affordable housing and access to a green courtyard and high-quality public open space.</p> <p>Proximity to parks and amenities – located in central Copenhagen, six parks, a hospital, a library, and three schools all within 1.2 km diameter; the courtyard to the north provides common parking areas, a basketball court, and greenery.</p>	<p>The apartments are diverse, including studio, one and two-bedroom options ranging in size from 60-115m², and each has a small terrace. Ceiling heights are generous (3.5 meters), views, light, central location, and proximity to services all add value to residents</p> <p>Private outdoor space – residents on the ground floor have their private gardens that feed into a communal courtyard used by residents of the Dortheavej project and neighbouring buildings.</p> <p>Accessibility – shared elevator between two units per floor level; the ground floor is accessible from the street—limited accessibility within apartments due to the construction system based on tunnel technology.</p> <p>Passive and active safety measures – eyes on the street approach to safety is encouraged through extensive glazing on both north and south sides. Limited access to shared elevators is demonstrative of further safety considerations. Limited safety considerations are observed in the context of the ground-floor apartments.</p>	<p>Affordability – construction cost adds to US \$1500/m² (€1377/m²), totalling \$9.8 million. The quality of the envelope with double (possibly triple) glazing also contributes to reduced heating/cooling costs for the residents</p>	<p>Construction methods Modular, stackable concrete, cross-laminated timber (CLT) cladding and double (possibly even triple) glazing are relatively innovative technologies in the Australian context.</p> <p>Natural ventilation – apartments are designed to allow for natural airflow with openings on the north and south sides.</p> <p>Natural lighting – natural light penetrates deep into the apartments due to floor-to-ceiling and wall-to-wall glazing on the southern side. Glazing on the northern façade is more controlled in bedrooms. At the same time, the living areas equally feature wall-to-wall and floor-to-ceiling glazing.</p> <p>Acoustics – the thickness of concrete, cross-laminated timber (CLT) cladding, and double (possibly even triple) glazing provide a sound acoustic barrier between apartments and protect them from excessive street and courtyard noise.</p>

¹⁶ [Dortheavej Residence by BIG / Bjarke Ingels Group | Apartment blocks \(architonic.com\)](#)

Case study example	Social housing / Affordable housing/ Private Housing	Background	Tenure mix and layout	Partnering and Finance	Sustainability measures/ Innovative features
<p>Agar Grove Estate, Camden, UK</p>  <p>Status: Completed</p>	<p>Social housing</p>	<p>Location: Camden, London Client: London Borough of Camden Date: 2012 – 2021</p> <p>This is a major initiative by Camden Council to address fuel poverty and disadvantage faced by tenants of old-style 1960s social housing, which requires a large proportion of the tenant's income to be spent on energy for heating their homes. It is a complex project requiring decanting of existing social housing tenants, some demolition, and some retrofitting of existing buildings to meet Passivhaus standards.</p> <p>In total, the Agar Grove intervention includes 507 homes under the regeneration scheme, of which 345 are designed to meet Passivhaus principles.</p> <p>https://www.ribaj.com/buildings/mae-passivhaus-agar-grove-block-camden-london-vernacular-fuel-poverty https://www.hawkinsbrown.com/projects/agar-grove https://www.mae.co.uk/projects/agar-grove-estate https://planning.lambeth.gov.uk/online-applications/searchResultsBack.do?action=back</p>	<p>34 stacked maisonettes Low energy homes Agar Grove, one of Camden Council's Community Investment Programme's flagship schemes, was built in stages partnering with Hill Properties which developed the first stage of the project following the demolition of existing low-rise residential pavilions.</p> <p>In total, 95 new homes were delivered in phases 1a and 1b. 'Phase 1a of the redevelopment was completed in 2018 and consisted of 38 socially rented Passivhaus homes.</p> <p>The masterplan utilises a 'streets and squares' layout emphasising the thresholds through front doors at street level and spaces in-between buildings to increase pedestrian accessibility and walkability throughout the site.</p> <p>Dwellings are dual aspects, enabling cross ventilation for effective natural cooling. Deep, south-facing balconies block peak summer solar gains and large window openings, many of which with views of central London from the middle levels and above, allow purge ventilation. Phase 1b was completed in July 2021 and consisted of 57 social and market-rate Passivhaus homes.'</p> <p>(Agar Grove Estate - Max Fordham) Responding to residents' feedback, the project refers to the surrounding context and offers diverse public space oriented typologies such as</p>	<p>The community-led project was built on land owned/purchased by the Council between 2013 and 2020 for a total Value of £97 Million. Driving factors behind the development include energy consumption reduction and decreasing maintenance through the durability of construction while supporting community and residents' wellbeing throughout the project. In addition, a "single decant" process was adopted, enabling residents to stay on-site during the whole construction period and move into their assigned properties upon completion.</p>	<p>To date Agar Grove is the first large-scale and tallest residential Passivhaus project in the UK. The development follows Passivhaus principles utilising higher performing communal heating than the widely used yet less efficient district heating system.</p> <p>'Renewable energy is provided via a PV array, exemplary air tightness helps reduce heat losses and improve thermal comfort, and comprehensive Post Occupancy Evaluation - both measured (temperature, RH, CO2) and resident feedback - has helped improve residents' comfort and experience.'</p> <p>(Agar Grove Estate - Max Fordham) Post occupancy evaluation shows steady temperature intervals ranging between 21° in winter and 26° in summer months. Phase 1a use data to suggest an energy consumption of 62 kWh/m2/yr, thus meeting the 2025 Climate Challenge targets. Locally-sourced materials such as façade bricks, metalworks and stone banding are used throughout the project to complement the surrounding context.</p>

Case study example	Social housing / Affordable housing/ Private Housing	Background	Tenure mix and layout	Partnering and Finance	Sustainability measures/ Innovative features
			<p>villas, terraces and mansion blocks that reinforce the area's character. Passive surveillance is provided on the ground floor through the maisonettes' kitchen windows at waist height. In contrast, all bedrooms located on the upper floors preserve occupants' privacy. In addition, naturally lit and ventilated stairwells and corridors, together with the double-height communal entrances, enhance the project's sense of spaciousness while offering views of the residents' garden upon entering. The pre-existing Lulworth Tower block was refurbished, adopting sustainability principles while preserving the precinct's identity.</p>		

Case study example	Social housing / Affordable housing/ Private housing	Background	Tenure mix and layout	Partnering and Finance	Sustainability measures/ Innovative features
<p>New Beginnings TMH building, Vancouver, BC</p>  <p>Stage: Complete</p>	<p>Supportive and subsidised (on-site) housing with support for indigenous people at risk of homelessness</p>	<p>This complex consists of a mix of permanent and temporary units built to respond to the issues of homelessness in British Columbia (BC).</p> <p>The project is part of the modular supportive housing program in BC named TMH, i.e. Temporary Modular Housing. Tsi programme involves builders and architects, policymakers and planners, developers and municipalities, and housing / social services operators. This programme aims to understand participants' wellbeing needs and identify the existing barriers to fostering them. The modular buildings are typically placed on a City-owned site awaiting redevelopment. The units are prefabricated off-site, transported to the site, and rapidly installed. Modular supportive housing incorporates full-time staffing and support services.</p>	<p>The building intentionally houses Indigenous residents who have experienced homelessness.</p> <p>New Beginnings has two buildings of three-storey buildings with 98 studio units. Each building has a ground-floor indoor shared space, commercial kitchen, dining and lounge areas, staff offices, laundry facilities, and storage space. Each of the units is self-catered, and 12 of them are accessible to cater for disabled tenants.</p>	<p>In 2017, the Province of British Columbia invested \$291 million to build over 2,000 modular supportive units across BC for people who are or are at risk of experiencing homelessness.</p> <p>This project is owned by BC Housing and operated by a housing provider (the Lu'ma Native Housing Society).</p>	<p>TMH buildings are set on a reusable, triadic raised foundation to place the building above ground. These buildings are designed to be fully disassembled and moved to a new location when needed.</p>

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