



Future Housing

Global Cities and Regional Problems

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Future Housing: Global Cities and Regional Problems

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INTRODUCTION

Future Housing: Global Cities and Regional Problem

This publication is the product of the conference Future Housing: Global Cities and Regional Problems held in Melbourne in 2016. It contains selected papers from the event. In the palimpsest context of the Asia Pacific region in which all design professionals work across national boundaries, this conference brought together diverse people concerned with the issue of housing. It aimed to understand the complexity and variety of the issues at play in housing and, specifically, housing affordability, to explore specific examples of best and worst practice, and facilitate the sharing of ideas essential in this multi-layered present and future. It is our belief that issues from one country are pertinent in another, and that the lessons of past developments are useful today.

Led by the Swinburne University, the Centre for Design Innovation, AMPS and its scholarly journal Architecture_MPS, this publication, and the conference which it documents, considers a plethora of issues at play in housing in the Asia Pacific region: the economic models of the construction industry; finance models for housing projects; urban regeneration; affordable housing in newly affluent areas; and the need for passive design in global cities. It is interested in government policy, private development, architectural design, community management, spatial planning, living density, building adaptation, housing in new towns.... and more.

TABLE OF CONTENTS

Chapter 1	
MODERN HOUSING COMPLEXES IN SOUTH KOREA. TYPOLOGICAL EVOLUTION AND URBAN ADAPTATIONS	1
Dario Pedrabissi	
Chapter 2	
IMPACTS OF THE NATIONAL RENTAL AFFORDABILITY SCHEME ON RENTAL HOUSING INVESTMENT: CHANGES IN INVESTMENT PROFILES AND INVESTOR SATISFACTION	10
Isara Khanjanasthiti, George Earl, Lynne Armitage	
Chapter 3	
THE URBAN REGENERATION OF STAR STREET IN HONG KONG	23
Francesco Rossini	
Chapter 4	
LONG-TERM CHALLENGES IN URBAN HOUSING: IN THE SEARCH FOR INTERSECTIONS BETWEEN DESIGN AND POLICY REGULATIONS	35
Garyfalia Palaiologou, Fani Kostourou	
Chapter 5	
ASSESSING THE CAPACITY FOR URBAN INFILL IN AUSTRALIAN CITIES	53
Stephen Glackin, Peter Newton	
Chapter 6	
THE ROLE OF COMMUNITY-DRIVEN FINANCE IN BRIDGING FORMAL AND INFORMAL PRACTICES FOR SECURING AFFORDABLE HOUSING IN SOUTH EAST ASIA	70
Johanna Brugman Alvarez	
Chapter 7	
CLEARING STOCK OF THE INVISIBLE: EFFECTS OF COSMOPOLITAN POWER ON THE SUPPLY OF AFFORDABLE HOUSING	79
Kane Pham	
Chapter 8	
DIVERSITY AND DISPARITY: RETIREMENT HOUSING IN AGE-FRIENDLY CITIES	88
Kirsten Bevin	
Chapter 9	
ALTERNATIVE INFILL STRATEGIES FOR ESTABLISHED RESIDENTIAL SUBURBS IN ADELAIDE AND LONDON	97
David Kroll, Damian Madigan	
Chapter 10	
NEIGHBOURING PATTERNS IN AUSTRALIAN SUBURBAN HOUSING DEVELOPMENTS	108
Leila Mahmoudi Farahani, David Beynon, Cristina Garduno Freeman	
Chapter 11	
RETHINKING HOUSING SOLUTIONS: ADAPTIVE REDESIGN APPROACHES FOR AGEING APARTMENT BUILDINGS	126
Sandra Karina Loschke, Hazel Easthope	

Chapter 12	
ALTERNATIVE DWELLING MODELS TO ACCOMMODATE A GROWING CITY: GOLD COAST, AUSTRALIA.	137
Vanessa Menadue, Justin Twohill	
Chapter 13	
THE FUTURE OF REMOTE INDIGENOUS OUTSTATIONS: OPTIONS FOR LIVING WELL ON COUNTRY AFTER THE BULLDOZERS COME.	152
Matthew Parnell	
Chapter 14	
ECONOMIC AND TAXATION BENEFITS OF THE NATIONAL RENTAL AFFORDABILITY SCHEME	161
Isara Khanjanasthiti, George Earl, Lynne Armitage	
Chapter 15	
ACTIVE AGEING AND POSITIVE AGEING IN NEW ZEALAND HOUSING CONTEXT	175
Olufunto Ijatuyi	
Chapter 16	
DESIGN CUSTOMISATION VS STANDARDISATION: DIGITAL SUPPLY CHAINS AND THE FUTURE OF AFFORDABLE HOUSING	183
Peter Raisbeck	
Chapter 17	
DIRECTIONS FOR DIVERSE HOUSING AND HYBRID-USE DEVELOPMENT IN VICTORIA: RE-DEVELOPMENT OF HOUSING IN PRAHRAN AS A CASE STUDY	191
Hing-Wah Chau, Rob Polgase	
Chapter 18	
BUILDING COMMUNITIES THROUGH INCLUSIVE DESIGN PLATFORM	203
Sky Lo Tian Tian	
Chapter 19	
WE'RE BUILDING SECURE, PERMANENT AND AFFORDABLE HOUSING FOR WOMEN AND CHILDREN.	214
Sophie Dyring, Jeanette Large	
Chapter 20	
HOUSING INFRASTRUCTURE CITIES: HONG KONG / SYDNEY HOW WE'RE BLINDED TO THE LIMITATIONS OF TRANSIT ORIENTED DEVELOPMENT	223
Tarsha Finney	
Chapter 21	
APPROACHES, DESIGNS AND SOCIO-CULTURAL IMPLICATIONS OF POST-DISASTER HOUSING: LESSONS FROM ACEH TSUNAMI RECONSTRUCTION.	230
Yenny Rahmayati	

Chapter 22

INDUSTRIALIZED BUILDING SYSTEM (IBS) IN THE CONTEXT OF ADAPTABLE ARCHITECTURE AND ITS CURRENT POTENTIAL 237

Zulkefle Ismail, Asiah Abdul Rahim

MODERN HOUSING COMPLEXES IN SOUTH KOREA. TYPOLOGICAL EVOLUTION AND URBAN ADAPTATIONS

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INTRODUCTION

The contemporary South Korean landscape is characterised by a massive display of modern apartment buildings. They are omnipresent in their monotonous manifestation and represent the dream of the Korean population. Serial mass housing is a typology that has had a great diffusion all over the world, but how has modern housing developed in South Korea? To this end, what are the resulting adaptations?

This paper retraces these key evolutionary aspects. Methodologically, it draws on a scholarly literature review as well as on-site photographic surveys, analysing both the urban and architectural transformation from the early modernisation period to the present condition of contemporary housing. An historical background introduces Korean traditional urban houses, to be used as a context to describe the contemporary modern city that has developed since the 1960s. The main emphasis is then placed on the urbanisation process that fully matured during the 1980s together with a focus on the mass housing typology as the main pivot in the urban transformation. Finally, the paper will draw a parallel between modern Western theories and Korean applications.

EARLY MODERNISATION

The first great modernization impact on the Korean peninsula occurred during the Japanese colonization period (1910-45). Japan exerted huge pressure on Korea even before its annexation. The first urbanization wave dates back to 1876 when Korea was forced to drop its long-held policy of isolation. Ten port cities and five inland cities opened to trade, generating new needs in modern urban planning.¹ Starting from the 1930s, Japan designated the Korean colony to be an engine of the Japanese military complex for its imperialistic expansion plan. Consequently, a great deal of new infrastructure was developed around the country.

Seoul did not register any large spatial transformation from its foundation year (1394) to the colonization period. Starting from 1910, the “ordering of streets” urban policy altered the original street network, widening existing thoroughfares and building new roads. The main purpose was to merely introduce economic and military principles in the organization of the urban space, completely altering the traditional principles of the original city. Urban design prior to this time was based on a conventional oriental geomantic idea called *Pungsu - Feng Shui* in Chinese – a set of theoretical principles based on the study of the wind and water. While the main urban fabric was based on a gridiron layout, there existed a maze of secondary arteries. Gelézeau described the space between the

axis as follows: “Roads providing access to the houses branch chaotically, forming a convoluted maze of frequent dead-ends, all highlighting the essentially pedestrian nature of this network”.²

The city of Seoul was then remodelled according to new modern urban standards that were first tested in Tokyo and later adapted to other cities such as Osaka, Kyoto, Taipei, and Pyongyang.³ Large new boulevards were introduced and existing roads were widened according to the City Ward Improvement Plans of 1912 and 1919.⁴ Further urban development occurred during the 1920s, but it is in the 1930s that the first modern planning acts appear: the 1934 Joseon City Planning Act and the 1936 Gyung-sung City Plan, which also resulted in a large expansion of the boundaries of Seoul.⁵

In terms of architectural developments, new colonial Western Style buildings were introduced in the cities – mainly public buildings and transportation facilities – intended to be used as tools to consolidate colonial rule. The buildings adopted neo-classical eclectic styles mainly deriving their influence from Britain, due to the well-established relationship between Japan and the UK.

Urban Housing Evolution

During this early modern development period, three distinct types of housing took form in Korea: Western-style houses, Japanese-style houses, and the urban *hanok*. While the Western-style houses maintained their original composition, which derived from other colonial modifications, the Japanese-style house was eventually adapted to the extremely harsh Korean winters. These houses were the middle-corridor type and the *machiya* passageway type, which eventually employed the traditional Korean heating system (*ondol*), originating the first hybrid integration of a Japanese house with a Korean traditional technological feature.⁶ The urban *hanok* derived from the traditional Korean house and first appeared in the 1920s, becoming the dominant type of urban housing built in Korea until the late 1960s.

The urban *hanok* saw great success as a house of the commoners due to its affordability and the preservation of the traditional housing layout. Its plan varied regionally, but in Seoul the U-shaped plan was the most common. The L-shaped set of rooms was combined with an I-shaped annex, used for the entrance gate and the services. The rooms were set around the *madang*, a central open courtyard that functioned as a distribution space, but also as storage and as a common area. The rooms usually included a kitchen, a master bedroom, a second bedroom, and a *maru* (*daecheong*). This was a wooden-floored semi-open space placed between the two bedrooms, to provide a ventilated area during the Korean summer.⁷ The traditional *ondol* heating system was fuelled from the kitchen, and for this reason, this room was connected to the master bedroom. This type of house then became a point of departure for the development of new types of urban housing to respond to new market demands and urban settings.

The process that initiated the prevalent use of modern apartment buildings developed through a series of housing typological transformations that originated when the traditional urban *hanok* became inappropriate to respond to the increasing urban population pressure. Two main housing types evolved from the urban *hanok*: the spec house and the multihousehold dwelling.

The first evolution of the urban *hanok* was the spec house: A ‘ready-built’ single-family detached house known as *jipjangsajip*, which entered the scene in the 1960s.⁸ Small-scale developers built the spec house type, adopting new modern materials and techniques, such as the brick façade with a reinforced concrete structure and gable roof. The house was either one or two stories and the main innovative aspect was the introduction of the boiler heating system. This allowed the transformation of the traditional floorplan arrangement, which had been defined by the strict relationship between the kitchen and the master bedroom due to the *ondol* heating system, where the cooking and heating occurred in the same place.

Another important development is the internalisation of the *madang*, the exterior court that once served as the circulation and relational space, even though the internal *madang* was initially used more as a hall instead of a proper living room. These two new arrangements introduced a novelty in the floorplan layout, based on a living-dining (LD) and living-dining-kitchen (LDK) axis: arrangements that became very influential for the later apartment building floorplans.⁹

In 1985, revision of the Building Act allowed owners of single-family homes to convert their property and build collective housings on the same site.¹⁰ Consequently, two new urban housing types, the multihousehold dwelling (*dasedae jutaek*) and the multi-family dwelling (*dagagu jutaek*) began replacing the spec house. The law was intended to boost the ongoing urban densification process by allowing the transformation of single family home into collective dwellings. Thus, the neighbourhoods where the urban *hanok* and later the spec houses were first built, witnessed another radical transformation with the advent of the multihousehold dwelling. This had a negative effect on the quality and quantity of open space, and for this reason, the multihousehold dwellings became the accommodation standard for low-income families.



Figure 1. View of a multihousehold dwelling area in Sanggye-dong, Seoul. (Source: the author)

FAST URBAN TRANSFORMATIONS

After the Korean War (1950-53) Seoul experienced one of the largest single country-to-city migrations ever recorded. Korea's economic "miracle of the Hangang river" exploded and starting from the early 1960s, this area experienced exponential demographic growth.¹¹ Urban development in Seoul was impossible to control and thus the urban organization introduced by the Japanese was kept. New large-scale public works projects were planned, and spontaneous development was expropriated and destroyed.¹²

South Korea was ruled by a military dictatorship from 1961-87, and during the leadership of President Park Chung-Hee (1961-79) the modernisation process was especially key to the political agenda. This period was characterized by massive economic growth coupled with severe repression. President Park

had a clear intention to use the urban transformation as a tool for social reform, introducing large scale population control in Seoul. Thus the construction of vast mass housing projects (called *ap'at'û tanji*) was seen as “a very powerful tool for guiding and managing the social groups that have been at the core of South Korea’s economic development”.¹³

To accommodate an increasing number of new urban dwellers, Seoul adopted an urban growth management strategy based on ring-radial roadway circulation, multiple centres, and green belts. The proposed urban model was inspired by the Western New-Town Planning and Garden City ideas. The resulting 1966 Comprehensive Development Plan was put into place to facilitate the expansion of the city, proposing four ring roads at varying distances from the city centre and thirteen radial arterials.¹⁴ The junctions of these roads were to become subcentres.

This plan was followed by the 1972 National Development Plan, which introduced a new greenbelt system, easily leapfrogged by unplanned development. The plan also pushed new development toward the south side of the Han River and, by the mid 1980s, the expanse of urbanization on both the north and south banks of the river was equal.¹⁵ A further decentralization process occurred in 1989, with the construction of five new large towns – Ilsan, Jungdong, Sanbon, Pyeongchon and Bundang – with a planned variety of population density. Recent ambitious new town projects include Sejong Metropolitan Autonomous City and Songdo Smart City.

Characters of Mass Housing Complexes

In this context, modern apartment blocks became the prevailing housing typology and consequently the dominant image of the South Korean landscape, spreading through both the city and countryside. As Florian Urban pointed out, “serial construction methods became the prevalent technology of mass housing around the world, and simultaneously a stylistic principle of modern city design”.¹⁶ In the 1970s, the prefab high-rises comprised less than 4 percent of the housing stock in South Korea, while that number rose to 50 percent in 2000. Accordingly, in the same period the percentage of individual houses decreased from 90 percent to approximately 25 percent.¹⁷

Korea’s first apartment building, the Mikuni Apartment in Hoehyun-dong, was constructed in 1930 by a Japanese company to provide accommodation for its employees. It was followed by a second apartment built in 1935 in Naeja-dong. In the same year, records show the construction of the Yurim apartment, the first to be built for rental purposes.¹⁸ None of these buildings survive today.

We have to wait until 1958 to see the first apartment buildings built after Korea’s liberation from Japan. The two examples worth mentioning are: The Jongam apartments, comprised of three buildings, four to five stories high, the first to be equipped with flush toilets; and the Mapo Apartments – ten six-floor apartment buildings – constructed between 1962 and 1964 by the Korean National Housing Corporation (KNHC), equipped with individual hot-water heating systems. Although the formal policies that applied to the apartment buildings were defined later on, the Mapo apartments established a set of planning principles for the layout of the *tanji*: collective housing, at least 300 units, autonomy, and shared facilities.¹⁹

The *tanji* realised exponential growth when the government launched the Housing Construction Promotion Act in 1972. Amended and strengthened in the early 1980s, the law promoted the construction of high-density residential areas within the city boundaries and other newly designated areas.²⁰ The *tanji* were then defined as a grouping of large urban blocks, containing monofunctional residential slabs, interspersed with small commercial buildings and service facilities.

The construction model employed the Fordist production system, where residential slabs are built in a reinforced concrete structure and prefab elements. The main building types are slab buildings having a single-loaded corridor system with open corridors (gallery access), and multiple vertical access. These slabs usually have the ridgeline of the building oriented east-west to maximise sun exposure, leaving the north façade merely as a functional element, aesthetically forgotten. These features allowed the maximum land use and the minimum construction cost, but at the same time created a completely new environment that disintegrated the traditional landscape and social relationships. Nevertheless, the apartments became a symbol of higher social status and a highly desired product that is still very popular nowadays.



Figure 2 (left). View of Boram Apartments, Sanggye-dong, Seoul (Source: the author)

Figure 3 (right). View of a communal area in a tanji, Cheonan (Source: the author)

In terms of interior design, the typical apartment floorplan is a combination of different influences. As analysed earlier, the traditional floorplan developed from the transformation of the urban *hanok* into the spec house, where the *madang* became an interior space and started to function as a living room. The Western influences travelled through Japan, adopting new building technologies and new spatial configurations. The typical LDK floorplan system (Living, Dining, Kitchen) was already developing in Japan starting from the 1940s and then employed in Korea, becoming the standard layout in modern Korean apartments. Nevertheless these influences were combined with the traditional floorplan, creating an hybrid arrangement together with these foreign systems, which blended the continuity and consistency of the traditional plan into the contemporary design.²¹

Hybrid Modernist Theories for Korean Serial Apartments

To trace the architectural references of the Korean modern apartment building we should analyse the theories of the modern movement and the experiments developed by the architects that rallied around the CIAM. After the previous two CIAM congresses on «The Minimum Dwelling» (Frankfurt/Main, 1929) and «Rational Land Development» (Brussels, 1930), «The Functional City» (1933) represented an ambitious project to apply modern methods of architectural analysis and planning to the city as a whole.²² In particular, Le Corbusier's Athens Charter publication of 1943 foreshadowed Korean urban planning by codifying the paradigm of strict urban functional division.

Modern Korean development was inspired by the most visionary unbuilt projects that have influenced many urban planners around the world. Specifically, the ones developed by the great modern masters at the beginning of the twentieth century. Ludwig Hilberseimer with the projects of High Rise City in 1924 and Berlin's *Gendarmenmarkt* Square in 1927, envisioned a repetition of identical residential

buildings, disposed in a logical geometrical layout, completely disconnected from the existing context. In a similar fashion, Walter Gropius's housing diagrams from 1929 show a clear scientific approach to the problem of large housing complexes. Ultimately, Le Corbusier's three main urban proposals – Contemporary City for Three Million People, 1922; Plan Voisin, 1925; The Radiant City, 1933 – were the main source of inspiration for the Korean architectural vision, in particular, his adherence to height, light, and geometrical order, were seen as a salvation from inefficient and unhealthy urban sprawl.

Another very important theory that influenced the definition of modern apartment complex planning in Korea is Clarence Perry's Neighbourhood Unit. The American urbanist developed the Neighbourhood Unit theory in 1929, which essentially defined a residential block delimited by transportation arteries. The block is designed to be self-sufficient, containing all the facilities needed to support the residences therein, such as shops and services. The Neighbourhood Unit would be designed to accommodate a population that ranges from 3,000 to 9,000 residents - which corresponds to a primary school capacity of 1,000 to 1,600 students. It should be noted, however, that the residential buildings were intended to be low-rise individual houses. This urban scheme is clearly influenced by the Garden City, but the interesting fact is that the Garden City movement predicated urban dispersal as a reaction against the congested urban centre, whereas the Korean *tanji* were intended to be located in the very heart of the city and in the new expansion areas.

Eventually the urban layout adopted by Korean urban planners was a hybrid interpretation of Clarence Perry's Neighbourhood Unit, combined with the modernist's proposition of collective high-rise residential towers and slabs. In reality, the *tanji* were not completely self-sufficient and the contemporary city is characterised by a collage of high-rise and low-rise buildings, with strict functional division.

When comparing the 1950s and 1960s European applications with the Korean *tanji*, we note a distinctive political approach. While the European projects were developed as 'social housing' for the poor and located at the periphery of the city, the Korean high-rise apartments were built within the existing city, and oriented toward the growing middle class and upper-middle class. Similarly, while European social housing was intended to be rented, Korean housing was based on a policy of home ownership.²³

Other, more direct influences, should be credited to Japan and to The USA. Japan developed its post-war modernisation process earlier than Korea, also being the only Asian country to have developed an architectural avant-garde – the Metabolism – which has had an international impact. In contrast, South Korea had advanced a very unique corporation system, defined by the country's large construction conglomerates (*chaebol*). These large companies played – and still play – a key role in the urban and regional transformation, where large housing projects are the instrument used to dominate the real estate market, leaving only the small and middle-scale projects to more independent and progressive architectural firms.

FINAL REMARKS

South Korea has experienced one of the fastest urban transformations in human history. Retracing the evolution of different housing types that emerged through the modernisation process allows us to comprehend the resulting urban morphology and the altered social relationships in the contemporary city. After the initial adaptation of the traditional urban house and the early modern developments, the apartment building became the prevailing housing typology in South Korea. Its success has been determined by three main factors. First, the *tanji* were located in the city and not at the periphery as in the European cases. Second, the apartment buildings were constructed with high-quality standards and

oriented toward the rising middle-class and not the society's lower strata. Third, the remaining low-rise residential areas suffered from a lack of urban and architectural quality, becoming unattractive to the majority of the population, while in Europe the vernacular city was seen as a privileged place. In Korea, apartments buildings became the image of modern life and a highly desired product. Still nowadays the apartments blocks are considered the best and most convenient preference for Koreans, and this trend is far from over. Thus a global architectural typology has been locally conditioned in both its spatial adaptation and in its political application, determining the success of a housing type that has been disparaged elsewhere.



Figure 4. View of apartment complexes in Cheonan (Source: the author)

NOTES

- ¹ Inha Jung, *Architecture and Urbanism in Modern Korea* (Honolulu: University of Hawaii Press, 2013), 4
- ² Valérie Gelézeau, "Streets and Open Spaces in Seoul (1995-2010). A Cultural and Geographical View of Local Neighborhood," *KNCU-Korean Studies Series* (2014): 166, accessed April 10, 2016, doi: <halshs-01174275>
- ³ Inha Jung, *Architecture and Urbanism in Modern Korea*, 9
- ⁴ Ibid., 11
- ⁵ Seoul Metropolitan Government. "Spatial Development of Seoul. History & Prospect." Accessed April 20, 2016. http://english.seoul.go.kr/wp-content/uploads/2014/02/03_Spatial_Structure_of_Seoul.pdf
- ⁶ Inha Jung, *Architecture and Urbanism in Modern Korea*, 28
- ⁷ Sang Lee, "Continuity and Consistency of the Traditional Courtyard House Plan in Modern Korean Dwellings," *Traditional Dwellings and Settlements Review* 3, no. 1 (1991): 66-69
- ⁸ Inha Jung, *Architecture and Urbanism in Modern Korea*, 71-72
- ⁹ Lee, "Continuity and Consistency of the Traditional Courtyard House Plan", 70
- ¹⁰ Inha Jung, *Architecture and Urbanism in Modern Korea*, 71
- ¹¹ Yong-Woong Kim, "Industrialization and Urbanization in Korea", *Korea Journal*, Autumn (1999): 35-62
- ¹² Gelézeau, "Streets and Open Spaces in Seoul", 168
- ¹³ Gelézeau, "Korean Modernism, Modern Korean Cityscapes", 186
- ¹⁴ Peter, G. Rowe, *East Asia Modern. Shaping the Contemporary City* (London: Reaktion Books Ltd, 2005), 81
- ¹⁵ Ibid., 82
- ¹⁶ Florian Urban, *Tower and Slab. Histories of Global Mass Housing* (London & New York: Routledge, 2012), 16
- ¹⁷ Peter Hall, *Cities of Tomorrow*, Second Edition (Oxford: Blackwell, 1998), 356
- ¹⁸ Chung Kee Lee, "Apartment City, Seoul" in *Replacing: Documentary of Changing Metropolis SEOUL*, ed Moon Sung Kwom (Venice: 12th International Architecture Exhibition la Biennale di Venezia, Korean Pavilion, 2010), 70-75
- ¹⁹ Valérie Gelézeau, "Korean Modernism, Modern Korean Cityscapes, and Mass Housing Development: Charting the Rise of Ap'at'ü Tanji since the 1969s," in *Korea Yearbook 2007. Politics, Economy, and Society*, eds. Rüdiger Frank et al. (Leiden & Boston: Brill, 2007), 171
- ²⁰ Ibid., 176
- ²¹ Lee, "Continuity and Consistency of the Traditional Courtyard House Plan", 69-76
- ²² Evelien van Es et al. (eds), introduction to *Atlas Of The Functional City CIAM 4 And Comparative Urban Analysis*, (Bussum: Thoth Publishers, 2014)
- ²³ Raffaele Pernice, "From 'Hanok' to 'A-Pa-Tu'. Korean Urbanism in the XXth Century" (paper presented at the EAAC 2012 International Conference on East Asian Architectural Culture, Hong Kong 2012), 9

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IMPACTS OF THE NATIONAL RENTAL AFFORDABILITY SCHEME ON RENTAL HOUSING INVESTMENT: CHANGES IN INVESTMENT PROFILES AND INVESTOR SATISFACTION

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INTRODUCTION

In Australia, as is the case for many countries around the world, housing affordability is a major problem affecting families on or below average incomes. The impact is particularly severe in the major capital cities such as Sydney and Melbourne. Projections suggest that in the next decade median house price in these cities will exceed one million dollars. To increase the supply of affordable housing, the Australian Government, in partnership with all state governments, initiated a National Rental Affordability Scheme (NRAS) in 2008.

One of the key objectives of NRAS is to increase the supply of new affordable rental housing throughout Australia. In light of this target, this paper conducts a study of NRAS investors to identify the extent to which this objective has been achieved. Therefore, the aim of this paper is to review the net impacts of NRAS on housing investment in Australia. Specifically, four key issues are investigated, namely profile of investors, investors' investment portfolios prior to and after the introduction of NRAS, investors' perception of NRAS and impacts of NRAS on investment and tenancy choices. The paper evaluates the effectiveness of the program on influencing housing investment patterns, which can potentially be a useful template for future housing policies and initiatives of other countries.

This paper comprises four sections. Firstly, the paper provides background information on the housing affordability crisis in Australia and on the NRAS program. The paper then discusses the methodology and assumptions employed in this research. Thirdly, the paper presents and discusses the findings of NRAS impacts on the profile of investors and their investment portfolio and their satisfaction with the program. Lastly, the paper concludes with key impacts of NRAS on housing investment in Australia.

BACKGROUND INFORMATION

Housing Affordability Crisis in Australia

Affordable housing can be defined as housing that is able to meet the needs of low-to-moderate-income households and priced in a way that these households can meet other basic living costs such as medical care, food and education. To this end, housing is considered affordable when it costs less than

thirty per cent of gross household income.¹ Housing stress occurs when the “30/40 rule”, in which housing costs exceed 30 per cent of total household incomes among households in the bottom forty per cent of income distribution, is met.²

According to the Australian Government’s Senate Economics Reference Committee, “affordable, secure and suitable housing [is] a vital determinant of wellbeing,” but a significant number of households in Australia do not have access to affordable housing and its associated benefits.³ The majority of existing affordable housing supply in Australia is rental housing.⁴ However, the country is facing a severe housing affordability crisis, in which insufficient supply of affordable rental housing is available to households on low to moderate incomes. Between 1996 and 2011, the shortfall of homes which are affordable and available for rental by Q1 households (families in the bottom twenty per cent of Australia’s income distribution) increased from 150,000 to 271,000. In the same time period, however, the number of affordable rental homes available for rental to these households increased from 71,000 to 76,000.⁵ Therefore, the housing affordability crisis in Australia has severely declined since 1996, implying that the private rental market in Australia has not successfully stimulated adequate supply of affordable housing.⁶ Furthermore, housing affordability problems in Australia will continue to worsen in the first half of the twenty-first century due to projected demographic and housing market changes.⁷

The housing crisis has significant implications for Australia across several dimensions including economic performance, labour market efficiency, social polarisation and wealth creation and distribution.⁸ Furthermore, it can adversely affect mental well-being of households.⁹

National Rental Affordability Scheme

In the past decade, several government initiatives have been implemented to increase the supply of affordable housing throughout Australia. For example, the Australian Government established an Affordable Housing Working Group in January 2016 to identify innovative financing models to increase affordable housing.¹⁰ The Government of South Australia, meanwhile, has established an Affordable Homes program to offer affordable homes costing less than \$350,000 to South Australian residents on low to moderate incomes before they are offered for sale to other buyers.¹¹

In 2008, the Australian Government, in partnership with all state governments, implemented the National Rental Affordability Scheme (NRAS) to encourage large-scale investment in affordable rental housing from private and institutional investors. To do so, investors of NRAS dwellings are eligible for a ten-year tax incentive. In return, NRAS dwellings must be rented to eligible low-to-moderate-income households at twenty per cent below market rates. As at December 2015, 30,037 rental dwellings have already been built under NRAS, with 7,180 additional dwellings on track for construction in the near future.¹²

Having provided an overview of housing affordability in Australia and the NRAS program, the paper now outlines the research methodology undertaken in this study.

RESEARCH METHODOLOGY

The study was conducted through an online survey using the SurveyMonkey website which began on March 31, 2014 and concluded on April 14, 2014. The link to the survey was disseminated via email to a total of 5,069 NRAS investors throughout Australia. Where applicable, respondents were asked to provide additional comments on NRAS and their satisfaction with the program and their tenants. The survey contained the four sections outlined in Table 1 below.

Survey Section	Description
1. Profile of investors	Who the investors are and whether they have invested in rental housing prior to the introduction of NRAS
2. Profile of investment	The investors' investment portfolio prior to and after the introduction of NRAS
3. Investors' perception of NRAS	How satisfied the investors are with the NRAS scheme and their NRAS tenants
4. Impacts of NRAS on investment and tenancy decisions	How NRAS has affected the investors' decisions on their rental housing investment and tenants

Table 1. Survey Questionnaire Sections

A total of nine hundred respondents completed the survey throughout the survey period, indicating a survey response rate of approximately eighteen per cent. The respondents, who represented a range of investors including individuals, businesses and trusts, have purchased at least one NRAS property. Survey responses were collected on April 15, 2014 and were then analysed using Microsoft Excel. Having described the research methodology, the paper next outlines and discusses the key findings of the survey. The findings below are organised into four major sections consistent with the different survey sections outlined in Table 1.

PROFILE OF INVESTORS

The proportions of different investor types among the survey respondents are shown in Figure 1.

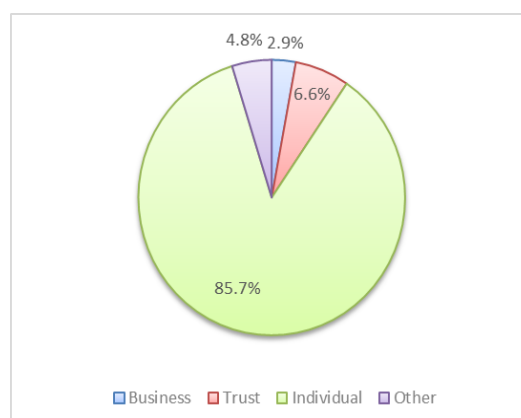


Figure 1. Profile of Investors

As shown in Figure 1 above, the majority of the respondents were individual investors. Therefore, there is no significant change in the profile of investors in the Australian rental housing market, which is traditionally dominated by “ordinary mums and dads.”¹³ In addition, the survey revealed that forty-three per cent of the respondents had never invested in a rental housing prior to the introduction of NRAS, indicating that NRAS has successfully introduced a new cohort of investors for affordable rental housing in Australia.

PROFILE OF INVESTMENT

The respondents were surveyed on their residential property investment portfolios both prior to and after the introduction of NRAS. Specifically, the following aspects of their investment portfolios were examined:

Portfolio size

Expected holding period;

Investment locations;

Property types;

Funding sources;

Price preference; and

Additional NRAS investment.

Portfolio Size

Single-property portfolios remained the most common among the surveyed investors, with fifty-two per cent and sixty-five per cent of investors possessing portfolio of this size before and after NRAS was implemented, respectively. Overall, NRAS has not led to a significant change in investment property portfolio sizes.

After the implementation of NRAS, the average number of rental properties per portfolio dropped slightly from 2.05 to 1.68. This is due to the thirteen per cent increase in the proportion of investors with a single property in their portfolio. Such an increase could be attributed to the fact that individual investors, who make up the majority of NRAS investors as discussed previously, traditionally invest in “only one property [as] an important part of a self-funded retirement plan.”

Expected Holding Period

Figure 2 below displays the expected holding periods among the surveyed investors prior to and after the introduction of NRAS.

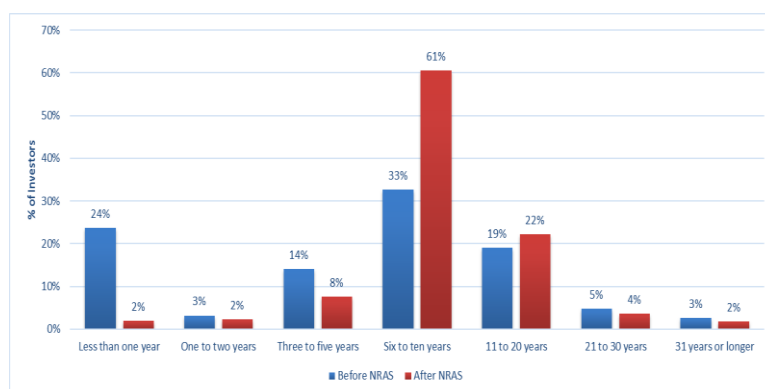


Figure 2. Expected Holding Periods before and after NRAS

Figure 2 indicates that after the introduction of NRAS, there was an increase of twenty-nine per cent in the proportion of investors who expected to hold their investment rental property for at least six years. The majority of the respondents (sixty-one per cent) expected to hold their NRAS property for six to ten years. Overall, the average expected holding period of properties increased by twenty-two per cent from 10.1 years to 12.3 years.

Thus, NRAS has stimulated a significant growth in the expected holding period of rental property. This implies that the scheme has effectively increased the supply of affordable rental housing in

Australia as NRAS property is likely to be available for rental for a longer period of time than non-NRAS property prior to being sold to another investor or owner occupier.

The substantial increase in expected holding period can be attributed to the structure of the tax incentive of the NRAS program, in which investors need to hold their NRAS property for ten years to receive full tax benefits.

Investment Locations

Figure 3 below shows the relative proportions of investment made in different states before and after NRAS was implemented.

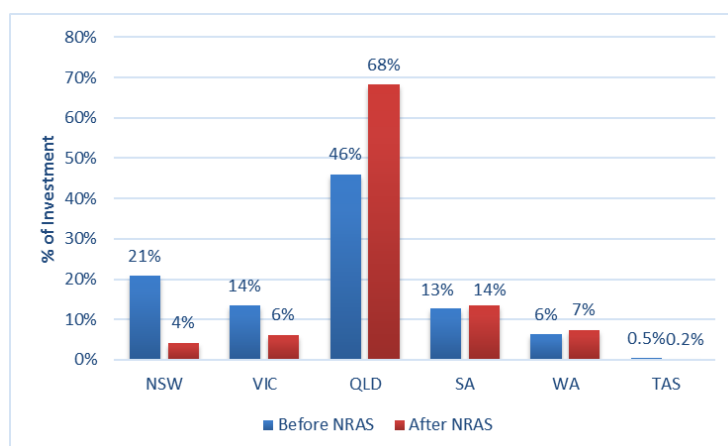


Figure 3. Investment in Different States before and after NRAS

As shown in Figure 3, property investment made in New South Wales and Victoria declined by twenty-five per cent. The share of investment in Queensland, meanwhile, increased by twenty-two per cent. These changes in investment locations could be attributed to the fact that the majority of NRAS dwellings built as at December 2015 (thirty-four per cent) are located in Queensland.⁴ Thus, NRAS has influenced investors' decisions for their investment locations.

Overall, however, the implementation of NRAS has not led to a substantial difference in the relative proportions of investment made in rental housing across all Australian states. Both prior to and after the introduction of NRAS, Queensland accounted for the majority of the rental property investment among the surveyed investors.

Property Types

Among the pool of the respondents' investment properties before and after NRAS was implemented, there was a slight decline in the proportion of investment made in apartments (five per cent) while a minor increase in the percentage of investment on townhouses (six per cent) and studios (0.56 per cent) was evident. The majority of residential property investment was made in detached houses both before (forty-two per cent) and after NRAS was implemented (forty-one per cent). Thus, NRAS has not substantially altered the proportion of investment made in different property types among the surveyed NRAS investors.

Funding Sources

Since the Australian financial sector was deregulated by the Hawk Government in the early 1980s, the big four banks have been dominating the country's banking and home loan industry.¹⁴ The big four

banks are Commonwealth Bank of Australia, Westpac Banking Corporation, National Australia Bank and Australia and New Zealand Banking Group.

After the implementation of NRAS, the proportion of investors with primary funding from a big four bank and investors with funding from another bank or financier increased by four per cent and three per cent, respectively. The big four banks were found to be the major funding providers as they were found to be the primary funding source for two thirds of the surveyed NRAS investors. Therefore, NRAS did not instigate any significant change in the key funding sources for rental property investment.

Preferred Price Range

Figure 4 illustrates the preferred price ranges among the respondents prior to and after the implementation of NRAS.

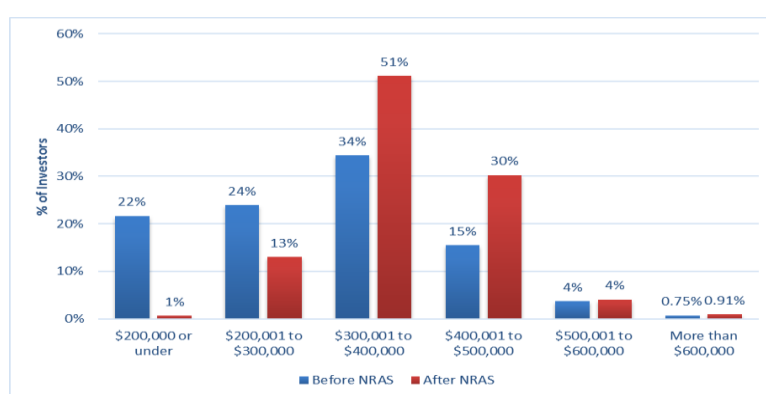


Figure 4. Preferred Price Ranges before and after NRAS

As shown in Figure 4, prior to the introduction of NRAS, more than forty-six per cent of the investors preferred to invest in rental property with a price range below three hundred thousand dollars. This figure substantially dropped to fourteen per cent after NRAS was initiated, indicating that NRAS has increased the price range preferred by investors of rental housing. Before NRAS was implemented, forty-nine per cent of the investors were interested in investing in rental property with a price range between \$300,001 and \$500,000. After NRAS was introduced, this figure increased significantly to eighty-one per cent. Furthermore, as a result of NRAS, the majority of the NRAS investors (fifty-one per cent) preferred the price range between \$300,001 and \$400,000 dollars whereas the price range between \$400,001 and \$500,000 dollars was the second most preferred option for thirty per cent of the survey respondents. Thus, NRAS has stimulated investment interests and actual investment in higher quality rental housing.

Additional NRAS Investment

The respondents were asked to provide an approximate timeframe for investing in another NRAS property under two different scenarios. In the first scenario, NRAS would continue under the original arrangement by concluding in June 2016 with a total of fifty thousand NRAS dwellings. In the second scenario, NRAS would extend beyond June 2016 with additional NRAS dwellings and the same tax incentive.

Under the first scenario, two-thirds of the investors planned not to purchase another NRAS property. In contrast, under the second scenario, the majority of the respondents (fifty-nine per cent) indicated that they would invest in additional NRAS property. The timeframe for another investment among the

investors with an interest to make additional investment under the second scenario was between one to three years.

Although the final round of applications for NRAS did not proceed, leaving the total number of NRAS dwellings at approximately 37,000, these survey results suggest that an extension of the program could be beneficial for the Australian housing industry by successfully attracting additional rental property investment in a relatively short period of time.

INVESTORS' PERCEPTION OF NRAS

The surveyed investors were asked about the following aspects in relation to their perception of NRAS:

Satisfaction with the NRAS program and their tenants;

Reasons behind their satisfaction with NRAS; and

Reasons behind their NRAS investment.

Satisfaction with NRAS Program and Tenants

Figure 5 below displays the levels of satisfaction with the NRAS program and tenants among the surveyed investors.

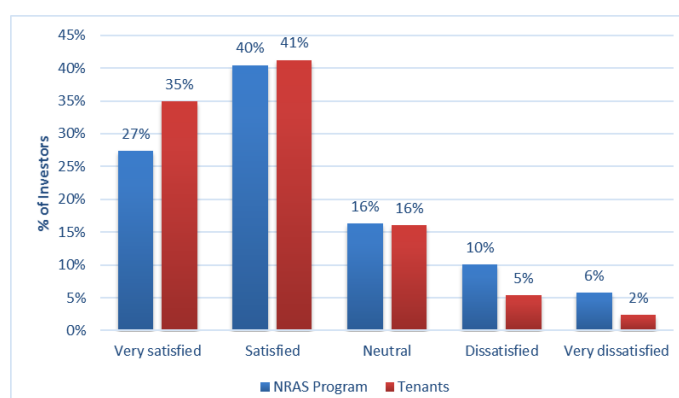


Figure 5. Investor Satisfaction with NRAS Program and Tenants

A total of eighty-four per cent and ninety-two per cent of the surveyed investors were neutral, satisfied or very satisfied with the NRAS program and tenants, respectively, as shown in Figure 5 above. Thus, the majority of NRAS investors have shown satisfaction toward the NRAS scheme and tenants.

Reasons behind Satisfaction with NRAS

Figure 6 shows the key reasons behind investor satisfaction with NRAS.

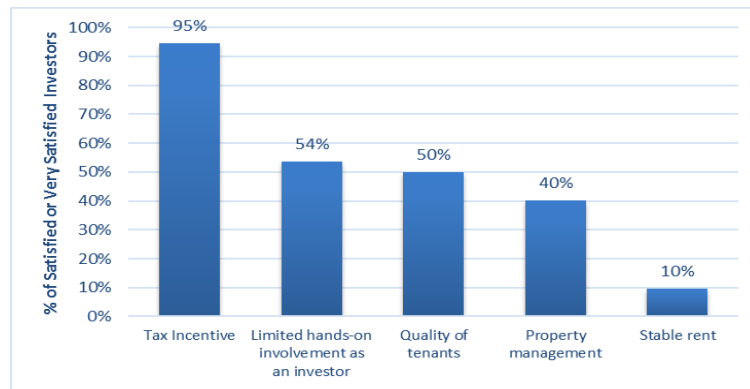


Figure 6. Reasons behind Investor Satisfaction with NRAS

Based on the data in Figure 6, three key reasons were behind the investors' satisfaction: NRAS tax incentive, tenancy managers and quality of tenants. These reasons are discussed further below.

Tax Incentive

More than ninety-five per cent of the satisfied investors cited the NRAS tax incentive as a key reason for their satisfaction. One respondent was satisfied with "how the incentive is paid" as a refundable tax offset in which the total tax bill of NRAS investors is reduced, or as a tax refund in the case where their payable tax is not high enough. This figure illustrates that the tax incentive is the key reason for investors' satisfaction with NRAS.

Tenancy Managers

Tenancy managers are responsible for the assessment of tenants as well as the on-going management of NRAS property and tenancy.¹⁵ Therefore, NRAS requires limited hands-on involvement from NRAS investors, indicating an arrangement of "set and forget nature" according to one respondent. More than fifty-four per cent of the respondents, who were satisfied with NRAS, indicated the limited hands-on involvement required by NRAS was a reason behind their satisfaction. Furthermore, forty per cent of the satisfied investors cited property management, which is the responsibility of tenancy managers, as a reason behind their satisfaction. Therefore, in addition to the tax incentive, the arrangement of tenancy managers for NRAS also significantly contributes to the investors' satisfaction with the scheme.

Quality of Tenants

Prior to being eligible for renting an NRAS dwelling, tenants must show evidence of household incomes to tenancy managers who, together with NRAS investors, select tenants for NRAS properties. Longer leases for NRAS dwellings are normally encouraged for NRAS tenancies due to the benefits of lower vacancy rates and high "costs normally associated with end of leases and re-tenanting."⁷

Given the reasons above, as one survey respondent noted, NRAS property may benefit from "more stable tenancies [and] less vacancies." Furthermore, the process of verifying household incomes could lead to a higher quality of tenants for NRAS property with a lower likelihood of rent arrears as one respondent noted, "I am personally very happy with my tenant who is a school chaplain." To this end, half of the satisfied investors cited the quality of tenants as a key reason for their satisfaction with NRAS.

Reasons behind NRAS Investment

Figure 7 displays the reasons behind NRAS investment among the surveyed investors.

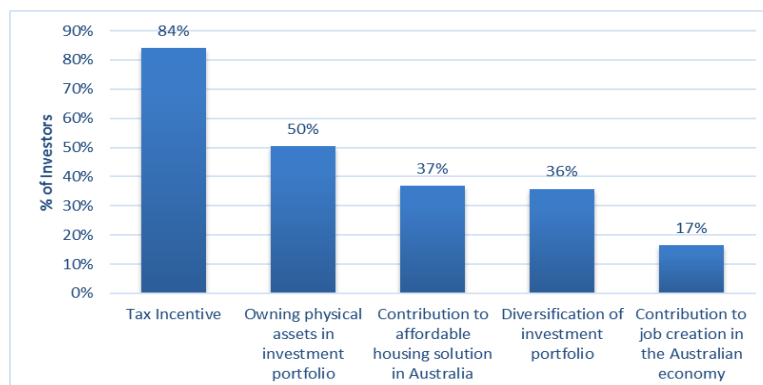


Figure 7. Reasons behind NRAS Investment

Based on the data in Figure 7, three key factors were revealed by the survey as key motivating reasons behind the investors' initial reasons to invest on NRAS property. These include the NRAS tax incentive, investment portfolio enhancement and goodwill.

Tax Incentive

The majority of the surveyed investors (eighty-four per cent) cited the tax incentive of NRAS as the major motivating reason for their initial decision to invest in NRAS property. This result is consistent with the previously discussed finding that the tax incentive was the key reason behind investors' satisfaction with the NRAS program. The tax incentive not only has attracted investors to purchase NRAS property but also may encourage them to hold their NRAS property for a longer period of time than non-NRAS property by maintaining their satisfaction with the program. Therefore, the tax incentive is a major driver for the successful implementation of NRAS.

Investment Portfolio Enhancement

The second most common reason behind the investors' decision to invest in NRAS property, cited by half of the respondents, was the desire to own a physical asset in their investment portfolio. Likewise, more than thirty-six per cent of the investors indicated portfolio diversification as a reason for their investment decision. Furthermore, several investors perceived NRAS as a safe and viable investment opportunity. One respondent noted that NRAS allowed "positive cash flow" to be achieved by the respondent's property investment "from day one." Investment in NRAS, as explained by a surveyed investor, has "reduced risk and consistent returns." The program also creates "housing that was dispersed throughout the community [leading to] better future resale prospects" according to another investor.

Thus, NRAS was perceived among the investors as a strategic investment product to enhance their investment portfolio or enter the investment housing market. This finding is a key reason behind the previously deliberated finding that nearly half of the surveyed investors were new housing investors. One respondent, who had never invested in property, noted that NRAS had "helped [the respondent] develop a sound and relatively safe entry into property investment."

Goodwill

Goodwill was found to be a key driver for several investors to purchase NRAS property. NRAS property, according to one respondent, is a “socially responsible investment opportunity.” More than thirty-seven per cent of the surveyed investors indicated that the opportunity to contribute to an affordable housing solution for Australia was a key reason behind their NRAS investment. One respondent noted that NRAS “is a win-win situation [as] low cost housing is provided to decent people on lower incomes.” Another investor mentioned the reason behind NRAS investment was “to assist people to be able to save for their own home by providing affordable accommodation.” Furthermore, seventeen per cent of the respondents indicated that the prospect of job creation in the Australian economy was a reason behind their NRAS investment decision.

Having discussed the surveyed investors’ perception of NRAS, the paper now outlines net impacts of NRAS on investment and tenancy decisions.

IMPACTS OF NRAS ON INVESTMENT AND TENANCY DECISIONS

The survey asked the investors about their decision regarding three aspects of their property investment if NRAS had not existed: investment, location and tenants.

Investment

Without NRAS, forty-two per cent of the respondents would have purchased an existing property whereas eighteen per cent of the respondents would not have invested in rental property at all, indicating the majority of the respondents (sixty per cent) would not have invested in a new rental property if NRAS had not existed. Thus, without NRAS, rental property purchased by sixty per cent of NRAS investors may not have been built due to lack of investment.

Location

NRAS aimed to provide affordable rental property in areas with moderate-to-high rental needs throughout Australia. To determine the extent to which this objective was achieved, the respondents were asked whether they would have invested in rental property in the suburb(s) where their NRAS property is located. The survey revealed that more than seventy per cent of the investors would have invested elsewhere. This finding implies that construction of rental dwellings in key areas with significant rental needs throughout Australia may have been constrained in the absence of NRAS.

Tenants

Approximately two-thirds of the respondents would not have considered renting their investment property to tenants on low or moderate incomes. This figure implies that without NRAS, low-to-moderate-income households would have had substantially more limited rental opportunities as the majority of investors may not have approved the households’ applications to rent their property.

CONCLUSION

This paper has discussed survey findings on the net impacts of NRAS on rental housing investment in Australia. The findings indicate that the scheme has led to five positive outcomes for the rental housing sector in Australia. Firstly, NRAS has introduced new investors to the Australian rental housing market, with nearly half the surveyed investors being new investors with no prior investment in property. Secondly, it has increased investors’ expected holding period for their rental property. This implies that NRAS housing is available for rental for a longer period of time than conventional rental housing prior to being sold to another investor or owner-occupier. Thirdly, the scheme has

stimulated investment and the associated construction activities for higher quality affordable rental housing due to the significant increase in the investors' preferred price range of their property. Fourthly, NRAS has stimulated additional supply of affordable rental property throughout areas of moderate-to-high rental needs. Without NRAS, investment in these suburbs would have been significantly limited, which could have led to limited construction of new rental dwellings in these areas. Lastly, the program has achieved strong investor satisfaction, indicating that should NRAS or a similar initiative be re-introduced, the investors may be favourably interested in participating in the program. Based on these key findings, it is evident that, from an investment perspective, NRAS has generated positive net impacts on the Australian rental housing market by effectively altering investment patterns in a way that stimulates additional supply of quality affordable rental housing. Therefore, the program provides a useful template for other countries to influence or establish their future housing policies and initiatives.

NOTES

- ¹ "What is affordable housing?" Centre for Affordable Housing, accessed May 19, 2016, <http://goo.gl/vl7TBw>.
- ² Judith Yates et al., *Housing affordability: a 21st century problem* (Sydney: Australian Housing and Urban Research Institute, 2007), accessed May 19, 2016, <http://goo.gl/PhzNIK>, 4.
- ³ Senate Economics References Committee, *Out of reach? The Australian housing affordability challenge* (Canberra: Senate Printing Unit, Parliament House, 2015), accessed May 19, 2016, <http://goo.gl/vE3UoI>, xvii.
- ⁴ "What is affordable housing?"
- ⁵ Kath Hulse et al., *Changes in the supply of affordable housing in the private rental sector for lower income households, 2006–11* (Melbourne: Australian Housing and Urban Research Institute, 2014), accessed May 19, 2016, <https://goo.gl/X0qYii>, 1-4.
- ⁶ "Increasing the supply of affordable housing for low income tenants," Australian Housing and Urban Research Institute, accessed May 19, 2016, <http://goo.gl/uvA8ea>.
- ⁷ Yates et al., *Housing affordability*, 1.
- ⁸ Judith Yates et al., *Housing affordability: a 21st century problem*, 1.
- ⁹ Rebecca J. Bentley et al., "Housing affordability, tenure and mental health in Australia and the United Kingdom: a comparative panel analysis," *Housing Studies* 31 (2016): 217, accessed May 19, 2016, doi:10.1080/02673037.2015.1070796.
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- ¹¹ "Affordable Homes," Government of South Australia, accessed May 19, 2016, <http://goo.gl/qpKKat>.
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- ¹⁵ "National Rental Affordability Scheme - Frequently asked questions," Australian Government, accessed May 19, 2016, <https://goo.gl/8tLVXd>.

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THE URBAN REGENERATION OF STAR STREET IN HONG KONG

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INTRODUCTION

Over recent years Hong Kong has experienced numerous and rapid changes to the urban structure. With several buildings built during the 1960s and 1970s, many districts have begun, or are in the process of embarking on a comprehensive urban renewal strategy to improve the quality of the urban environment. Pressure for land across the whole territory is extreme, in fact the built-up areas account for only twenty-four per cent of the territory, the remaining areas comprising an impressive mix of tropical landscape, natural reserves, mountains, islands, and country parks. This contrast between artifice and nature is tangible in many areas of the city and the interconnection between the urban fabric and the landscape creates a distinct feature of Hong Kong.



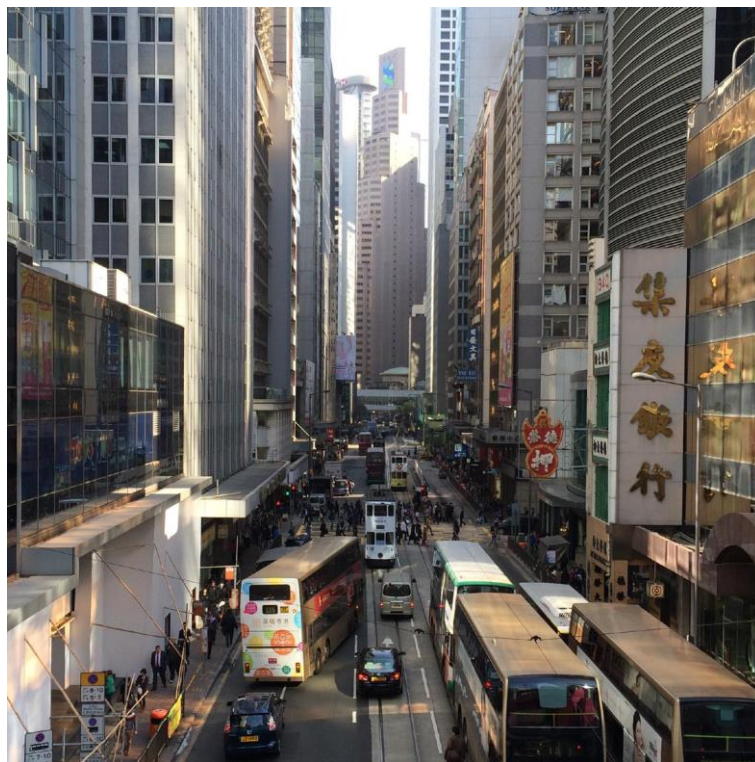
*Figure 1. Hong Kong Special Administrative Region. The urbanised area is shown in pink.
(Source: <http://geology.com/world/hong-kong-satellite-image.shtml>)*

Due to its morphology the city has developed a vertical model of mixed-use functions, concentrated in towers that are interconnected by different modes of public transport. Hong Kong represents a phenomenologically unique three-dimensional model of high density, where the high cost of land has led profitable business for the private sector.¹ In this regard, an important factor in the renewal of old urban areas is to control and preserve the public character of the new developments. Serving the public interest is the fundamental mission of governments and public institutions, but strong pressure from the private sector often directly influences the decision-making processes that affect the urban regeneration of the city.

The article will provide an overview of the current practices of cooperation between the public and the private sector in the renewal of the city by analysing the case of the urban regeneration of Star Street in Hong Kong.

VERTICAL DENSITY

With a population of seven million people packed in an urbanised area of 273 square km, Hong Kong is among the densest cities in the world. The concentration of function, the density of the population, the complexity of the urban form, and the verticality, are all urban qualities that define the character of the city.²



*Figure 2. De Voeux Road on Hong Kong Island.
(Source: Photo, Francesco Rossini)*

In Hong Kong, the (supposed) lack of land for development creates the intensity of use, and the vertical layering of different functions leads to the generation of overlapping flows of movement, which facilitate the creation of unconventional urban spaces. This vertical density provides an efficient solution to meet the demand for rapid urbanisation, allocating a large number of people into a small portion of territory.

Although the land is controlled by the government, in practice the private sector has a free hand in land development through leasehold agreements, and the connection between development capital and the planning function has played a central role in the economic growth of the territory. The land administration in Hong Kong plays an indispensable role in the economy of the city and a significant proportion of government revenues depend on the transfer of land-use rights. Concomitantly, the Hong Kong government has adopted a high land price policy, which has resulted in the highest urban densities in earth.³ This vertical density has been documented in the impressive works of the German photographer Michael Wolf. The reportage, “Architecture of Density” shows the obsessive repetition of the residential blocks that shape large parts of the territory of Hong Kong. Wolf’s images of density vividly illustrate the figures, which reveal an average density of 6,690 persons per square km and a peak density in Kwun Tong district of 57,250 persons per square km.⁴



Figure 3. *The Architecture of Density*, Michael Wolf.
(Source: <http://photomichaelwolf.com>)

This unique cityscape of Hong Kong is the result of the volumetric expansion of the city during the last forty years. During this transformation, old buildings have been redeveloped into modern commercial complexes, and the regeneration process has often removed important traces of the city’s history. In March 2009, the Antiquities Advisory Board (AAB) announced the completion of the assessment of 1,444 historic buildings and, to date, eighty-five more historic buildings have been added and accorded *Grade 1*, *Grade 2* or *Grade 3* status.⁵ Of the 1,444 buildings assessed only 114 were declared monuments and proposed for preservation. The Government could demolish the remaining buildings, those without a preservation order, even if they had been awarded the status of *Grade I Historical Buildings*. One example is that of the well-preserved pre-war building of Tung Tak Pawn Shop in Wan Chai district where an online petition is demanding that the government name the *Grade 3 Historical Building* as a proposed monument, forcing a twelve-month delay in the demolition work to allow more time for negotiation with the owners of the building.⁶



*Figure 4. Tung Tak Pawn Shop in Wan Chai
(Source: Photo Nora Tam, South China Morning Post.)*

Due to this intense pressure for urban redevelopment, the demolition of part of the urban structure makes it possible to substantially increase the dimensions of the new development. Dilapidated settlements are often replaced by clusters of residential buildings with an office tower above a podium. This evolution of the urban structure has changed the symbiotic relationship between buildings and streets, characterised until the post-World War II period by the shop-tenement houses. Unfortunately, nowadays only a few examples of this type of structure remain in the centre of Hong Kong. This typical Chinese architecture was organised to offer a mix of services creating an intense street activity.⁷ Over the years, the typology of podium and towers has evolved, increasing its dimensions and losing its urban scale. Mega-structures surrounded by any type of infrastructure configure self-sufficient urban islands generally indifferent to the context.

According to Tieben, it is remarkable that the strong typological changes in the 1970 and 1980s, from shop-tenement houses to residential towers, have not yet affected yet the public/private interfaces. More fundamental changes arrived only with the large-scale urban renewal project, carried out first by the Land Development Corporation in the 1990s and then by the Urban Renewal Authority after its establishment in 2001.⁸

URBAN REDEVELOPMENT IN HONG KONG

In the period prior to World World II, urban renewal was primarily focused on improving conditions of hygiene and safety in the overcrowded urban settlement. Later, during the post-war period and prior to the establishment of the Land Development Corporation (LDC), urban renewal was primarily left to the initiative of the private sector.

The basic working model of the LCD was the public-private partnership (PPP) set up in 1984 with the aim of carrying out urban redevelopment through joint ventures with private developers.⁹ The general

policy of this PPP partnership was that urban renewal should focus on a “people-centred approach”, although the contents of the strategy show that it was a “project-centred” approach.

According with Mee Kam Ng, many of the projects carried out by LCD have changed the socio-economic conditions of the area affected by the urban renewal process. Many shops and small activities, that gave character to the old urban districts, had to be closed because compensation was insufficient to continue their businesses in the same place. In most of the cases, tenants in old buildings are new immigrants and they are reluctant to move out of the old urban areas because it is difficult to find a job in the new towns and the transportation costs incurred to travel to the city could be beyond their means.¹⁰



*Figure 5. A local shop in Sham Shui Po District.
(Source: Photo, Francesco Rossini)*

As can be seen from the institutional website, the Urban Renewal Authority (URA) was established under the Urban Renewal Authority Ordinance (URAO) in May 2001 to replace the LDC as the statutory body to undertake, encourage, promote and facilitate the regeneration of the older urban areas of Hong Kong. One important role of the URA is to carry out urban renewal in locations that private market finds unprofitable, adopting a “people first, district-based and public participatory” approach to urban renewal. However, their adherence to these tenets has drawn strong criticism from the public.¹¹ While Hong Kong is facing the problematic redevelopment of old districts, the URA has been criticised for placing financial interests above the needs of local people and communities. As a statutory body, and thus distinct from private developers, the URA has the responsibility to preserve the characteristics of local culture as far as practicable. This aspect seems to be the most debated because it is almost inevitable that the transformation process of urban renewal will affect the pre-existing condition of the area. The URA should identify the local characteristics and evaluate those that should be retained, engaging residents early in the regeneration process to avoid costly

confrontations and delays and to ensure that the benefits of the regeneration process meet local aspirations and needs.

Serving the public interest is the fundamental mission of governments and public institutions, but, unfortunately, the strong pressure from the private sector directly influences directly the decision-making processes that affect the urban regeneration of the city.

WANCHAI AND THE RENOVATION OF STAR STREET

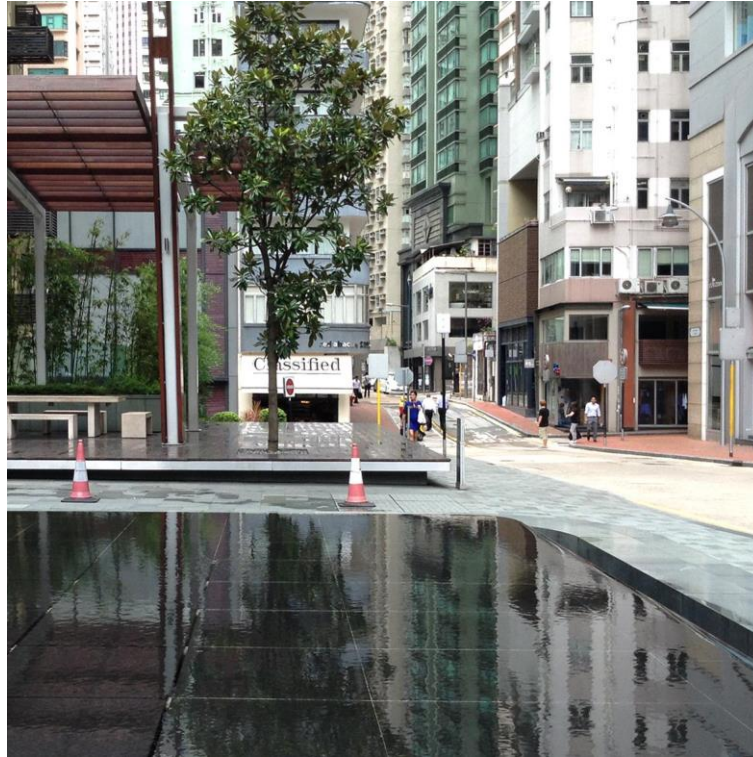
Wan Chai is one of the earliest settlements in Hong Kong with a rich cultural heritage and traditions. According to the statistics of the Building Department it is in the top five districts with oldest urban structures, having 490 building that are fifty years or older. Wan Chai can be considered an extension of the CBD of Hong Kong and throughout the years it has been transformed from a residential area to a major centre of different activities, playing an important role in the economy and the social life of the city. Surprisingly, with a density of 15,477 people per square km Wan Chai is not among the densest sectors of the urban area.¹² The district has been identified by the URA as one of the nine target areas where there is an urgent need to improve the conditions of the urban structure, eradicating dilapidated buildings and preserving buildings of heritage value.

In order to promote local characteristics and the conservation of heritage buildings, the Development Bureau has established the Old Wan Chai Revitalization Initiatives Special Committee (OWRISC). The OWRISC comprises Wan Chai District Council members, professionals and historians, and the Urban Renewal Authority acts as the secretariat. In recent years OWRISC has implemented and initiated various urban renewal projects, the most relevant are Tai Yuen Street, Wan Chai Heritage Trail, and the revitalisation of the Star Street District.¹³

The regeneration of Star Street

The project of Star Street began under the Old Wan Chai Revitalization Initiatives (OWRI), a private-public partnership between Swire Properties and the Hong Kong Government, and took place from March 2009 to November 2012. The partnership proposed to revitalise the south-west end of Wan Chai, also known as “Old Wan Chai”, adding new value to its historical and cultural heritage. The aim of the project was to create a more modern and accessible environment that, in principle, could address the needs of the community whilst preserving the district’s cultural legacy.¹⁴

The development of Star Street began in the late 1980s, shortly after the Sino-British Joint Declaration that established the return of the former British colony under the umbrella of the People's Republic of China. At that time of uncertainty about the future of Hong Kong, Swire properties bid in government auctions for land — a strategic site in the Admiralty — in order to build the exclusive project of Pacific Place, a mixed-use commercial complex with offices and hotels.¹⁵



*Figure 6. Star Street Precinct.
(Source: Photo, Francesco Rossini)*

The project was completed in three phases: the first in 1988, the second in 1991, and the third in 2004. The operation was quite ambitious because the aim of the developer was to extend the atmosphere of Central, financial, district eastward, with the intention of increasing the commercial value of the area. The third phase, Three Pacific Place, was just at the edge of an old area of Wan Chai district. The area was developed in the 1900s and although none of the original Edwardian terraced buildings survive, the street pattern retains the traditional Hong Kong shop-house urban character. From the point of view of the developer, the site was just a clutter of dilapidated tenements and steep, narrow lanes, and this decadent character could affect the commercial value of the recently built properties. The main purpose of this renovation was essentially to transform this old, slowly declining area, into a stylish district with restaurants, cafes, shops and exhibition galleries. However, an important factor here is that the land was not even up for sale. The thinly hidden intent of gentrifying the neighbourhood was already an objective that was being pursued.

At that time the LDC was given powers of compulsory acquisition, but Swire decided to start the negotiation with the owners on a free market basis.¹⁶ Under the name of Alpha, a new company not associated with Swire and created in order to keep the purchases low key and to reduce costs, the developer decided to acquire all of the 354 properties within the area. This process took almost ten years, and subsequently two residential towers were built, StarCrest 1 and 2 completed in 1999 and the office complex of Three Pacific place completed in 2004. At the same time, a 280-meter underpass link was built to connect the area to the Admiralty MTR station. The final step of this process was the renovation of the old buildings and the surrounding lanes of Star Street.

This area was one of the oldest settlements in Hong Kong under a 999-year unrestricted lease. In the early days of the colony, leases were for terms of seventy-five, ninety-nine or 999 years, subsequently standardised in the urban areas of Hong Kong Island and Kowloon to a term of seventy-five years

with a right to renew for a further seventy-five years, or fifty years up to 30 June 2047 (dependent on when the lease was granted and the locality of the land).¹⁷ To maintain the advantages of this tenure Swire worked with the government to keep the structure of the street patterns already in place, which meant the leases did not have to be surrendered and reissued. The project, which was completed in 2012, was carried out by the international architecture practice *the Oval Partnership* and focused mainly on the revitalisation of public spaces.



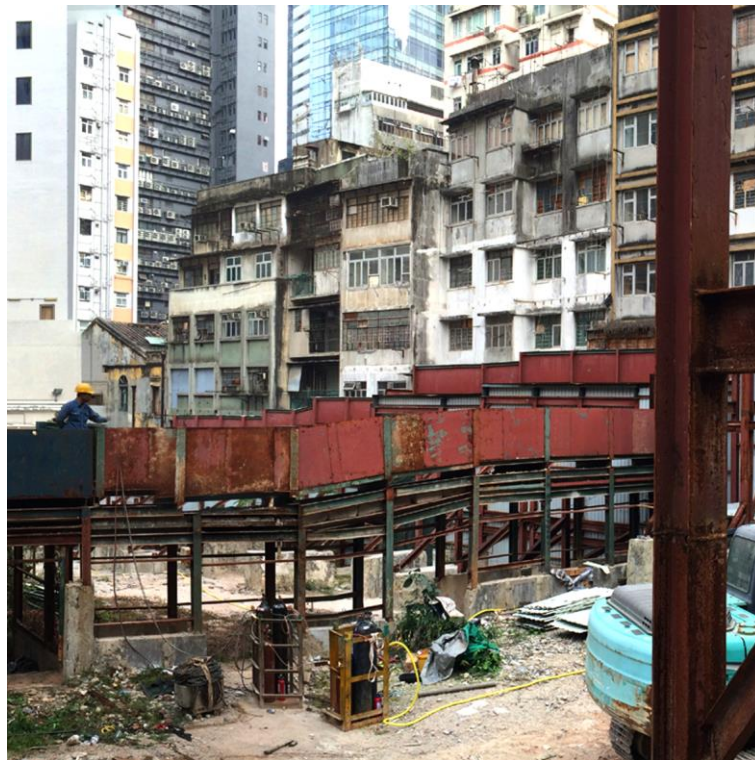
Figure 7. Renovation of Dominion Square in Star Street Precinct.
(Source: Photo, Francesco Rossini)

A public consultation was initiated during the renovation process and citizens were invited to share their views and comments in order to better understand the needs and wishes of the local community and the general public in shaping the design development of the project.

The impact of renewal has significantly changed the socio-economic profile and the physical aspects of the area. The developer, under the public-private partnership with government, achieved the ambitious goal to elevate the value of their properties, gentrifying the neighbourhood and transforming a working-class residential enclave into a completely new district with a glamorous atmosphere.

CONCLUDING REMARKS

Hong Kong is facing a serious problem of aging buildings and urban decay and, in a city where the pressure for land is extreme, it is necessary to formulate an urban renewal strategy that is able to protect the public interest whilst improving the overall living environment. In general, the urban renewal was not satisfactory in the early years prior to the establishment of the Land Development Corporation (LDC), however, compared to LDC, which was focused mainly on redevelopment, the role of the URA has been expanded to include rehabilitation and preservation.



*Figure 8. Redevelopment Project in Peel Street and Graham Street.
(Source: Photo, Francesco Rossini)*

Since 2001 the URA has carried out several projects, including projects initiated by LDC, and has often been criticised for putting financial interests first and ignoring the needs of low-income residents living in the area.¹⁸ According a Hong Kong University report, the role of the URA in redevelopment, in rehabilitation, and in preservation has to be reviewed and any changes should be clearly reflected in the Urban Renewal Strategy. The Urban Renewal Strategy is a complex subject because there are countless factors that need to be considered with regard to a comprehensive review of the existing policies. These include the legislation related to land and buildings, the coordination between different government departments, and other related issues including the compensation policy, community engagement, gentrification, and the conflict between private and public interests. One of the key approaches of the URA is to put people first, but there should be clarify about who the beneficiaries are because under the current mode of operation in redevelopment most of the residents living in dilapidated buildings would not be able to enjoy the improved environment of the redeveloped site due the gentrification problem.¹⁹

Star Street is not a URA project but this case study is helpful to understanding the government approach to the preservation of the old districts of Hong Kong. In the case of Star Street, in order to realise the plan to transform the area, the developer had to persuade all the owners to sell their property. Thus, the district has been totally stripped of its contents or, rather, the contents have been substituted with something more appropriate to the idea of creating a new trendy atmosphere, and with the main aim of elevating the commercial value of the area.



*Figure 9. New shops in Star Street
(Source: South China Morning Post.)*

Under a 999-year unrestricted lease, Star Street was one of the oldest settlements in Hong Kong. The area has been entirely renewed with the aim to retain this privileged lease of the early days of the colonial period. Substantial changes of the buildings and urban structure would lead a renegotiation of the contract between the developer and the government. As a result, the area has preserved almost the same physical aspect but with new uses.

At the first sight the result is pleasant — good quality public spaces, distinctive urban furniture, nice cafés, design shops, and stylish restaurant — but there is no trace of local atmosphere. Pizza Express, Caffè Habitu, Pret à Manger, Plaza Mayor, Just Green, Chez Patrik Deli, and Castello del Vino are just a few of the bars and restaurants currently open in Star Street precinct. Just to be clear here, the concern is not about the results of the redevelopment, but about the scope and the power given to the private sector in guiding the development of the city.

As we have seen, the urban renewal process in Hong Kong is quite controversial, considerable economic interest and pressure is being exerted over the development of these urban spaces and the URA should lead a more sustainable Urban Renewal Strategy with the main aim of safeguarding public interest. The case of Star Street, and more generally, all the LDC and URA redevelopment projects that have carried out over recent years could stimulate a comprehensive reflection on the future of urban renewal in Hong Kong.

NOTES

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- ² Barrie Shelton, Justyna Karakiewicz and Thomas Kvan, *The Making of Hong Kong: From Vertical to Volumetric* (London: Routledge imprint of Taylor & Francis, 2011), 5.
- ³ Alexander R. Cuthbert, "The Right to the City: Surveillance, Private Interest and the Public Domain in Hong Kong," *Cities*, 12, 5 (1995): 298
- ⁴ "Hong Kong the Facts," Information Services Department, Hong Kong Special Administrative Region Government. April 2015, accessed May 29, 2016, <http://www.gov.hk/en/about/abouthk/factsheets/docs/population.pdf>.
- ⁵ "Assessment of 1444 Historic Buildings," Antiquities and Monument Office, Hong Kong Special Administrative Region Government, accessed May 29, 2016, <http://www.amo.gov.hk/en/built2.php>
- ⁶ "Demolition of Hong Kong's Tung Tak Pawn Shop Continues Despite Last-Ditch Battle to Save It," *South China Morning Post*, accessed May 26, 2016, [http://www.scmp.com/news/hong-kong/education.community/article/1849072/demolition-hong-kongs-tung-tak-pawn-shop](http://www.scmp.com/news/hong-kong/education/community/article/1849072/demolition-hong-kongs-tung-tak-pawn-shop).
- ⁷ Shelton, Karakiewicz and Kvan, *The Making of Hong Kong*, 51.
- ⁸ Hendrik Tieben, "Public/Private Interfaces in Hong Kong: Observations in the Sai Ying Pun District," in *Density and Intensity: Measuring the Non-Measurable, Work Book 1*, ed. Darko Radović (Tokyo: Flick Studio and IKI-International Keio Institute for Architecture and Urbanism, 2013), 42.
- ⁹ C.K. Law, et al. Study Report. *The Achievements and Challenges of Urban Renewal in Hong Kong* (University of Hong Kong, March 2010), 7, accessed May 26, 2016, http://www.ursreview.gov.hk/eng/related_studies_reports.html.
- ¹⁰ Mee Kam Ng, "Property-Led Urban Renewal In Hong Kong: Any Place For The Community?" *Sustainable Development* 10, 3 (2002): 142.
- ¹¹ Wing-Chi Yeung, "Why the URA Should Dissolve Itself Now," *The Hong Kong Economic Journal*, April 21, 2015. Accessed May 26, 2016, <http://www.ejinsight.com/20140421-why-the-ura-should-dissolve-itself-now/>.
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- ¹⁴ "Wan Chai: Evolution of a District," Swire Properties Limited, accessed May 26, 2016, http://www.swireproperties.com/cornerstone/past_issues/20130304/en/spotlight.html.
- ¹⁵ "Star Struck!" *Swire News*, 1st issue, 2009, 11 http://web.archive.org/web/20110721154531/http://www.swire.com/eng/news/swire_news/1st2009.pdf.
- ¹⁶ Ibid.
- ¹⁷ "Land Tenure System and Land Policy in Hong Kong," Lands Department, The Government of Hong Kong Special Administrative Region, accessed May 26, 2016, <http://www.landsd.gov.hk/en/service/landpolicy.htm>.
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LONG-TERM CHALLENGES IN URBAN HOUSING: IN THE SEARCH FOR INTERSECTIONS BETWEEN DESIGN AND POLICY REGULATIONS

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INTRODUCTION

In the contemporary urban context, cities under pressure are called to overcome, foresee and manage the impossible: continuously increasing challenges which reside under the greater label of sustainability and entail resolving environmental, social, economic and cultural problems¹. The scale and speed of change cities undergo, compromises the extents to which provided solutions display well-estimated chances for long-term viability. In other words, while longevity is by definition linked to sustainability, very often it remains neglected by urban vision agendas. On all urban grounds, old and emerging, designers and policy makers are dealing with multifaceted projects of either developing, reinventing or conserving the city. Now, more than ever, the debate on modes of living, on what is to be built, reconfigured or protected, renders itself critical and, as ever, it manifests extensively in the issue of housing. From the UK housing crisis to new towns like Rawabi in Palestine, it appears unavoidable that the debate on the future of urban housing falls into the loops of planning systems, development constraints and the real estate market.

Expanding on Booth's study² of Anglo-American, French and Hong-Kong planning systems, John Punter discusses how most of the twentieth century cities have been associated with two different planning systems³. On one side was the regulatory system of North America and most Western Europe, which was based on clear development rights, zoning regulations, administrative laws and a written constitution. On the other side was the discretionary system of Britain and Ireland where decision-making was plan-based yet susceptible to alterations. While design policy was clearly prescribed in the former, in the latter it was rather flexible; still, the approaches often converged⁴. At the same time, the twentieth century cities have failed to address housing sustainability successfully, with the collapsed utopias of modernism and post-modernism considered as their most characteristic failures. In the premises of reassessing future projections for a sustainable urbanism, urban design theory and research focused on examining what went wrong. As Marshall⁵ briefly reviews it, the modernist rational thinking in planning, projected mainly onto the design of 30s-70s housing estates, formed a 'disurbanism'⁶ of segregated morphologies. Then, debates on what constitutes 'good urbanism'⁷ suggested that the essence of city lies in the density and diversity of street activity⁸, implying the significance of socio-economic sustainability as an integral property of a well-functioning city⁹. However, while architecture and urban design literature¹⁰ has extensively studied

disurbanism and good urbanism, the focus has stayed solely on the interplay between spatial, social, political and economical evidence. Instead, few studies of the field have looked at the ‘urban design as public policy’¹¹; the design principles¹² and review practices¹³; or the building/planning regulations¹⁴ in relation to urban housing. Even fewer have addressed policymaking at different levels of the city scale¹⁵ and across a long-term period of evolution of the built environment. This evidence further demonstrates the need to understand the role of design and policymaking on shaping the complexities of the quotidian city over time; and in particular, the regulatory dynamics from macro to micro scales responsible for the housing cultures of the twentieth century cities.

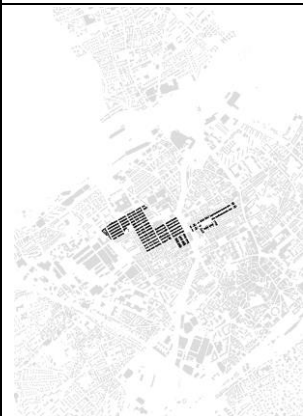
Case Studies	West Village	Islington	Cité Ouvrière
Date	1790-1835	1900-1930	1853-1897
Housing Type	Federal Row	Georgian and Victorian Terraced Houses	Terraced Back-to-Back Quarter-detached Semi-detached
Urban Type	Old city part (urban)	Satellite town (suburban)	Company town (Working-class mass housing)
Diachronic Process	Accommodation of non-residential uses	Block treatment / Subdivision	Incremental growth
City & Housing			
Housing Figure ground			

Figure 1. Summary of case studies

This paper looks at long-standing housing schemes, which remain spatially and socio-economically relevant to the context of the contemporary city, showing a consistent ability to resist, adapt and change in response to unforeseeable needs and pressures. We use an analytical, evidence-based approach, which merges methods and tools from the historico-geographical, the process-typological and the space syntax schools of urban morphology¹⁶. We examine three case studies: the West Village in Manhattan; Islington in London; and Cité Ouvrière in Mulhouse. These were selected to reflect varying urbanisation challenges in different contexts – in terms of spatial, morphological, socio-economic and cultural conditions – and in each case we focus on the policymaking approaches, which have had a significant impact on the way these urban places evolved over time. Figure 1 summarises the background and relevant particularities that each case study deals with. The comparison of the three case studies suggests that a combination of policies at different levels have been successful in each case to ensure the long-term viability of the building stock. It does, however, acknowledge that local communities have also been instrumental in supporting the formation of appropriate planning policies.

EXCESSIVE URBANITIES: EMBEDDING DIVERSITY

Case study: The West Village, Manhattan

The West Village is one of the oldest parts of New York and today retains possibly the greatest assortment of row houses dating from 1790-1835 (Federal style). The first blocks were delineated as early as 1752¹⁷. The street grid followed the direction of main thoroughfares, as well as the boundaries of existing land ownership, which resulted in great variation in terms of block sizes and shapes¹⁸. Other than fire regulations (state laws of 1775¹⁹ and 1791²⁰), the design of these buildings was neither extensively regulated nor necessarily overseen by architects. Instead, Federal row houses were built following builders' guides and *in situ* craftsmanship²¹ until 1806, when the first official requirement²² for scientific engineering guidance in housing design was introduced.

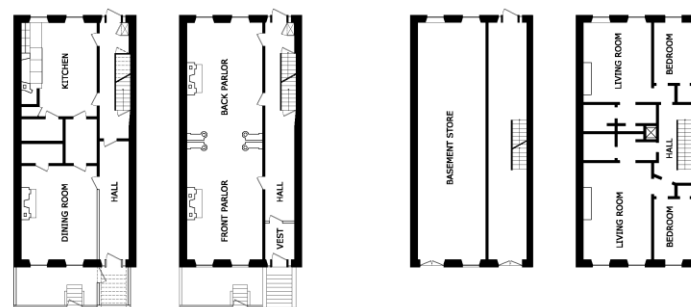


Figure 2. A typical Federal row house plan; before (1890s) and after (1920s) alteration. Reproduced from Andrew S. Dolkart, *The Row House Reborn* (2009, p.31).



Figure 3. The West Village, Manhattan – building use record for row houses and old-law tenements (top left: 1921, top right: 1955, down left: 2011). The land uses visualise the time-spread ‘ballet of Hudson Street’ and mixing of uses as described by Jane Jacobs (1961, p.153). Background map: © 2011 Department of Information Technology and Telecommunications, NYC.

The 1820s and 1830s rapid urban expansion in Manhattan absorbed the Village, turning it into a ‘boom town’²³. By the end of nineteenth century, row house conversion to multiple flats was becoming the norm²⁴, while tenement developers were taking over the blocks at the southern end of the Village, in response to a demand for higher density housing²⁵. The refurbishment of row houses often included changes in building use with stores accommodated on the ground or lower-ground floor (Figure 2). The culture of construction along with technological innovation²⁶, as well as the block configuration with narrow plots in combination with the flexible, symmetrical building interior layout²⁷ allowed for row houses to adapt to urban change (Figure 3). The varying adaptations of the row house typology resulted in both the maintenance of picturesque qualities and the formation of a lively streetscape accommodating in the urban block diverse uses in high density and close proximity to each other. To the mixing of uses contributed the area’s street layout properties²⁸, as revealed by space syntax analysis (Figure 4): (1) long, straight, north-south axes turned the Village into a passing through, well-connected area; (2) short block-fronts enhanced local permeability and socio-economic activity; and (3) longer block-fronts on the east-west direction protected the residential quieter streets.

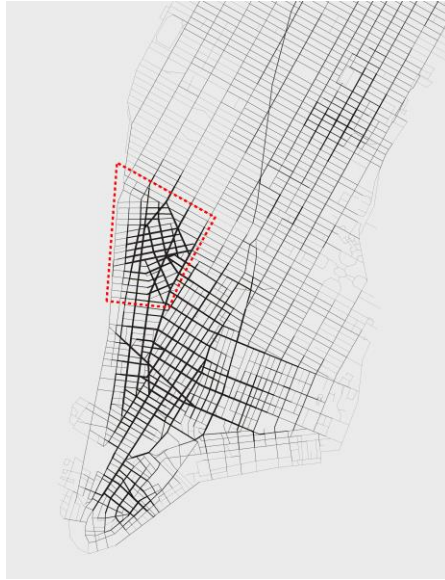


Figure 4. The West Village, Manhattan – spatial accessibility 2500m (using the space syntax measure of combined integration and choice).

The case of the West Village is an example of community participation in policy making. A number of local groups and associations were active in the Village, establishing their role in affecting legislation. The Greenwich Village Improvement Society, founded in 1903 by Mary Simkhovitch was one of the first neighbourhood associations in New York City²⁹. In 1906 active residents established the Washington Square Association, another local organisation which aimed to protect the residential character of the area. The Central Mercantile Association represented the interests of local merchants. These social and commercial parties, in liaison with real estate developers with interests in the area, promoted neighbourhood activism and influenced over the years political actions in favour of safeguarding the future of the Village³⁰. Effectively, the 1916 Zoning Commission regulation, echoing the voices of local representations³¹, provisioned restrictions on residential and commercial uses in the heart of the neighbourhood³² and at the same time protected manufacturing (light industrial) uses in the west waterfront area. Later in 1961, Jane Jacobs's activism against the West Village Houses renewal project³³ proposed by the New York City Housing and Redevelopment Board (HBR), forced the HBR to drop their mono-functional 'slum' clearance scheme and the Committee to Save the West Village, formed in 1963, submitted its own redevelopment plan. Notably, Jacobs's attacks³⁴ on urban renewal policies resulted in the historic preservation of the Village in 1969, designated by the Landmarks Preservation Commission. Since then, the Greenwich Village Society for Historic Preservation (GVSHIP), a non-profit organisation founded in 1980, has lead more than 70 campaigns³⁵ and has succeeded in passing zoning proposals in 2005³⁶ and 2010³⁷ for density and height restrictions in the West Village.

EXPANDING CITY: PROTECTING PLACES

Case study: Islington, London

Islington was first known as a dormitory village (mid-sixteenth century), north of London. The area gradually grew out as a suburban retreat settlement³⁸. During the first three decades of the nineteenth century, villas and terraced houses started occupying the fields of Canonbury and Barnsbury. Non-domestic activity clustered alongside Upper and Lower Streets – the two historical roads of the area. By the turn of twentieth century Islington was a satellite town³⁹ in its own right, with transportation

links to and from the city centre intensifying the appeal of the suburb to commuters. In the meantime, London was expanding towards its fringes. The city soon reached Islington and brought new settlers in the area. The requirements for new housing space led to the subdivision of single-family terraced houses into multi-dwellings, and eventually to overcrowding.

Whilst similar to the row house typology and equally flexible in terms of floor layout, here the individual terraced house was more submissive to the architectural and morphological unity of the entire block front. Changes in built form and/or occupancy were more likely to affect the whole terrace rather than a single building unit (Figure 5). Among the regulations affecting the terrace built form were those dealing with matters of fire prevention⁴⁰, sanitation, lighting, ventilation and drainage⁴¹ with an impact on the width of streets, as well as the width, height and materials of buildings. The unity of the terrace at the block-front scale⁴², as well as the functional distinction between prominent spatially integrated streets and quieter, primarily residential streets⁴³ (Figure 6), created over time sections within Islington with diverse qualities and different character, ranging from purely residential to highly mixed use.



Figure 5. Chapel Street, Islington, London – historical building footprints showing terraced house transformations, from top to down: 1875, 1910, 1965, 2013. Historical and background maps: © 2013 Crown Copyright. An Ordnance Survey/EDINA supplied service.



Figure 6. Islington, London – spatial accessibility 2500m (using the space syntax measure of combined integration and choice).

To protect the character of the area, in 1969 the Council of Islington Borough designated the first of a series of urban conservation areas that followed. Adopting an approach to conservation, which acknowledges that built form itself is not the sole factor defining an area's character. Street layout, components of the streets' micromorphology⁴⁴, building uses and their mixture, as well as the intermingling of private and public spaces, are all considered as parameters that have an impact on the identity of urban sceneries. There are seven conservation areas falling partly or wholly within the case study boundary, with all areas having been designated at different points in time.

The gradual embedding of Islington into the entire London movement network also shifted a once-suburban village to a local sub-centre. Analysis showed that those conservation areas while fragmentally delineated, were found to respond to physical, spatial and socio-economic characteristics as these naturally evolved throughout London's urbanisation processes. Non-domestic activity settled down along the main streets and on those districts, which historically showed higher street network accessibility potential (Figure 7). Overall, it is of interest to note how the Borough's localised approach chose the unit of 'clusters' instead of 'housing blocks/buildings' in order to safeguard the character of these places at the meso level, and managed to embed emerging socio-spatial processes of the past in the policy-making schemes, which regulated the future of these conservation areas.

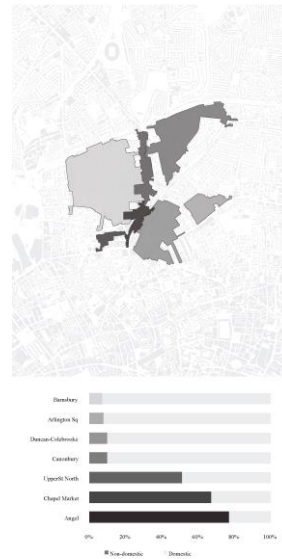


Figure 7. Islington, London – conservation areas; showing the areas' average value of spatial accessibility and the percentages of domestic vs. non-domestic uses. Background map: © 2013 Crown Copyright. An Ordnance Survey/EDINA supplied service.

SOCIAL HOUSING PROJECT: REGULATING ADAPTABILITY

Case study: Cité Ouvrière, Mulhouse

Cité Ouvrière in Mulhouse was built as a low-cost mass-housing scheme realised by the industrialists of Société Mulhousienne des Cités Ouvrières (SOMCO) for the workers of the Dollfus, Mieg & Cie (DMC) textile factory. The construction began in 1853 at the north edge of the city next to where the factory was located. It lasted till 1897 counting at the end a sum of 1243 single-family dwellings homogeneously repeated in space (Figure 8). It was developed in three time periods eventually demonstrating three main building types: (1) terraced, (2) back-to-back⁴⁵, and (3) quarter-detached houses. All types were symmetric, low-rise (two floors plus an attic) with pitched roofs and private gardens. The overall plan was based on an orthogonal and hierarchical – according to street width – urban grid with some narrow passages of 2,5 meters.

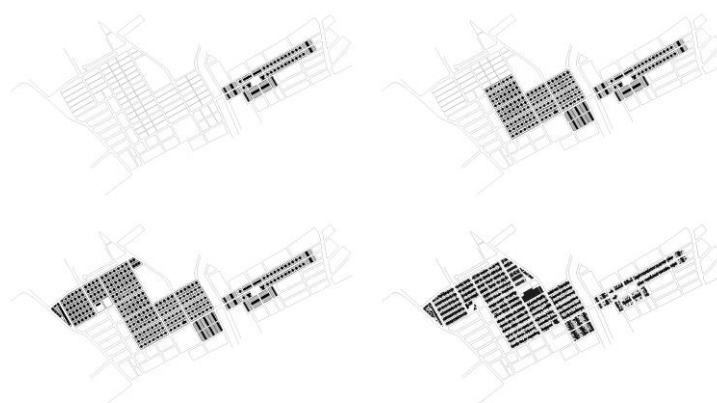


Figure 8. Cité Ouvrière in Mulhouse – development phases from top left to bottom right: 1853, 1856-1870, 1876-1897, 2015. Maps produced based on historical maps and maps provided by © 2012 IGN Copyright Institut National de l'Information Géographique et Forestière

Cité Ouvrière was not a typical ‘company town’⁴⁶; not only because of its architecture and urban design, but also because of the cultural and social aspirations for the labour, the access to property ownership and social mobility. It is also the first French case where government funds were used for a private project as far as public infrastructure and communal services were concerned⁴⁷. Few non-residential uses were also provided or opened such as nursery school, public baths, clothing stores, bistros, restaurants, bakery and laundries. In fact, scholars⁴⁸ have highlighted its catalytic influence on the following European company towns and other working class housing.

This is the reason why since 1882 the Police du Batiment established a set of regulations for building permissions and later in 1910, these regulations advocated in favour of the conservation of the appearance of the Cité⁴⁹. Upon recognition of its urban and cultural value, as well as that of the surrounding industrial building stock, more recently the ‘93 Projet Urbain Mulhousien⁵⁰ proposed the protection of its architectural heritage (Figure 9). It also suggested the need for (1) the adaptation of housing to contemporary necessities within the framework of the first Opération programmée d’amélioration de l’habitat (OPAH), (2) the accommodation of new land uses in existing brownfields and (3) the association of housing with other activities. Accordingly, the zoning of ‘95 Plan d’Occupation des Sols⁵¹ (POS) published by the Service d’Urbanisme identified Cité Ouvrière as a UP3 zone, meaning a zone of urban patrimony, the coherence of which should be guaranteed by regulating any transformation, demolition or construction within the area.

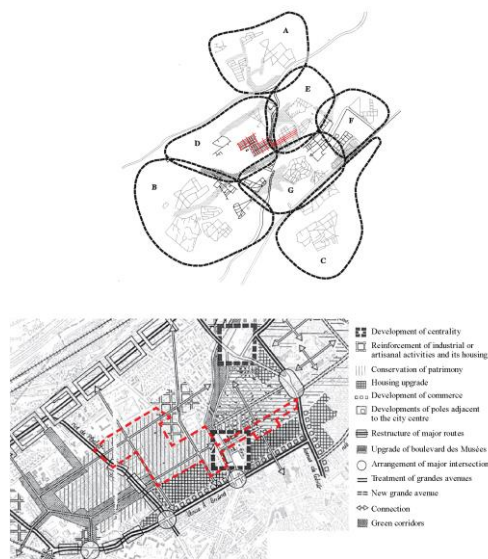


Figure 9. ‘93 Projet Urbain Mulhousien – Top: Urban strategies for each quarter. Cité Ouvrière is shared by D and E strategic areas concerning the upgrade of housing (E) and its association with other activities (D). Down: Detailed urban strategy for the cité. Two different maps have been joined together by the authors.

Source Chambaud, L. Vidal P. and Berger F., *Le Projet Urbain Mulhousien*, Bulletin de la Société Industrielle de Mulhouse. Mulhouse: Société Industrielle de Mulhouse, 2003.

While retrospectively, policymaking at the macro scale tried to enhance and protect the old quarter inasmuch as affiliating it with the modern city, Cité Ouvrière had already largely changed soon after its completion. Vertical and horizontal extensions, subdivisions and annexations of the individual houses ruptured the architectural uniformity (Figure 10). Building permissions for these acts of

changes were susceptible to a number of prescriptions with regard to implantation, aesthetics, security, fire prevention, heating, ventilation, hygiene, sanitation, street network and various others.⁵²

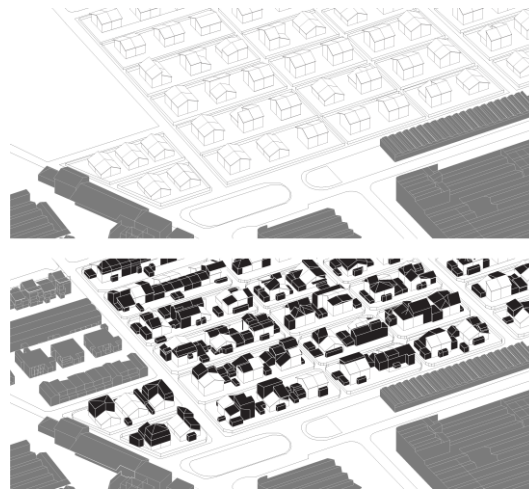


Figure 10. north-east part of Cité Ouvrière – axonometric by authors produced based on Bing Maps Bird's eye view.

To relate policymaking to the housing design now, the architect responsible for the cité Emile Muller deliberately provided open space more than 70% of the total plot area in all the original building types. This was believed to offer sanitary conditions, add value to the property and correspond to the social standards of family living. In fact, city authorities until before WWII aligned the building line permit with the building rather than with the plot so as to ensure that this open space remains unbuilt and gardens are safeguarded. However, with the introduction of the car from the beginning of twentieth century and the restoration wave after the war, the mushrooming of garage sheds and the re-arrangement of plots with clipped-off angles were observed (Figure 11). Effectively, the provision of such space added to the adaptive capacity of the housing typologies⁵³. Interestingly enough, transformations were not random, but followed morphological patterns over time mostly based on lifestyle trends and technological advancements.

Shifting to the actual built form, the '95 POS included a set of guidelines for future transformations in order to preserve the original character and architecture of Cité Ouvrière. Although there was certain flexibility, regulations determined building volume, roof ensemble, dormer-windows, tiles and sewage pipes system, facades' composition, setbacks and fencing. Even more detailed guidelines were found in the Plan Local d'Urbanisme⁵⁴ (PLU) for the UP3 zone. Among other things, they included rules for land uses, networks' usage, modifications, distances and dimensions, structural elements, colours, styles, materials, decoration, garages and green spaces (Figure 12).

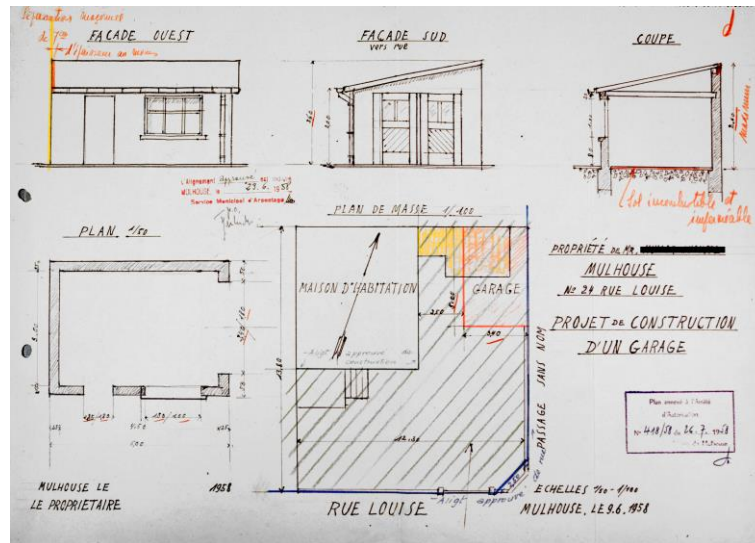


Figure 11. Plans for a garage shed and clipped-off angle plot submitted for Permis de Construire in 1958. Source: Service des Archives, Mulhouse.

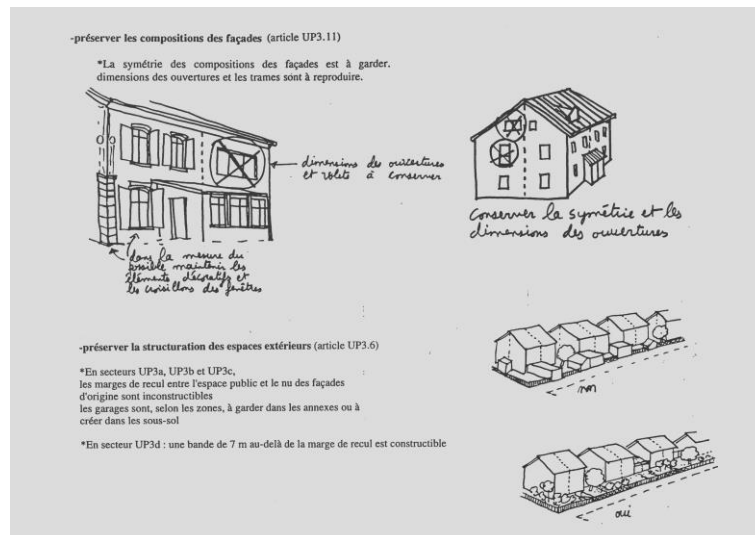


Figure 12. Building guidelines for UP3 zone.
Source: Service d'Urbanisme. (1995). Plan d'Occupation des Sols, p. 29

Cité Ouvrière is a social housing project, which managed to preserve its character as a residential neighbourhood of multiple ethnicities and low-income population groups. This is partially explained by the fact that the original scheme carried inherent spatial qualities that enabled it to sustain any socio-economic upheavals and survive the fast-urbanisation process. Space syntax research⁵⁵ showed how the layout of Cité Ouvrière avoided deprivation as it was well embedded in the global and local movement networks and its intensified grid of short and dense blocks made it internally easily accessible, while being surrounded by inter-accessible streets that attract non-residential activities (Figure 13). However, this would not have been the case if policymaking had not managed to regulate incremental growth without discouraging it. Cité Ouvrière now embodies both (1) formal unity – yet not uniformity – thanks to its original underlying organisational rhythm⁵⁶, and (2) formal variety as a result of a series of morphological transformations and the consistency of their patterns.



Figure 13. Cité Ouvrière, Mulhouse – spatial accessibility global scale (using the space syntax measure of integration).

CONCLUSION

This paper discussed design policies in relation to urban transformations mostly throughout the twentieth century in the context of three particular residential schemes in North America, Britain and France. The objective was to frame the impact of regulations on the evolution of housing as well as identify the different operational levels of policymaking in the city shaping process.

Collectively, we observed that the national, departmental, municipal and local regulations as fragmented as they may seem, they actually produce a framework of legal ‘affordance’⁵⁷, which up to a great extent formulates the possibilities of housing for long-term viability. In all the three case studies and planning systems a degree of flexibility was observed which enabled the evolution of the domestic building stock. Particularly, in the cases of West Village and Cité Ouvrière, flexible policies were happening simultaneously with local transformations of the houses – occasionally later – as a result of technological advancements and societal changes. Nonetheless, under this framework, housing schemes managed to evolve and grow whilst maintaining integrity over time and without missing the balance between stability, continuity and change⁵⁸.

Case Studies	West Village	Islington	Cité Ouvrière
Date	1790-1835	1900-1930	1853-1897
Characteristics	Mixed-use Diversity Historic Preservation	Clusters of uses Unity Historic Conservation	Purely residential Ruptured uniformity Industrial Heritage
Planning System (macro)	Regulatory	Discretionary	Regulatory
Development Constraints (meso)	Zoning Commission / State Laws	Conservation areas	Local Masterplan PLU / Zoning POS / Planning Codes
Local stakeholders (micro)	Community participation	Authority of local council	Regulated bottom-up transformations

Figure 14. Summary of findings

Furthermore, we argue that the management of policymaking over time happened at different levels, at different speeds and by different stakeholders within the same schemes. For instance at the macro scale, the West Village struck the right balance between the need for state legislation on the one hand and community's control through active participation on the other; namely the combination of top-down and bottom-up policymaking. Then, at the meso scale, what prevailed in all cases was the management of decision-making by users and local stakeholders. By ensuring that the various stakeholders take decisions across different built scales and a variety of conditions occur in space at different times⁵⁹, long-term sustainability is ensured. At the micro level, processes of transformations allowed for morphological diversity to emerge, while keeping the principles of the architectural identity and character of the place intact. Particularly, in the West Village and Cité Ouvrière the original standardised uniformity gradually evolved to unity due to the combination of design possibilities and policymaking at different levels: that of buildings, plots, blocks, city parts and city wholes.

On a final note, we wish to highlight how all three case studies showed inherent physical and spatial qualities, which supported their longevity. The local morphological conditions of buildings, plots and blocks enabled the piecemeal change of the built form as new demands, restrictions and potentials were arising. Space syntax analysis showed how the spatial layout of streets, being integrated with the surrounding city, ensured the areas' accessibility to urban flows, resources and networks. In other words, in all three cases policymaking benefited from the given potential of flexible built forms and integrated into the city street networks. Notably, this suggests the interdependence of architectural and spatial design and urban housing governance over time and calls for a synergetic relationship between them in every step and scale of policymaking.

NOTES

- ¹ c.f. Ricky Burdett and Deyan Sudjic, *The Endless City* (London: Phaidon Press, 2007); Ricky Burdett and Deyan Sudjic, *Living in the Endless City* (London: Phaidon Press, 2011); Kayvan Karimi, "Guest Editorial - 'Urban Challenges': Space and Society in the Contemporary Urban World," *The Journal of Space Syntax* 4(1): i-iv.
- ² See Philip Booth, *Controlling Development: Certainty and Discretion in Europe, the USA and Hong Kong, Volume 9* (Psychology Press, 1996).
- ³ John V. Punter, "Developing urban design as public policy: Best practice principles for design review and development management", *Journal of Urban Design* 12(2) (2007): 167-168.
- ⁴ Nico Nelissen, "Preliminary conclusions: ten megatrends in aesthetic control in Europe," *Urban Design International* 4(1&2) (1999): 77-78.
- ⁵ Stephen Marshall, *Cities, Design and Evolution* (UK: Routledge, 2009), 32-39.
- ⁶ c.f. Bill Hillier, *Space is the Machine: A Configurational Theory of Architecture* (Cambridge: Cambridge University Press, 1996), 131; Julianne Hanson "Urban transformations: A history of design ideas," *Urban design international* 5(2) (2000): 97-122; Ann Legeby, *Patterns of Co-Presence: Spatial Configuration and Social Segregation*, Doctoral Thesis (Stockholm: KTH Royal Institute of Technology, 2013).
- ⁷ See Emily Talen, *City Rules: How Regulations Affect Urban Form* (Washington: Island Press, 2011), 1.
- ⁸ c.f. Jane Jacobs, *The Death and Life of Great American Cities* (Harmondsworth, Middlesex: Penguin, 1961); Christopher Alexander, "A City is not a tree," *Design* 206 (1966): 46-55; Stanford Anderson, *On Streets: Streets as Elements of Urban Structure* (Cambridge MA: The MIT Press, 1986).
- ⁹ While disurbanism refers to housing estates, good urbanism refers to the whole city.
- ¹⁰ Policy issues have, however, been addressed by studies in other fields, such as planning, sociology and geography.
- ¹¹ Jonathan Barnett, *Urban Design as Public Policy* (New York: Architectural Record Book, 1974).
- ¹² c.f. John V. Punter, "Developing urban design as public policy: Best practice principles for design review and development management", *Journal of Urban Design* 12(2) (2007): 167-202.
- ¹³ c.f. Nico Nelissen & C. de Vocht, *Wel-staan over de grenzen heen* (Nijmegen: Zeist, 1988); John V. Punter, "The history of Aesthetic Control: The control of the external appearance of development in England and Wales, 1909-1985," *Town Planning Review* 57(4) (1986): 351-381, 58(1) (1987):29-62. 1987; Richard Tseng-Yu Lai, *Law in Urban Design and Planning: The Invisible Web* (New York: Van Nostrand Reinhold, 1998).
- ¹⁴ c.f. David Knight and Finn Williams, "SUB-PLAN: A guide to permitted development", *Architectural Research Quarterly* 16(03) (2012): 269-272.
- ¹⁵ During the 20th century, design principles have addressed issues of land use, density, zoning, street design, masterplanning, typomorphology and detailed stylistic guidelines. See John V. Punter, "Developing urban design as public policy: Best practice principles for design review and development management" *Journal of Urban Design* 12(2) (2007): 167-202.
- ¹⁶ On the schools of urban morphology see Karl Kropf, 'Aspects of urban form', *Urban Morphology* 13(2) (2009): 105-120.
- ¹⁷ Andrew S. Dolkart, *The South Village: A Proposal for Historic District Designation* (New York: The Greenwich Village Society for Historic Preservation, 2006), 12.
- ¹⁸ Landmarks Preservation Commission, *Greenwich Village Historic District Designation Report*, (New York: Landmarks Preservation Commission, 1969) (1), 11-12.
- ¹⁹ Peter van Schaack, *Colonial Laws of New York* (New York: New York Colony, 1775) (1) (chapter 63), 107-110; See also David Grimm, "Account of the 1776 Fire for the New York State Historical Society," (New York: New York State Historical Society, 1870).
- ²⁰ See New York State Legislature, *Laws*, (New York: New York State, 1791) (chapter 46), 34-35.
- ²¹ Charles Lockwood, *Bricks and Brownstone* (New York: Abbeville Press, 1972), 30.
- ²² Richard Plunz, *A History of Housing in New York City* (New York: Columbia University Press, 1999), 2.
- ²³ Caroline Ware, *Greenwich Village, 1920-1930: A Comment on American Civilization in the Post-War Years* (New York: Harper and Row, 1965; First edition in 1935, Boston: Houghton Mifflin), 9.
- ²⁴ Andrew S. Dolkart, *The Row House reborn* (Baltimore: The John Hopkins University Press, 2009).
- ²⁵ Legislation at the time revolved around the 'tenement problem' looking for designs, which would reduce the effects of overcrowding by securing air and ventilation. Estate developers managed to use the *New Tenement Law* to their profit by remodeling the row-house interiors into flats with kitchen facilities masked as 'non-

housekeeping' studios with 'dressing rooms'. See Andrew S. Dolkart, *The Row House reborn* (Baltimore: The John Hopkins University Press, 2009), 167.

²⁶ Howard Davis, *The Culture of Building* (New York: Oxford University Press, 2006).

²⁷ Garyfalia Palaiologou and Laura Vaughan, "The Manhattan row house as an exemplar of urban adaptability: 1874-2011," Cavallo, R., Komossa, S., Marzot, N., Berghauser Pont, M. and Kuijper, J. (eds.), *New Urban Configurations* (Amsterdam: IOS Press, 2014), 347-353.

²⁸ Garyfalia Palaiologou and Laura Vaughan, "The sociability of the street interface - revisiting West Village, Manhattan". *Our Common Future in Urban Morphology* (Porto, Portugal: FEUP, 2014): 88-102.

²⁹ Gerald W. McFarland, *Inside Greenwich Village: A New York City Neighborhood, 1898-1918* (Amherst: University of Massachusetts Press, 1938), 76.

³⁰ Andrew S. Dolkart, *The Row House reborn* (Baltimore: The John Hopkins University Press, 2009), 116-119.

³¹ c.f. 'City buildings zones divide realty men', taken from the New York Times archive: <http://query.nytimes.com/mem/archive-free/pdf?res=9E07E4D71231E733A0575BC2A9659C946796D6CF> (accessed May 30 2016).

³² Caroline Ware, *Greenwich Village, 1920-1930: A Comment on American Civilization in the Post-War Years* (New York: Harper and Row, 1965; First edition in 1935, Boston: Houghton Mifflin), 14.

³³ Richard Plunz, *A History of Housing in New York City* (New York: Columbia University Press, 1999), 308-312.

³⁴ See in *ibid.*, an example of Jacobs's activism against the West Village Houses renewal project proposed by the New York City Housing and Redevelopment Board (HBR) in 1961. After long debates the HBR dropped the proposal and the Committee to Save the West Village, formed in 1963, submitted its own redevelopment plan.

³⁵ http://www.gvshp.org/_gvshp/preservation/index.htm (accessed May 30 2016)

³⁶ <http://www1.nyc.gov/assets/planning/download/pdf/plans/far-west-village/farwestvillage.pdf> (accessed May 30 2016)

³⁷ http://www1.nyc.gov/assets/planning/download/pdf/plans/washington-greenwich-streets/wa_gw.pdf (accessed May 30 2016)

³⁸ Elizabeth McKellar, *The Birth of Modern London: The Development and Design of the City, 1660-1720* (Manchester: Manchester University Press, 1999).

³⁹ c.f. T. F. T. Baker and C. R. Elrington, *A History of the County of Middlesex: Volume 8: Islington and Stoke Newington parishes* (London Victoria: County History, 1985); Stephen Inwood, *A History of London* (London: Macmillan, 1998).

⁴⁰ The seventeenth century London was regulated by a system that classified streets determining their width and the building heights (Baer, 2007) and this classification is obvious in the Rebuilding Act of 1667 after the Great Fire (Davis, 2006). The Rebuilding Act of 1667, the Metropolitan Building Act of 1844 and the London Building Act of 1894 were fundamental regulation schemes that shaped the two and three-dimensional city form.

⁴¹ See Stephan Muthesius *The English Terraced House* (New Haven and London: Yale University Press, 1982), 49-62.

⁴² On the morphology of the London terrace see Garyfalia Palaiologou and Laura Vaughan, "Setting up the metropolis: Unpacking the historical spatial cultures of London and Manhattan," *Proceedings of the 10th International Space Syntax Symposium* (London: Space Syntax Laboratory, The Bartlett School of Architecture, University College London, 2015): 55:1-55:18.

⁴³ For an analysis of Islington's street network see Garyfalia Palaiologou "High street transactions and interactions," in Vaughan (Ed.), *Suburban urbanities: suburbs and the life of the high street* (London, UK: UCL Press, 2015), 175-203. doi:10.14324/111.9781910634134.

⁴⁴ i.e. the architectural treatment of the pavement at the level of individual plots; See Jeremy W. R. Whitehand, "British urban morphology: The Conzenian tradition", *Urban Morphology* 5(2) (2001):103-109.

⁴⁵ Back-to-back and terraced typologies were inspired by the British counter models of the time.

⁴⁶ A 'company town' is a massive production of industrial or working class housing provided top-down by a private developer. Porteous (1970) writes that the word 'company' refers to the organisations –individuals or corporations– responsible for their funding, construction and organisation. These residential schemes tended to formulate whole settlements or even towns, a "sea of housing in a uniform style" (*ibid.*, p. 133) and had certain characteristics in common: large scale, remote location, architectural homogeneity, specific target group to accommodate, unity under one command, dependence upon communal services, production at once, hierarchy and strong social control. They represented a specific category of social housing, built by the avant-garde capitalists in order to be rented and used exclusively by their employees; See J. Douglas Porteous, "The Nature of the Company Town," *Transactions of the Institute of British Geographers* (51) (1970): 127-142.

- ⁴⁷ Joseph J. Ermenc, Avant-Garde Capitalism in France. *The French Review*, 31(2) (1957): 129-135.
- ⁴⁸ c.f. Michael Honhart, "Company housing as urban planning in Germany, 1870–1940", *Central European History* 23(01) (1990): 3-21; Franzika Bollery and Kristina Hartmann, "A patriarchal Utopia: The garden city and housing reform in Germany at the turn of the century," in Anthony Sutcliffe (Ed.), *The rise of modern urban planning* (New York, 1980), 135-164.
- ⁴⁹ Laws of 1882 and 1910 found in documents of *Permis de Construire* in the Service des Archives of Mulhouse.
- ⁵⁰ See Loïc Chambaud, Pierre Vidal & François Berger, *Le Projet Urbain Mulhousien, Bulletin de la Société Industrielle de Mulhouse* (Mulhouse: Société Industrielle de Mulhouse 2003).
- ⁵¹ See *Service d' Urbanisme, Plan Local d'Urbanisme* (2008), <http://www.mulhouse.fr/fr/contenu-du-plu/> (accessed June 3 2016). *First Plan d'Occupation des Sols approved in 1977 followed by a number of revisions.*
- ⁵² See example *Permis de Construire* 1967, Service des Archives of Mulhouse.
- ⁵³ Fani Kostourou, "Configurational and morphological sustainability in social housing: The case of Cité Ouvrière in Mulhouse", *Proceedings of the 10th International Space Syntax Symposium* (London: Space Syntax Laboratory, The Bartlett School of Architecture, University College London, 2015): 7:1-7:20.
- ⁵⁴ See *Service d' Urbanisme, Plan Local d'Urbanisme* (Mulhouse: Ville de Mulhouse, 2008). <http://www.mulhouse.fr/fr/contenu-du-plu/> (accessed June 3 2016).
- ⁵⁵ Fani Kostourou, "Configurational and morphological sustainability in social housing: The case of Cité Ouvrière in Mulhouse", *Proceedings of the 10th International Space Syntax Symposium* (London: Space Syntax Laboratory, The Bartlett School of Architecture, University College London, 2015): 7:1-7:20.
- ⁵⁶ Garyfalia Palaiologou and Laura Vaughan, "Urban rhythms: Historic housing evolution and socio-spatial boundaries", in Margarita Greene, José Reyes, Andrea Castro (Eds.), *Proceedings of the Eighth International Space Syntax Symposium* (Santiago de Chile: PUC, 2012): 8161.1-8161.21.
- ⁵⁷ James J. Gibson was the first to introduce the term 'affordance' in his 1979 book *The Ecological Approach to Visual Perception*. He defined affordances as all "action possibilities" latent in the environment, objectively measurable and independent of the individual's ability to recognize them, but on its capabilities. In 1988, Norman's definition of 'perceived affordance' in his book *The Design of Everyday Things* made the whole concept relational by referring only to those possibilities that are readily perceivable by an actor.
- ⁵⁸ Howard Davis, *The Culture of Building* (New York: Oxford University Press, 2006).
- ⁵⁹ Jane Jacobs, *The Death and Life of Great American Cities* (Harmondsworth, Middlesex: Penguin, 1961), 198.

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ASSESSING THE CAPACITY FOR URBAN INFILL IN AUSTRALIAN CITIES

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INTRODUCTION

With population increase and the associated urban sprawl becoming one of the most significant issues for planning authorities, every state government in Australia now has infill housing targets ranging from 45% to 85% ¹. These targets aim to decrease the proportion of urban fringe (greenfield) housing developments by increasing the amount of dwellings on ex-industrial (brownfield) and established residential (greyfield) land.

Brownfield precinct redevelopment is now a well-established model for medium density and high-rise developments, but greyfield redevelopment, due to the complexity of multiple land ownership, is considered too difficult for the major property development companies, and as such is left to small scale “mom and pop” projects. However, despite the typically small project size, individual lot redevelopment accounts for 34% of new housing, producing 152,430 new houses (85,392 net increase) in Melbourne between 2004-2014. What this volume indicates is that, even without strategic initiatives, this form of redevelopment is considerable, but it also illustrates that by not strategically investing in this form of redevelopment, state governments are highly unlikely to achieve the infill levels that they have set about 50%.

Quantum of new housing aside, there are a number of significant issues with the lot-by-lot scale of redevelopment. Firstly, mapping exercises show that roughly 65% of existing land parcels in the middle suburbs have between 70-80% of value in the land, indicating that they are under-capitalized and prime for redevelopment ². What this amounts to is that majority of land parcels in the middle suburbs will eventually be redeveloped, regardless of strategic direction. Secondly, the ad-hoc nature of redevelopments, which are generally built to maximum building envelopes, is already eroding the “neighbourhood character” of areas and producing buildings and neighborhoods of indifferent design. Thirdly, though they generally produce a slight increase in population, lot-by-lot redevelopment does not provide for additional local amenity; placing more pressure on already scarce resources, such as parks and community services, regardless of development contributions (loss of private green space is a growing issue for urban microclimates). Lastly, this land is being redeveloped inefficiently, due to being done on small parcels in a lot-by-lot fashion. What these factors amount to is that the Australian suburbs are undergoing significant change, and are poised to undergo significantly more, but under the current lot-by-lot system, the outcomes are going to result in suboptimal outcomes in terms of quality, density and sustainability. Furthermore, once developed, the properties are off-the-

market for the next 40 years or so, which is an opportunity cost, particularly when the potential of redevelopment – and regeneration - on a larger scale is considered.

An alternative to this form of development is the concept of the “regeneration precinct”, which comes from Newton’s body of work on “Greyfields”. In this context greyfields refer to “those ageing but occupied tracts of inner and middle ring suburbia that are physically, technologically and environmentally failing and which represent under-capitalized assets” ³. This, and later work illustrate how the urban greyfields represent the potential to achieve superior outcomes in terms of density, design and sustainability *if* tackled strategically and *if* they were developed as “regeneration precincts” as opposed to the currently lot-by-lot system ⁴.

A precinct can be conceived of as any series of lot amalgamations, notionally between 4 and 50 lots, which, due to the volume of land acquired, now allows for more intensive regenerative redevelopment. The additional benefits of precincts, due to their scale, are that they allow for major regenerative infrastructural retrofit, assistance with local policy implementation (by incorporating open-space, canopy trees, affordable housing etc.), strategic redesign, and, due to the additional densities achieved, also have the potential to produce far higher returns on land sales for existing landowners, thereby encouraging citizen-led lot amalgamation and redevelopment ⁵.

The opportunity to obtain far higher property sales prices for amalgamated land is becoming a market led reality, illustrated by the frequency of media reports on land-owners collectively selling their properties for far more than they could have achieved individually ⁶. Also, due to suburbs having dwellings that were built roughly around the same time, market pressures leading to redevelopment naturally occur in clusters, as can be seen in Figure 1, where the red (medium dark) lots are those with high redevelopment potential and those in dark grey being lots developed between 2004-2014. The life-cycle model of metropolitan housing in Newton and Glackin (2017) illustrates this evolutionary process.



Figure 1. All recent redevelopment (Black), showing lost opportunity for lot amalgamation and high RPI dwellings (RPI ≥ 0.7) in Grey, i.e. the future potential for lot amalgamation in the area. Land parcels remaining white have low RPI.

To this point the argument has been largely theoretical; that there are housing lifecycles and that precinct scale redevelopment could achieve better outcomes than Business-As-Usual (BAU) redevelopment. The next section will begin to explore one of these benefits; illustrating how precincts can be embedded in more traditional local area or municipal housing capacity analyses to provide evidence, purely in terms of additional densities, that can be achieved with larger (amalgamated) lots.

CAPACITY ANALYSIS

A housing capacity analysis is an examination of potential land supply, usually combined with predictions regarding how many dwellings that land will accommodate. At a metropolitan scale, states produce reports on the land supply of capital cities, which typically incorporate planning approvals data (of ten or more dwellings), foreshadowed zoning change, land earmarked for future development (e.g. proposed new greenfield sites) and lots over a specific area (e.g. 2000m²) that are under single ownership in residential zones⁷. Occasionally this is combined with a survey of landowner intentions, to begin planning for additional infrastructural demand⁸. These Urban Development Programs (UDPs) provide a measure of all expected *major* development within the urban boundary.

Smaller scale capacity analyses are also performed at a municipal level and there is no prescribed methodology for these studies, as they are usually undertaken purely to inform municipal housing strategies. Commonly, methodologies begin by removing all land which is deemed to be non-

developable, such as roads, public space, land not available for residential use (such as active industrial land) and civic or special use areas (there are weaknesses with such assumption e.g. continuing to allocate existing space to car related activity). Occasionally land that has recently been developed and land identified as heritage is also removed. Once supply has been identified, either a building density or a population density is applied to this land, typically in the context of what density is achievable in each zone, to provide an estimate of potential future housing supply. These studies vary greatly in their rigor, but all provide estimates of potential dwelling supply.

The aim of this paper will be to illustrate, using a capacity model developed for the Greening the Greyfields project, the benefits that can be achieved with precinct scale redevelopment. However, prior to this we will present a series of formal methodologies to illustrate the complexity and limitations of capacity analysis.

The ‘Adams’ method

Robert Adams⁹ work on Transport Corridors aimed to show how significant transport corridors could be used to both increase the densities around areas of high utility and protect the traditional suburban areas between them. This approach was broadly aimed at promoting greater sustainability through reducing urban sprawl and more efficiently position new housing, so that it utilizes existing transport networks. Adams’ method consisted of the following steps.

- Identify cadastral parcels (within the greater city boundary)
- Remove special zones (such as the CBD & cultural precincts)
- Select parcels along tram and priority bus routes
- Remove areas in parks or areas that are undevelopable due to open space zoning
- Remove public use and industrial zones
- Remove sites without rear laneway access
- Remove recently developed properties
- Remove heritage registered buildings
- Remove sites with less than 6 metres of frontage
- Remove 50% of sites within the heritage overlay (Melbourne heritage overlays can cover large swaths of inner urban land, much of which can be redeveloped, once designs are respectful to the location)

This method identified that 34,477 dwellings, comprising 6,694 hectares, with a current population of 200,700. This was the first stage of the research; identifying potential redevelopment sites. The second stage was individually assessing the potential capacity for new dwellings and assessing population increase. A context based analysis of all potential land was analysed by municipality and provided a range of population density increases, which then flows to a housing density increase. At a low density target (180 people per hectare) the identified parcels were shown to create a net population increase of approximately 1 million, involving 501,975 new dwellings. At high density (400 people per hectare) the available land produces a population increase of approximately 2.5 million and an associated 1.2 million net new dwellings.

The ‘Landis’ method

The method used by Landis et al.¹⁰ relies primarily on county taxation records, which provide an Improved Value (value of the dwelling) and a Land Value (value of the land). Using these variables they developed the I/L ratio; the ratio of dwelling value to land value. Values below 1 for commercial and multi-unit dwellings, and values of less than 0.5 for single unit dwellings indicated undercapitalisation of the lot; signifying a potential infill redevelopment site. Additionally, vacant

land, or land that had an improved value or less than \$5000, was added to this set of potential infill land parcels.

To ensure that parcels were not selected in inappropriate areas (areas where market potential for infill was low), census collection districts were analysed. In respect of their current dwelling density, if the census block did not achieve a threshold of 2.4 to 4 dwellings per hectare, dwellings in these blocks were not included in the calculation; as they were deemed to be in areas of low density and therefore not contextually appropriate for significant redevelopment.

Further limitations were also placed on calculating potential infill sites, such as excluding cemeteries, golf courses and country clubs, excluding parcels greater than 5 acres with non-residential activity occurring on them and exclusion of multiple condominium listings. Across large, medium and smaller census blocks this method identified approximately 1,260,000 potential dwellings that are available for redevelopment (480,000 in large census blocks, 450,000 in medium sized census blocks, 330,000 in small census blocks) for California.

With the potential redevelopable land identified, the next phase was to provide contextually appropriate density increases, as well as minimum and maximum densities. Potential increases were developed based on a number of factors (Table 1 provides some of these parameters as an illustration).

Classification	% Residential density increase	Minimum density (dwellings/acre)	Maximum density (dwellings/acre)
Within a dense, mixed use area	150%	40	80
Within 1/3 of a mile of train station	100%	30	60
...			
Not classified, single family units, low public transport	25%	4	6

Table 1. Landis census blocks categorization

After applying these percentage increases, this method showed that the infill potential for the state of California was roughly 9,700,000 net new dwellings, 4,000,000 in high density census blocks, 3,500,000 in medium density blocks and 2,150,000 in low density census blocks.

The 'Buxton' method

The method proposed by Buxton et al. (2015) was largely aimed at the metropolitan strategy *Plan Melbourne* and its aim to achieve 61% of new residential dwellings within the established areas and 39% in greenfield sites ¹¹. Buxton et al. show how this figure for new residential dwellings in established area can be increased to 78.3%, and greenfield development reduced to 21.7% of new dwelling constructions.

As in the above two methods, the first process was parcel identification, which began with all metropolitan properties identified in the Housing Capacity Analysis (HCA) dataset (a state funded dataset aimed at identifying housing capacity in Melbourne). The first step was to remove all features of interest (such as schools, churches and public space). Parcels that were in zones precluding residential development (e.g. industrial and purely commercial) were removed, except when within 400m² of an activity center, to allow for rezoning in the future. Parcels with more than 1 dwelling were removed, as they were already considered to be re-developed. Parcels less than 225m² were then excluded, due to being considered of inappropriate size for redevelopment. All heritage lots were then

removed. Finally, and if not already within the dataset, parcels identified in the Urban Development Program ¹² were added to the dataset, providing 550,000 parcels across the Inner, Established Middle, Established Outer and Growth Area regions.

Potential capacity was then calculated based on a number of variables, such as lot-size cohort (225-2000m²), planning zone (the 4 key development zones in Melbourne), city region (inner, middle, outer, growth) and the existing number of dwellings on it (0 or 1). With the probable outcomes for each parcel established the uptake rates were then defined. These were largely a product of city region, zone and parcel size, to produce an uptake rate between 30% and 100%.

This analysis showed that there was the potential to develop 1,653,135 net new dwellings, as opposed to Plan Melbourne's projection of 1,570,000. More importantly it illustrated how 986,375 of these dwellings (59.7%) can occur in established areas rather than 650,000 (41%) as stated by *Plan Melbourne*

Greening the Greyfields: Greyfield Renewal Precinct (GRP) methodology

This method is used to illustrate the benefits of implementing regeneration precinct scale housing supply assessment over that of Business as Usual piecemeal infill. As a result, each scenario has two methods, the first which relates to BAU redevelopment while the second looks at the same area under a precinct, lot-amalgamation model.

The first step was to identify potential land parcels. This was done similarly to the 'Landis' method, by using Capital Improved Value (CIV) and Land Value (LV) from municipal rates data to develop a value that represented the relationship between the two. In the Victorian context Capital Improved Value is the total value of the parcel, including the dwelling, as opposed to just the cost of the building, which is the case in the Landis method. When Land Value is divided by Capital Improved Value a score between 0-1 is generated. The closer this score is to 1, the higher the proportion of value is in the land, a score of 0.7, for example, indicates that 70% of value is in the land, which indicates significant market pressure to redevelop. For this reason this score is known as the Redevelopment Potential Index (RPI) ¹³.

In order to apply Greyfield Renewal Precincts ¹⁴ strategically, four redevelopment scenarios were chosen; regeneration around Neighbourhood Activity Centres, train stations, transport corridors and residential zones more broadly. In each of the scenarios below, a 400 metre buffer was drawn around the object of focus. Land parcels with an RPI of 0.7 or greater were taken to be the parcels with high redevelopment potential; based on rates of subsequent redevelopment documented in Newton (2010). If these parcels were abutting they were amalgamated into precincts. Once identified, capacity models were then applied.

Market analysis models have used the Density Site Ratio (DSR) as a metric for illustrating the potential yield from redevelopable lots ¹⁵. The DSR reflects the footprint of land utilised by each dwelling. To calculate GFA this figure would be multiplied by the number of stories in each building. So a DSR of 25, at five stories, would produce 125m² (5*25m²) of space per dwelling, which, allowing for a 20% allocation to shared space (stairwells, parking etc.) would produce an apartment roughly 100m². Table 2 illustrates the variety of scales of DSR, their respective typology and expected Gross Floor Area/unit. It should be noted that the DSR in the higher density developments (lower DSRs) includes shared space such as stairwells, corridors and so forth. .

DSR	350	200	125	50	25
Typical Stories	1	1-2	2	2-3	4-5
GFA m ² /unit	350	200-400	250	100-150	100-125
Description	Single story Detached house	1-2 story Townhouse / terrace	2 story Townhouse / terrace	2-3 story walk-up apartments	4-5 story elevated apartments

Table 2. Typologies associated with various Density Site Ratios (DSRs)

To show the effects of a precinct approach, large lots (>2000m²) have been removed from the analysis, as it is assumed that these are easily redevelopable and capable of producing higher densities. The figures below do not allow for higher densities on smaller lots (in a BAU scenario). Higher densities (lower DSR) are only available on precincts that incorporate two or more land parcels and thus gain the volume of land necessary for these higher densities.

As a final note on method, all figures herein are at 100% redevelopment at specific typologies. Complete redevelopment of all redevelopable lots is unlikely, neither is a uniform dwelling typology, and local context must be applied to the percentage of lots that could reasonably be developed. However the figures are illustrative of the significant increase in dwelling numbers that can be achieved with lot amalgamation as precincts. The City of Maroondah represents the municipality where the analyses were undertaken.

PRECINCT SCENARIOS

This section examines the concept of Greyfield Renewal Precincts (GRP) and their potential yield. The aim is to show how lot amalgamation and precinct scale redevelopment can be used in a variety of scenarios to provide the additional dwellings (as well as retrofitted hard and soft infrastructure implied by Greyfield precinct methodologies). These scenarios cover Transport Corridor scenarios, Neighbourhood Activity Centre scenarios, development around train stations and precincts in the General Residential Zone.

Neighbourhood Activity Centres (NAC)

A Neighbourhood Activity Centre is a small-scale centre of commercial activity servicing an immediate area. They are ranked (1-6) by Victorian Department of Environment, Land, Water and Planning (DELWP) according to the level of service they provide. These areas have been identified as one strategy for focusing redevelopment activity, by allowing additional densities within 400m of these locations. Research with local government has indicated that only the top 2 rankings provide the level of amenity necessary to fuel medium density development. Figure 2 shows the position and buffers of 8 NACs in the City of Maroondah, Victoria ¹⁶.

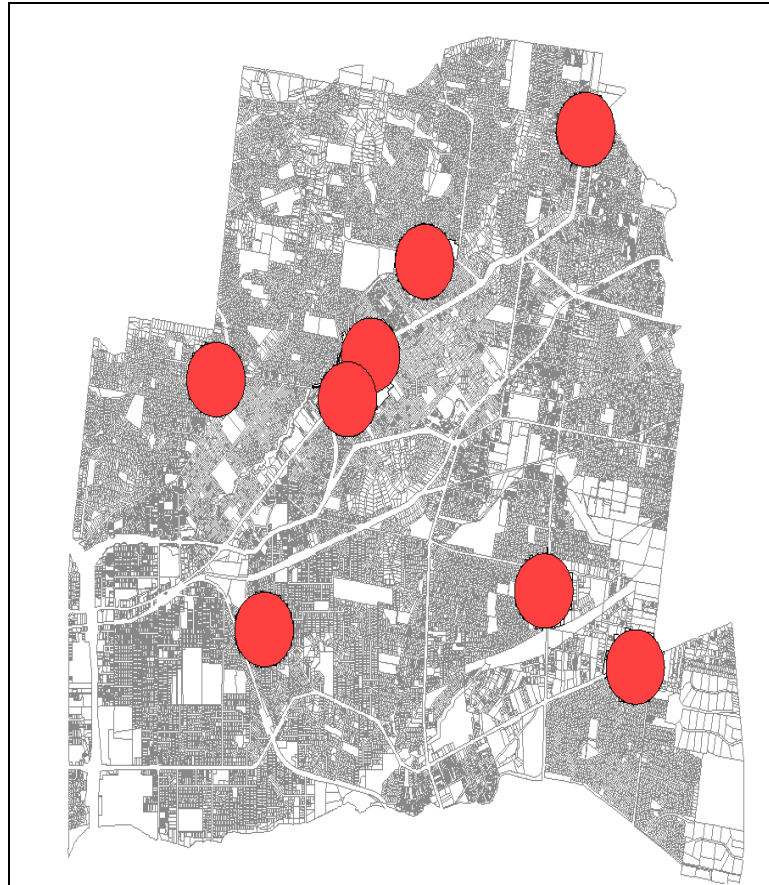


Figure 2. Neighbourhood Activity Centres in Maroondah

As with the previous scenario, Figure 3 illustrates cadastres with high redevelopment potential surrounding one of these centres (left), while the map to the right shows the same parcels with the boundaries dissolved.



Figure 3. Neighbourhood Activity Centre (in Black) and surrounding undercapitalised dwellings (left), and with potential amalgamated lots and GRP (right).

Tables 3 and 4 illustrate the net housing increase that is associated with developing these parcels in a BAU approach compared with precincts. At 100% development, and using typical subdivision sizes (350m², 200m² and 125m²) a precincts approach produces an additional 562, 696 and 631 dwellings, respectively for those areas. However, when the possibility of medium density is taken into account, which would mostly be unachievable with BAU subdivisions, potential housing increases in the tens of thousands can be realised. While these figures are extraordinarily high, and at 100% redevelopment of high RPI dwellings, they remain indicative of the housing increase that can be achieved using lot amalgamation.

Table 3 shows that, in a BAU scenario, and at 100% redevelopment, Neighborhood Activity Centres can achieve 1698 dwellings at DSR 350 (which is typical for subdivisions scale for the area), 5573 large townhouses and 9399 small townhouses.

Neighbourhood activity centre	Developable area m ²	N Lots	Avg. area m ²	DSR 350 Detached house	DSR 200 large town house	DSR 125 Small town house	DSR 50 2-3 Story Apt.	DSR 25 4-5 Story Apt
Burnt Bridge SC & PO Ringwood	173,829	216	805	216	864	1296	Unviable at the individual lot scale	
Canterbury Gardens SC, Kilsyth	16,989	21	809	21	84	126		
Eastwood, Ringwood East	205,778	279	738	279	837	1395		
Kallay Street Shops	125,918	142	887	142	568	994		
McAdam Square, Croydon	299,294	188	1592	564	1316	2256		
Merrindale SC Croydon South	124,434	139	895	139	556	973		
North Croydon Shopping Plaza	143,012	158	905	158	632	1106		
North Ringwood	169,778	179	948	179	716	1253		
Total net housing increase				1698	5573	9399	0	0

Table 3. BAU capacity at 100% redevelopment of high RPI dwellings

Table 4 shows that by generating precincts, yield will increase, even at low density scale. However, when we take the higher densities into account, which can only be achieved through lot amalgamation, the power of precinct scale redevelopment is readily apparent.

Neighbourhood activity centre	Developable area m ²	N Precincts	Avg. area m ²	DSR 350 Detached house	DSR 200 large town house	DSR 125 Small town house	DSR 50 2-3 Story Apt.	DSR 25 4-5 Story Apt
Burnt Bridge SC & PO Ringwood	182548	42	4346	306	913	1460	3651	7302
Canterbury Gardens SC, Kilsyth	16989	13	1307	28	85	136	340	680
Eastwood, Ringwood East	205778	69	2982	309	1029	1646	4116	8231
Kallay Street Shops	111970	20	5599	178	560	896	2239	4479
McAdam Square, Croydon	299294	29	10320	667	1496	2394	5986	11972
Merrindale SC Croydon South	124434	27	4609	217	622	995	2489	4977
North Croydon Shopping Plaza	143012	37	3865	251	715	1144	2860	5720
North Ringwood	169778	47	3612	306	849	1358	3396	6791
Total net housing increase				2260	6269	10030	25076	50152

Table 4. Precinct capacity at 100% redevelopment of high RPI dwellings

Train station scenario

As the most significant category of public transport infrastructure in relation to value uplift and intensified level of development, higher density redevelopment around train station have long been an objective of state governments, in the context of their Activity Centre planning policies. The scenario below is located in the City of Maroondah. As with above scenarios, lot boundaries have been dissolved to illustrate potential



Figure 4. Heathmont Train station precinct under-capitalised individual lots (left) and potential amalgamated lots, or Greyfield Renewal Precincts (right).

In Table 5 we can see that the benefits from precincts have effect even at the typical redevelopment scale (350m^2 , 200m^2 and 125m^2), producing 349, 806 and 1446 (or an additional 104, 71 and 221) net dwellings increase per typology (a 43%, 10% and 18% increase respectively). As with the previous scenario, the effect of amalgamation on housing increase, particularly at the medium density scale, has the potential to produce dwellings at a scale 10 times greater than typical redevelopment outcomes.

Scenario	Developable area m ²	N lots / precincts	Avg. area m ²	DSR 350	DSR 200	DSR 125	DSR 50	DSR 25
BAU	210,328	245	858	245	735	1225	Not viable at the Individual lot level	
Total BAU				245	735	1225	0	0
Precincts	203,137	42	4837	335	771	1380	3818	7880
Remaining Individual properties	10,099	15	673	14	35	66	Not viable at the Individual lot level	
Total Precincts				349	806	1446	3818	7880
Additional dwellings form precincts				104	71	221	3818	7880

Table 5. BAU versus Precinct capacity of at 100% redevelopment of high RPI dwellings

General Residential Zone

Recent statutory changes in Melbourne metropolitan planning have resulted in the creation and implementation of three residential zones. The Neighbourhood Residential Zone (NRZ) aims to protect neighbourhood character and limits redevelopment to a maximum of 2 dwellings on a lot. The Residential Growth Zone (GRZ) aims to promote higher density redevelopment in strategic areas, while the General Residential Zone (GRZ) aims to promote incremental growth. Table 6 indicates that the RGZ has been implemented on less than 1% of land, which leaves the GRZ (44.1%) and other (commercial, low density etc.) zones (42.2%), to carry the weight of urban intensification.

	NRZ	GRZ	RGZ	Other
Number of lots	341,037	1,070,724	26,397	131,186
Area (Hectares)	22,148	76,338	1,590	73,000
% of total zoned land	12.80%	44.10%	0.90%	42.20%

Table 6. Zones that allow for residential development, metropolitan Melbourne. (Source: Overarching Report: Residential Zones State of Play)

Figure 5 represents a typical greyfield area in Maroondah, showing the significant amount of GRZ land parcels with high redevelopment potential on the left, and then with the boundaries of attached high redevelopment lots dissolved to the right. This, once again, is indicative of the potential to utilise redevelopment precincts, rather than lot-by-lot redevelopment.

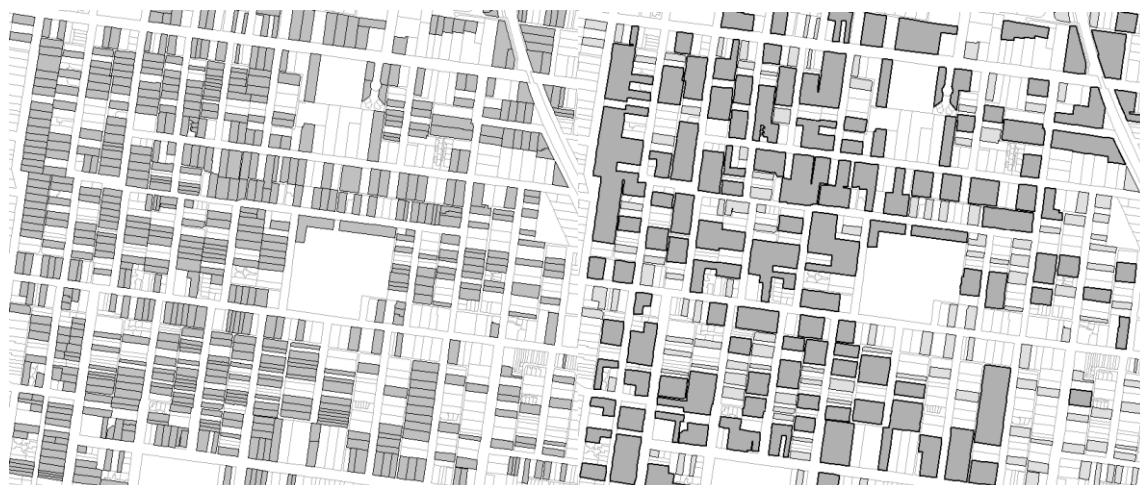


Figure 5. GRZ high RPI land parcels as individual parcels (left) and as GRP (right)

Table 7 illustrates the BAU versus precinct approach for GRZ redevelopments, in terms of available land. The BAU analysis shows that there are currently 691 land parcels available for redevelopment: with an average area of 547m². With lot amalgamation we now have 119 precincts, however the average area of each precinct is now 2495m²; a scale at which medium density dwellings are now viable development projects.

Scenario	Developable area m ²	N lots / precincts	Avg. area m ²	DSR 350	DSR 200	DSR 125	DSR 50	DSR 25
BAU	378,315	691	547	0	691	2073	Not viable at the Individual lot level	
Total BAU				0	691	2073	0	0
Precincts	369,095	119	2495	714	1309	2142	6690	14072
Remaining individual properties	9,220	168	705	168	336	672	Not viable at the Individual lot level	
Total Precincts				882	1645	2814	6690	14072

Table 7. BAU versus Precinct capacity of at 100% redevelopment of high RPI dwellings

All Scenarios

The previous sections have illustrated the benefits of using GRPs instead of relying on lot-by-lot redevelopment for optimizing net new housing supply. The broad effect has been to develop land more efficiently through the realignment of land parcels, as well as supply greater volumes of land, which, when the setbacks and plot ratios for apartment buildings are taken into account, allow for greater central massing than would be the case with lot-by-lot redevelopment. Table 8 shows the benefits that can be achieved across each of the scenarios; in terms of the net housing increase that can be achieved through BAU approaches versus the GRP approach. In all instances the net housing increase is significant, particularly in the higher densities (where between 176-402 dwellings per hectare can be achieved), but also in the detached and semi-detached market (where an additional 4-25 dwellings per hectare can be achieved).

Scenario	BAU / Precinct	Net dwelling increase / hectare				
		DSR 350 Detached house	DSR 200 Large townhouse	DSR 125 Small townhouse	DSR 50 Walk-up apartment	DSR 25 Apartment
NAC	BAU	14	45	75	0	0
	Precinct	18	50	80	201	401
	Increase	4	6	5	201	401
Train Station	BAU	12	35	58	0	0
	Precinct	17	38	69	182	375
	Increase	5	3	11	182	375
GRZ	BAU	0	18	55	0	0
	Precinct	23	43	74	176	370
	Increase	23	25	20	176	370

Table 8. Net housing increase per hectare. BAU versus Precincts

IMPLEMENTATION AND CONCLUSION

Housing capacity analyses show the benefits that precinct scale redevelopment can deliver for infill housing supply and urban regeneration. Through lot amalgamation, and the larger redevelopment projects that can be achieved on these lots, far greater yield can be achieved in medium density projects. When combined with regeneration objectives related to renewable energy, water sensitive design etc. there is a capacity to significantly improve urban design and housing outcomes for Melbourne. The calculations outlined above have been incorporated into local housing strategies and are, at the time of writing, poised to become part of a municipal housing policy. Other work in this field has begun to explore the statutory and other legal mechanisms required to enable Greyfield Renewal Precincts as a regeneration strategy for metropolitan Melbourne.

This research has seen the concept of greyfield renewal precincts included in Plan Melbourne Refresh, the redraft of the Metropolitan Strategic Statement. This endorsement seeks to explore the possibility of a new zone or overlay explicitly developed to support precincts as an alternative to lot-by-lot redevelopment. Ongoing work with collaborative municipalities has produced a pilot schedule amendment, which will be the precursor of this new statutory mechanism.

Community engagement activities have also begun within a collaborating municipality. To date these have been at the macro level; working with municipal officers to advertise changes to housing policy and to signal the intentions of local government to implement greyfield precincts as a viable alternative to lot-by-lot housing redevelopment in selected locations¹⁷. Shortly this will turn to micro-level engagements, where community members and landowners are engaged directly, in a co-design process, to jointly assemble (and possibly design and develop) regenerative precincts. This phase also requires a suite of contractual templates and financial viability instruments, to ensure that landowners are provided with the necessary financial and legal tools to allow for transparent collaboration and decision making. Contractual assistance is being provided by lot amalgamation experts who have been directly involved in land consolidation projects¹⁸, while economic viability is being assessed (at a rudimentary level) by software developed for the project¹⁹. Finally, to prove that precincts do actually outperform BAU development on multiple levels, assessment tools have been created that have the capacity to calculate energy, water use, embodied and operating carbon, storm-water flow, project cost and potentially other metrics related to performance²⁰.

The analyses presented in this paper have shown that the benefits of precinct scale redevelopment are evident, and if applied broadly could produce gains that could deliver benefit to the entire city. However, built form and fabric varies across a city, as does the scale and density of redevelopment scenarios that are achievable. To calculate benefit at a metropolitan scale would require replication of this type of analysis, where the contextual parameters are applied by each municipality. The requirement for all municipalities in a metropolitan region (in Victoria) to develop future housing strategies provide such a platform. Here, each municipality would need to address the additional factors that require consideration, such as the new and upgraded services that each precinct should deliver (such as reconfigured and reduced parking, green-space, space for social services). The outputs of this research demonstrate the potential for better alignment of state and local government planning and housing strategies, which ultimately contribute towards a more sustainable city.

NOTES

- ¹. All Australian State now have these targets see Western Australian Planning Commission 2010, Department of Planning & Environment 2014, Department of Transport Planning and Local Infrastructure 2013, Department of Planning and Local Government 2010, Government of South Australia 2016. 85% of all new housing will be built in established areas by 2045.
- ². See Newton 2011.
- ³. The work of (Newton 2010, Newton and Glackin 2017 use the Redevelopment Potential Index, which is land value divided by capital improved value to derive under capitalization, as per Landis 2016.
- ⁴. Newton's work is practically explored in the following Newton et al. 2011, Newton et al. 2012, Murray et al. 2015, all of which begin to look at the broader implications and the design criteria for potential precincts.
- ⁵. Bottom up engagement becomes a necessity in the area of infill and urban regeneration. See the following for practical examples: Newton and Glackin 2017, Glackin and Newton 2015, Glackin and Dionisio 2016.
- ⁶. Current trends show that significant financial gains can be made through amalgamating lots, sometime in the range of an additional 50%.
- ⁷. See for example the Department of Environment Land Water and Planning 2015b.
- ⁸. See for example the Western Australian Department of Planning 2015.
- ⁹. Adams performed this analysis for The City of Melbourne 2009.
- ¹⁰. See Landis et al. 2006 for a complete overview of the process.
- ¹¹. Buxton et al. (2015) calculations were largely in response to the then Department of Transport Planning and Local Infrastructure metropolitan strategy Plan Melbourne (2013) to illustrate the gains that could be made using alternative strategies.
- ¹². The UDP (Urban development Program) is calculated annually by the Department of Environment Land Water and Planning (2015b) to illustrate the amount of brownfield land potentially available for use as residential land.
- ¹³. Newton (2010) uses a similar approach to Landis (2006), but more reflective of Australian data.
- ¹⁴. The concept of the GRP has moved from theory to policy, with its inclusion in Plan Melbourne Refresh. The concept is currently being developed with assistance from local and state government statutory planners. The Department of Environment Land Water and Planning 2015a page 57. References are also included throughout, particularly in the recommendations for implementation selection.
- ¹⁵. Charter Keck Cramer (2015) produced a housing sales and market analysis for the City of Maroondah. The Density site ratio is largely the same as a Floor Space Ratio (FSR).
- ¹⁶. These can be seen in the Maroondah Housing Strategy as published by the City of Maroondah (2016b)
- ¹⁷. The community engagement report, published by Maroondah City Council (2016a) illustrate the responses, which, for a research project, were notably high (46% approval rating council wide).
- ¹⁸. See Bowden 2016. Additionally local experts have been drawn on for this purpose
- ¹⁹. Glackin, 2013, illustrates the types of tools, and a bespoke example of one, required to identify potential precincts.
- ²⁰. The total workflow, from identification through to actual precinct design and assessment, has been well documented in Trubka et. al 2016. What remains is to implement the legislative, financial and engagement methodologies which, at the time of writing, were in process.

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THE ROLE OF COMMUNITY-DRIVEN FINANCE IN BRIDGING FORMAL AND INFORMAL PRACTICES FOR SECURING AFFORDABLE HOUSING IN SOUTH EAST ASIA

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INTRODUCTION

Urban informality plays an important role in providing land, shelter, finance, and livelihood opportunities to low-income and urban poor groups; despite this informality continues to be perceived as an urban policy problem¹. The planning literature identifies the need to move forward from the formal/informal dichotomy and recognize the role that informal development practices play in urban development². This argument is relevant in the context of finance for housing and upgrading as on the one hand formal practices (e.g. international, public and private) have the ability to leverage funds to invest in housing and upgrading at scale; while on the other hand, informal practices (e.g. community saving groups) have the knowledge to effectively reach and work for the poor³. Despite evidence showing linkages between formal and informal finance in housing and upgrading, most research has tended to concentrate on understanding these practices separately⁴. Departing from a theoretical discussion on informality and planning in the global south, this paper presents the potential of community-driven finance to bridge formal and informal finance for housing and infrastructure upgrading in South East Asia, and illustrates this by reflecting on the case of the re-development of old collective housing in Huu Nghi community, Vinh city – Vietnam. The paper draws on secondary documents, observations, notes, attendance to workshops and interviews conducted by the author while living in this community as part of a 6 month internship with the Asian Coalition for Housing Rights in 2013.

INFORMALITY AND PLANNING IN THE URBAN GLOBAL SOUTH

In the global south urban informality is mostly associated with human settlement and trade or exchange that occurs outside of formal legal structures and processes⁵. However understandings and definitions of informality vary and there is a growing academic debate about what informality entitles and how is manifested in different contexts⁶. For example, informality has been associated with ungovernable development practices⁷; with autonomy and creativity opening up development opportunities for those excluded⁸; with survival practices of the poor⁹; and for embodying varying degrees of power and exclusion¹⁰. Also, it is now recognized that informality is not just the ‘space’ of the poor but also of the state itself and influential actors in cities that use ‘the state of exception’ to purposely meet their individual interests¹¹. What this argues is that even when there is a direct

relationship between poverty and informality¹², informality itself is much complex than that. Informality is tangled with complex structural power relationships that define which urban development practices are legitimate and illegitimate in cities, and decide which urban development models are valued or removed¹³. Thus planning responses to informality are not only important for successful pro-poor interventions, but also to progress efforts to construct just cities in the urban global south.

In planning, traditional views have considered informality as a separate ‘informal sector’ supporting a dichotomy between formal and informal sectors¹⁴. Consequently, in planning informality is seen as supporting illegal, uncontrolled, and inefficient development, being fundamentally different from the ordered, regulated, and efficient notions of planned land use and settlement. Thus, in the context of planning, informality is seen as ‘the other’ and thereby perceived as an urban policy problem¹⁵. This formal/informal dichotomy has informed most planning responses to informality in cities of the south. Consequently, there is a significant gap that the formal/informal divide creates between planning (institutions and practice) and the realities of those surviving under conditions of informality. Watson (2003) conceptualizes this as a ‘conflict of rationalities’ between the logic of governing and the logic of survival¹⁶. This gap is recognized as a central limitation of planning to effectively respond to problems associated with poverty and injustice in the urban global south¹⁷.

In regards to financial practices for housing and infrastructure upgrading, the literature recognizes that the formal financial system excludes low-income and urban poor groups because it operates in disconnection to the informal practices they use to secure access to housing, basic services and livelihood needs¹⁸. For the purpose of this paper these informal practices refer to collective financial mechanisms such as saving groups, rotating savings and credit associations (ROSCAs) and cooperatives emerging as a third sector to provide access to finance to low-income and poor groups¹⁹. Despite their potential to contribute to housing and slum upgrading, collective informal financial mechanisms are mostly excluded from the formal financial system and most government-led housing and upgrading interventions in the global south²⁰.

The result is that formal finance provided by banks is not affordable to the urban poor, and formal standard loans demand inflexible conditions for access such as stable incomes, the need for a secure guarantee and/or land security which most of the urban poor lack²¹. Also, most governments support centralized and heavily subsidized interventions in which the state leaves little room for the inclusion of the poor in investment decision-making, and in many cases the intended subsidies are unable to reach the poor due to stringent rules needed for their access²². Similarly international aid rarely reaches the urban poor directly and is unable to catalyse development processes that are sustainable and transformative at the local level²³.

The planning literature recognizes the limitations of the formal/informal sector dichotomy and proposes new understandings of this concept. For example McFarlane (2012) proposes formality/informality as practices moving forward the understanding of informality and formality as fixed categories to acknowledging the different flows taking place between these practices²⁴. Within this discussion the concept of ‘*the interface*’ arises as a central concern for planning to understand the various and complex interactions between formal and informal urban development practices²⁵. In the context of financial practices for housing and slum upgrading, examples of public and private initiatives supporting the interactions between formal and informal practices have appeared over the last decades²⁶. The next section will describe the characteristics of community-driven financial mechanisms in South East Asia and their potential to bridge formal and informal financial practices in housing and infrastructure upgrading.

COMMUNITY-DRIVEN FINANCE IN SOUTH EAST ASIA

Community-driven finance in South East Asia responds to the lack of appropriate support to disadvantaged groups to access finance, land, housing and livelihood opportunities in rapidly growing cities²⁷. It is helpful to understand community driven finance not as a specific mechanism but as a gradual process arising from the need and initiative of the urban poor, and consolidating by linking individuals through saving activities as a community, then into a neighbourhood, city, and/or nation-wide network, and ideally linking and accessing formal financial sources either from government, the private sector, or international aid²⁸. Despite this, these processes vary in the way they consolidate mixing both bottom-up and top-down elements in different ways.

In South East Asia these processes are supported by global and regional networks of slum dwellers and support professionals represented by two umbrella organisations: the Asian Coalition for Housing Rights (ACHR) and Slum Dwellers International (SDI). These organisations provide start-up funds, encourage knowledge exchanges and learning between communities, create partnerships with governments and key development agencies, and provide technical support. Community-driven financial mechanisms are found in 7 countries including Cambodia (23 funds), Indonesia (4 funds), Myanmar (4 funds), Philippines (15 funds), Vietnam (17 funds), Thailand (7 funds) and Lao PDR (26 funds) with a total capital of 22, 192,646 US Dollars in 2014, from which 14,893,989 US Dollars come from urban poor community savings²⁹.

Community-driven mechanisms operate as revolving funds but are diverse in their characteristics. The funds vary in scale ranging from settlement, neighbourhood, city, regional, national and international levels. They also vary in degree in how they link with formal sources of finance, blending resources from the state, international donors and in some cases local communities and the private sector.

Formal linkages with government institutions occur in Vietnam, Thailand and Cambodia³⁰. Consequently there is diversity on management and decision-making structures, and rules and regulations in how the money is made accessible to urban poor communities³¹. Archer (2012) considers the diversity within community-driven financial mechanisms a strength allowing the funds to respond to local circumstances and political contexts rather than following a single model³².

Despite their diversity, the literature indicates common characteristics supported by these mechanisms allowing these to bridge formal and informal financial practices. The funds are characterized by presenting a high degree of flexibility in the rules and conditions used to make finance available to the urban poor, as well as by supporting projects that relax existing legislative and planning standards to make housing and infrastructure affordable³³. This flexibility allows money to be adapted to the dynamics of the poor communities, often supporting an incremental process of development and repayment that is appropriate to their livelihoods³⁴. Also, contrary to large amounts of money, these mechanisms support small amounts in order to build the urban poor's capacity to organize, manage money and repay loans³⁵. The 'scarcity' strategy helps to de-emphasize the budget and material aspect, and consolidate a social process through the development of housing and infrastructure.

Importantly, community-driven finance encourages the collective organisation of communities to address specific infrastructure and shelter needs. Collective action is sought to allow poor people themselves to organize and manage their housing and infrastructure investments based on their terms and conditions³⁶. Also collective action can increase the urban poor's negotiating capacity and political support from local authorities, and can encourage transparency and good management of resources³⁷. Furthermore, community-driven finance does not only focus on providing financial assistance, but supports community-driven enumerations, knowledge exchanges, and financial literacy with the aim of increasing the capacity of urban poor communities to become a strong player in housing and infrastructure upgrading³⁸.

Community-driven finance is now recognized by many international organisations and academics as an innovative approach to finance affordable housing in the global south³⁹. Despite this there is little research into how these systems operate in practice⁴⁰. The following section introduces the community-driven finance movement in Vietnam, and the case of re-development of old collective housing in Huu Nghi community through a city-wide community development fund (CDF) in Cua Nam Ward, Vinh city. The following draws into the characteristics used by CDFs to bridge formal and informal practices as described in this section.

THE RE-DEVELOPMENT OF OLD COLLECTIVE HOUSING IN HUU NGHI COMMUNITY IN VINH CITY

The community-driven finance movement in Viet Nam has been consolidating since 1989 through the support given to collective saving activities used by low-income groups. Key in the implementation of this process have been local organisations such as the National's Women Union, Enda Vietnam, the Association of Cities of Vietnam (ACVN), local authorities, as well as international organisations including ACHR, UN-ESCAP, UNDP and Cities Alliance⁴¹. The first breakthrough in the consolidation of this process was in 2001 with the establishment of city-wide community development funds in 5 cities (Vie Tri, Hai Duong, Hue, Quy Nhon, Can Tho). The aim of this process was to strengthen and scale-up existing community savings groups and link them with formal government institutions in different cities. The CDFs proliferated to a total of 17 cities forming the National Network of Community Development Fund⁴².

In Vinh, a city in the North central coast of Viet Nam with approximately 490,000 residents, the city-wide CDF was set up in 2006. The CDF is a revolving fund managed by a committee of members from the local government, and blends different sources of funding including from ACHR's Asian Coalition for Community Action Programme (ACCA), the Latin American, African and Asian Social Housing Service (SELAVIP), UN-HABITAT, World Bank and the local government as shown in Figure 1. These sources are allocated first to the National Network of Community Development Fund and then to each individual city.

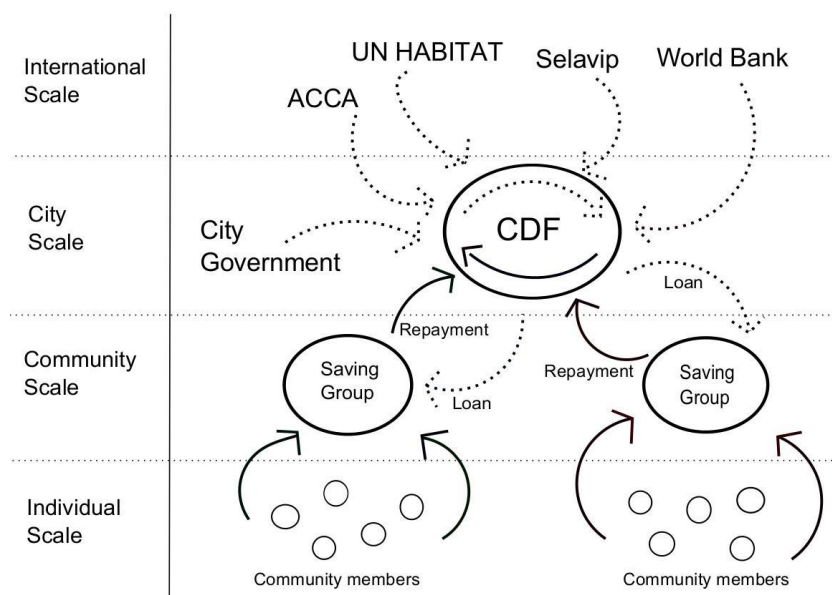


Figure 1. Vinh's city community development fund (CDF)

The funds are used to give loans to communities with organized saving groups to manage small infrastructure projects, big housing projects, disaster recovery as well as support community exchanges, mapping and enumeration and other activities. By December 2012 the CDF had funded a total of 34 small infrastructure projects, 5 housing projects and 3 disaster relief projects supporting the conditions seen in Table 1⁴³.

Purpose	Amount of Loan (USD)	Repayment period	Annual interest rate
Infrastructure	15,000	25 months	0.8%
Housing	40,000	42 months	0.65%
Disaster relief	20,000	25 months	0.65%

Table 1. Conditions of loans supported by Vinh city CDF

Vinh is home to 99 old dilapidated collective housing blocks (both one-storey row houses and apartment flats) built for factory workers in the 1970s when the city was planned to become a new industrial centre. In 2007 the People's Committee of Nghe An Province provided the legal basis for the redevelopment of old collective housing in Vinh city. The re-development of old collective housing happens across Vietnam as part of the market-driven urbanisation wanting to 'renovate' and 'beautify' cities characterizing South East Asia. In Vinh, this process initially supported the conventional top-down and state-driven practice, and proposed the replacement of existing housing with lower-density social housing occupying plots of double the size of the existing ones⁴⁴. This made the houses very expensive and implied that some families would be relocated to new housing elsewhere. These plans triggered the members of Huu Nghi community to organize and discuss alternatives to upgrade their community. At that time Huu Nghi community was comprised of 29 households and 103 people living in old and dilapidated row-houses, once built by soviet-owned Huu Nghi Shareholding Company during 1974-1978, and sold to the individual households in 1990. The community consisted of four housing rows of one floor that were seriously degraded, as well as a lack of adequate infrastructure such as access roads, drainage and sewerage system.

In 2009 ACVN together with ACHR and Vinh city CDF organized a workshop on "communities collectively build low cost housing" as well as exchange visits to other cities in Vietnam and Thailand. These exchange visits aimed to give the opportunity to community leaders and members, as well as government officials to learn from the initiatives of communities and governments facing the same challenges in other cities and countries. These exchange visits helped community members and local authorities to visualize how they could work together in their own particular context. This sparked the interest and initiative of Huu Nghi community and in 2009 they started their own saving group making it possible to borrow the CDF's 40,000 USD housing loan.

With the money in hand and the help of a retired architect, the community developed the design plan for their new houses and infrastructure. This plan proposed the development of 2 storey houses within 45 m2 plots each. This plan made houses more affordable by proposing smaller plots than the provincial government's minimal social housing standard. Thanks to securing the loan through the CDF and the good organisation of the community, negotiations with city and provincial authorities were successful in relaxing the housing standards. This is recognized as an important breakthrough in

the provision of affordable housing for low-income families in Vietnam's socialist regime. In addition, the design proposed sharing the houses' foundations and walls, reducing costs by about 40%. The community reduced additional costs by collectively purchasing materials in bulk quantities, making effective use of new and old materials, and having one contractor for the whole community. At the end the project cost 1,248,000 dong per m², reducing 45-50% of the estimated cost of 2,200,000 dong per m². In 2010 only after 6 months of starting the project the whole development was complete, leaving behind the one floor degraded houses with leaking roofs and bad quality infrastructure, and replacing it with two rows of 2-3 floors with a 5 meter wide alley, street lighting, complete drainage and available basic services to all households. With the money that was left the community bought Vietnamese flags for all households, which are still displayed in the community on special occasions ⁴⁵

The success of the project is attributed to the strong collaboration and solidarity between community members. This entitled sharing land plots of equal size in the new development even when some households had previously bigger plots of about 90 m². Also two better off households agreed for a 72 year old single and poor women to "borrow" the walls of their houses, meaning she only had to pay for a roof and front and back walls. Solidarity and collaboration was also reflected in the initiative of all community members to volunteer their labour in the construction of the houses and infrastructure, the supervision of construction quality and use of materials, and the constant sharing of information about the use of the money and development plans and progress. Furthermore, good leadership, the support of government and the support from national and international organisations are attributed as important factors for the success of the project. As off Today the community has been able to pay back the complete loan to the city CDF and continue to enjoy life together. Community members feel proud and have received recognition from society, as well as secure material and non-material long-term assets for themselves and their future generations⁴⁶. Despite the important lessons from this case different questions remain including, how to replicate this process on a city-wide scale? How to involve community members in the management and decision-making of the city CDF? how to continuously maintain the mobilisation and networking of urban poor groups in the city?

CONCLUSION AND RESEARCH DIRECTIONS

The case of Huu Nghi community shows how the principles supported by community-driven finance to bridge formal and informal financial practices are put in practice to secure affordable housing. As seen in this case community savings groups are used as an effective mechanism for low-income families to access more formalized forms of finance and link with formal institutions, but at the same time maintain control over their investments and development process. Also, the lessons of this case show that flexibility, collective action and working with small and more realistic budgets are important conditions that provide space for urban poor communities to take ownership of their own development, and increase their capacity to negotiate and collaborate with local authorities and other key development partners. Research into community-driven mechanisms would benefit not only from in-depth case-studies into these processes but also contextualizing these cases within the political and socio-economic complexities experiencing in cities of the global south, as well as more practice-oriented research into how these mechanisms could be scaled up and sustained by linking with private sources of finance.

NOTES

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- ⁴² See Cities Alliance and Association of Cities of Vietnam. 2012. Operations manual of community development fund. Available online at:
http://www.citiesalliance.org/sites/citiesalliance.org/files/CAFiles/Projects/Final_CDF_Manual_with_Cover_Page.pdf
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- ⁴⁴ This information is derived from reports and conversations with ACVN, ACHR government officials and community members in Vinh. Some documents can be accessed online in the following link:
<http://www.achr.net/countries-de.php?ic=2>
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- ⁴⁶ Ibid

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CLEARING STOCK OF THE INVISIBLE: EFFECTS OF COSMOPOLITAN POWER ON THE SUPPLY OF AFFORDABLE HOUSING

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INTRODUCTION

The geopolitical landscape of the Sydney metropolitan region is caught in the entanglement of competing interests framed within the conflict of state and local governments, council borders and changing leadership affecting how these edges are drawn, quartered and sold. Sydney exemplifies the shift to a post-industrial city with flight of heavy industries to the suburban fringe and concentration of service and information industries in the CBD and surrounding area¹. This in turn has changed the social makeup of its residents and their requirement for amenities furthering the transformation to a post-industrial landscape. Through a case study analysis of the Barangaroo development this paper examines how issues of policy provision affect the development of city regions and their impacts on the development and supply of affordable housing.

It is not just the tourist gaze but also the gaze of its residents that allow cosmopolitan developments to proceed as planned. The drive for 'Sydney Global City' leaves the more quotidian requirements of affordable and social housing supply to claim the little attention left in our schizophrenic lives. Urban densification and intensification in the context of Sydney's housing bubble² places considerable stress on brownfield development in built up areas where quantitative measures such as economics and yield dominate the agenda and passively implicate further social inequality through spatially determined outcomes³.

Issues of housing supply and affordability are not a new phenomenon with plans and policy provisions existing since the post war era. Leonie Sandercock⁴ provides an account of planning in Australia for the period up to 1975 beginning rather nihilistically stating that 'this is a book about failure'. In nearby Pyrmont in the 1980s and 1990s we have witnessed the impacts of cosmopolitan development on existing residential neighborhoods at the city's edge⁵. An increasingly transitory citizenship is also affecting the quality of communities with temporary tenure and empty residences contributing to a lack of cohesion in the quality of social relationships. One could argue that in a tourist and commercial precinct like Darling Harbour might not require the same level of cohesion as a more residential suburb at the edge of the Sydney city catchment but for want of progress and development has seen Millers Point lose its historically working class residents forced out as the agglomeration of the image of Sydney Global City stretches out further claiming more casualties in the efforts of consolidation.

The State Government has recently released a public paper⁶ providing a 10-year plan for housing reform and addressing a backlog of over 60,000 residents waiting for placement. As we consider the contents of this document and the trend for divestment onto the community and private sector we truly see this shift that David Harvey identified over 25 years ago⁷ and has grown increasingly visible in the urban cityscapes that take form.

SYDNEY'S CONTEXT

Development around the foreshore within the City of Sydney area is a particularly tenuous site that needs to not only navigate the needs of economic development, social cohesion and technological innovation but because most major developments fall under the category of 'major projects'⁸ and designated State Significant Developments (SSDs) there is tension between the agendas and remit of both local and state government determining the outcomes of these projects. Following Madanipour⁹ the importance of urban planning and design is such that it must consider the tensions between 'producers, regulators and users' and in the case of Sydney and many other cities, the developer, the state, and a mix of residents & visitors¹⁰.

Social Housing and Urban Renewal

The development of social housing in Sydney has had a history of addressing challenging conditions of high value sites whereby innovative pragmatism advanced the building of social housing in the inner city suburbs of Redfern and Surry Hills in the 1950s¹¹. At the time these areas were laden with slums and this urban upgrading was seen as a way to alleviate these sites of poverty. This advancement progressed until the early 1980s where neoliberal policies saw a shift in development and replenishment of housing stock¹² accentuating the governments push to inspire a society of homeowners. A rapidly expanding Sydney embraced globalisation and the attraction of open markets had shifted the developmental focus back into the city.

Contemporary renewal and development of Sydney's industrial heritage along its foreshore dates from the 1960s and 1970s coinciding with the shift of Sydney's major shipping needs moving to Botany Bay¹³. As the shipping requirements in Sydney began rolling back, the docklands in Darling Harbour became available for redevelopment with urgency to meet the Bicentennial celebration deadline in 1988 leading to a mixed-use tourist precinct that was conceived in tenuous terms and that is currently undergoing a new stage of redevelopment in the face of regional competition¹⁴. Sited in proximal adjacency the conditions surrounding the Barangaroo development have been equally tenuous and conflicting since its inception and during the competition phase¹⁵ with light cast on the politics, design and process of development. Notwithstanding Lend Lease are also redeveloping the southern flank of Darling Harbour raising concerns about ownership of what is considered public space¹⁶. As this development takes shape with expansive massing and floorplates, the adjacent suburb of Millers Point continues its sale and exodus of public housing as they stand in the way of densification and capital gain¹⁷.

What ties these developments together is the drive to deliver iconic buildings and 'world-class' facilities as a driver to attract global capital¹⁸ serving double duty as post-modern capitalist monuments. Perhaps the question to be answered is how can we balance economic growth and provide for social sustainability that results in inclusionary interfaces between public and private spaces. In considering this nexus we should constantly shift our locus of observation from the micro to macroscopic scale; from that of the immediate spatial boundary that is impacted to the impacts on these developments on the system of local and state government that shares jurisdiction on sites of state significance.

The importance and direction of policy towards home ownership has been identified by previous scholars of the NSW government's divestment of public housing stock¹⁹ and shifting its focus from housing supply towards subsidies like the Commonwealth Rental Assistance. The generational call for and promotion of home ownership may attempt to remedy the issue of housing supply and affordability but recent research by Jacobs²⁰ identifies the subsidies to homeowners total \$45 billion annually while the Commonwealth Rent Assistance to low income renters totals just \$3.6 billion per year. This incongruence of support is evidently disproportionate to those in need of assistance and these regressive policies put in place only exacerbate the conditions of inequality. In the shift from managerialism to entrepreneurialism there is a need to consider the not immediately read social capital of communities and a wider consideration of the political economy²¹ of housing as a complex asset and instrument of basic human need.

BARANGAROO

The Barangaroo precinct development was always going to be under strain as it attempted to balance the needs of a growing Sydney Global City²². The now defunct Sydney Harbour Foreshore Authority (SHFA)²³ commissioned a report by a well-known Sydney based academic²⁴ considering the social sustainability of the precinct and makes a case by considering the site in relation to neighboring suburb of Millers Point, and international benchmarking against comparable cities of London and New York on the feasibility and necessity of planning a socially diverse community in this new suburb on East Darling Harbour. Successively as the development has evolved, the initial target of 7.5% affordable housing that was in line with the *minimum* target suggested by the City of Sydney has now been eroded to a *maximum* of 2.3%²⁵. Even considering this modest proposal, it has been reported that even this is not guaranteed²⁶ with talks of Lend Lease moving their contribution offsite. Against the targets of 7.5% social housing and 7.5% affordable housing, the current stock of social housing is at 8.6% (8.1% after the sale of Millers Point) and 1% affordable housing²⁷ will make achieving the City of Sydney 2030²⁸ goals quite the challenge.

In addition to the housing stock deficit, it must also be recognized of the conflictual nature of housing itself. The 'right to the city'²⁹ has long been advocated especially with shifting governance structures and transfer of responsibility to quasi-state and community sectors in delivering housing solutions³⁰. The problems they inherit stem largely from both the fixed asset of housing, the scarcity of resources to develop them, and the changing demographics of both their tenancy and society as a whole. It is beyond the scope of this paper to develop these issues but perhaps we can consider the relationship between demographic and built form of public housing.

Millers Point

The adjacent suburb of Millers Point³¹ was historically working class, housing men and families involved in the nearby docks. This rather tight-knit community held together until about the 1950s³² when technological innovation like the automobile allowed workers an easier commute from the then more desirable suburban lifestyle. This gradual locational dissociation between work and home has today seen the reverse whereby not only is city and coastal property more valuable and desired, but also changing societal mores desire a lifestyle where we may live and work in close proximity *and* near the city. Recent demographic studies have illustrated the skewed figures between the City of Sydney LGA and Millers Point. Figure 1 illustrates the sharp demographic differences between those in social housing in Millers Point, and that of the City of Sydney average seeing heavily skewed population imbalance.

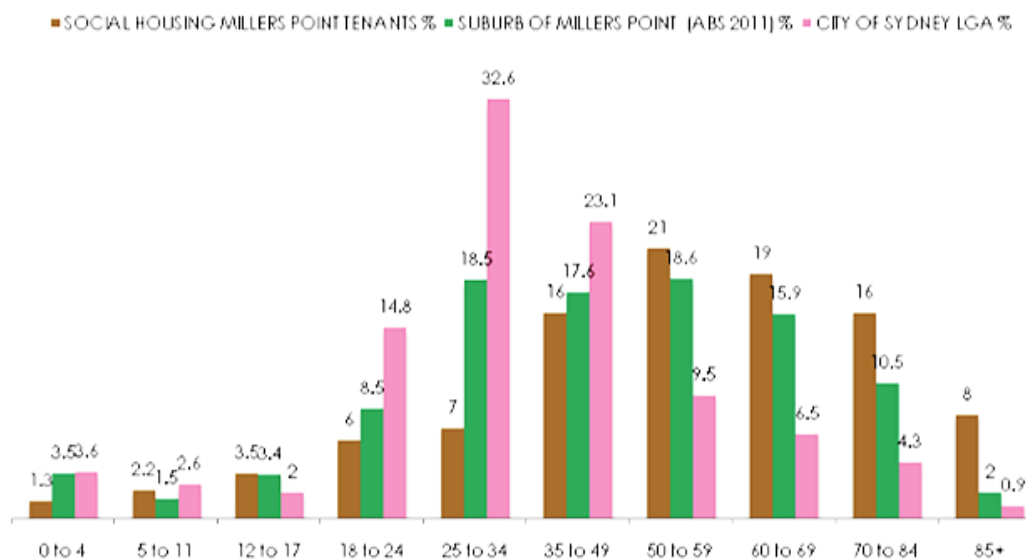


Figure 1. Age comparisons – Age groups as a % of total.
Source. SGSEP 2014.

International Benchmarks

The ageing demographic and housing stock compounds the issues of supply and funding of social and affordable housing as a whole with upkeep, repairs, and rental subsidies costing significantly more than the state average³³. Add to this the high value of the land makes a good case to pursue consolidation, but not at the expense of shifting the current residents that would see full gentrification taking place. Recent European perspectives have seen the benefit and success of hybrid or mixed tenure developments³⁴. Looking at the UK context, London is considered with New York as the most connected global cities³⁵. The Peabody Group³⁶ has successfully delivered numerous social housing projects and has also incorporated well-designed buildings that successfully cater for mixed tenure residences on challenging sites³⁷. The Bethnal Green building in East London (Figure 2) manages 67 homes that comprise 27 social rent, 17 shared ownership and 23 market rent³⁸ that roughly come to a 34% private/66% social split with common entrances winning a number of awards including a RIBA London Regional Award in 2015.



Figure 2. Mint Street, 2015. Peabody Group by Pitman Tozer Architects.
Source. Pitman Tozer.

Iconicity and its Effects

The image of public housing in Sydney differs markedly. With a lack of affordable housing provision in the last 2 decades or longer, it remains to be seen if development of affordable housing will become available in Sydney in the face of economic driven development. In Figure 3 we can see the Barangaroo Precinct with its 200+ meter towers abutting the waters edge, a condition unprecedented and in breach of planning controls that require buildings to step down towards the waterfront³⁹. As Lend Lease successfully argued their case to reduce and/or negate entirely their contribution to ‘key-worker’ housing on site, the neoliberal turn has yet to come about face as the desire for iconicity⁴⁰ and cosmopolitan development envelops any socially cohesive outcome with even the heavily curated and managed parkland⁴¹ capped on the north of the precinct challenges our perception of the success of privately owned public space (POPS) outcomes. The role of architecture as a social good faces serious challenges under capitalism⁴² and brings us to the question of who controls the architectural agenda⁴³? The agglomerative imagery of Sydney incorporates the natural features of its surrounds (Bondi Beach and the Blue Mountains) and the built icons accumulated through means of infrastructure provision (Harbour Bridge), cultural amenities (Opera House), mega sporting events (Olympic Stadia) and now through the showpiece of the proposed Casino resort. The site is prescribed, and to borrow from Maria Kaika⁴⁴ becomes a form of ‘autistic’ architecture that doesn’t respond to its environs neither the built form nor social structures.



Figure 3. Rendering of the Barangaroo Precinct, 2014
Source. Transport NSW

Rights to the City

To commit to being part of the global network of cities, this mobility affects the definition of spaces both public and private shifting from a strictly dialectical positivist structure to one that can be politicized and its outcome deliberated in public. The gradual erosion of the democratic political process and the social spatial reformation at the waters edge eats away at structuring an equitable sustainable development of the city in what David Harvey⁴⁵ terms “accumulation by dispossession”. As the structural framework that urban policy sets on the design and construction of urban form allows insidious modes of encroachment on the liberties of a wider publics. These restrictions dictate the determinates of the public but doesn’t allow them to be involved in the construction of the city themselves⁴⁶.

The embedded position of government⁴⁷ continues to shift the responsibility of providing affordable housing to non-government and community sectors as a marketised commodity rather than innovating

policy that aligns with the rhetoric of housing as a basic good. This realized marketization focuses its gaze on the well-heeled mobile ‘communities’ as the agglomerated region of Sydney continues to expand, reimagining all the remaining high-value sites re-colonializing⁴⁸ these sites of conflict to pacified depoliticized spaces. This gesture of ‘revitalising’ the last significant portion of public land and indeed as the whole of Darling Harbour is apportioned to a single developer⁴⁹ sings praise of the condition of urban design and governance of iconic development in Sydney.

Seen through the case study of Barangaroo, the provision of social housing find ill fit with the ideology of cosmopolitan development on such a significant high value site. The higher-level drivers of economic development completely overpower the softer, more implicit function of social capital that provides the baseline for nurturing cohesive and inclusive communities. Even at this stage of development there is no clear indication of where the ‘key-worker’ housing is to be located. Indeed examining how this development has unfolded in relation to the developments in inner Sydney since the 1980s, one can be pessimistic of the outcome.

CONCLUSION

Under a competitive global environment there are certain prerogatives that cities must attend to maintain relevance in influence, connectivity and attractiveness. Iconic developments are desirable cosmetic attachments to city agglomerations that easily serve to both promote externally and regenerate internally. The unfortunate casualties of this process are those on the edge, on the fringe of maintaining a foothold in or even tangible connection to identifiable citizenship to the daily activities that are assumed quotidian to the bourgeois or even petit bourgeois.

As a non-liquid asset, housing, and even more so affordable housing face the challenges of a rapidly changing demographic and the cost consequences of establishing, maintaining and replacing housing stock clash with the aims of the private sector as their business model even more strongly opposes the risks that accompany these types of development. The inherent risk associated with provision of social housing finds ill fit with development and supply by the private sector without the structural support of policy advancement or leadership from state and federal government. Although these restrictions pose challenges to the supply of affordable housing, there are hybrid forms of tenure through the aforementioned Peabody Group case and emerging innovative typologies of housing in the Nightingale Model⁵⁰ in Melbourne that tackle affordability and demographic issues by reducing overheads and optimizing spatial allocation. These innovations are slowly emerging although planning instruments and zoning restrictions hinder their implementation.

Aside from the structural issues of provision, there are further geographical restrictions and responsibilities that must be considered. The recent City of Sydney Housing Issues Paper⁵¹ identifies these challenges of housing provision and supply in context of balanced economic growth and housing affordability. Reinvigoration of interest by the federal government and progressive policy provisions as anticipated by the Greater Sydney Commission could work to guide balanced growth that collates social cohesion into the sustainability framework.

Important landmark developments like the Barangaroo Precinct should consider the gaze of iconic status not just speculatively on the grounds of perceived design quality, but inherent in the quality of its urban condition that includes the social equity of its catchment. Introspection towards the long-term demographic changes and needs of its users should assist in the provision of equitable housing models that are adaptive to guide future sustainable development.

NOTES

- ¹ Maurice Daly and Patrick Malone, "Sydney: the economic and political roots of Darling Harbour." In *City, Capital and Water*, ed. Patrick Malone. (London: Routledge, 1994), 97.
- ² Andrew Beer, Alan Morris and Chris Paris, "Housing and Local Government in Australia in the 21st Century.", (2016).
- ³ Michael Bounds and Alan Morris, "Second wave gentrification in inner-city Sydney." *Cities* 23, no. 2 (2006): 99-108.
- ⁴ Leonie Sandercock, *Cities for sale: property, politics and urban planning in Australia*. (1975).
- ⁵ See Glen Searle and Michael Bounds. "State powers, state land and competition for global entertainment: the case of Sydney." *International Journal of Urban and Regional Research* 23, no. 1 (1999), 168-170; Glen Searle and Jason Byrne. "Selective memories, sanitised futures: constructing visions of future place in Sydney." *Urban Policy and Research* 20, no. 1 (2002), 18-19. The early 1990s saw Pyrmont face the full force of iconic developments gentrify its neighborhood through the Star City Casino development.
- ⁶ Future Directions for Social Housing in NSW, (2015).
- ⁷ David Harvey, "From managerialism to entrepreneurialism: the transformation in urban governance in late capitalism." *Geografiska Annaler. Series B. Human Geography* (1989), 3-17. Harvey identified the shift from managerialism to entrepreneurialism, a key feature of neoliberal governance strategies.
- ⁸ Certain developments in New South Wales (NSW) fall under major project planning instruments when certain criteria are met, depending on significance of the project, and more generally under capital value. See <https://www.planningportal.nsw.gov.au/understanding-planning/assessment-systems/state-significant-development>
- ⁹ Ali Madanipour, "Roles and challenges of urban design." *Journal of Urban Design* 11, no. 2 (2006), 189
- ¹⁰ Visitors may include tourists and other non-permanent residents that whose interests tend to be prioritized in large developments that intersect the public and private.
- ¹¹ David Pettigrew, "Homes for the People." *Sydney, David Pettigrew* (2005), 58-59
- ¹² Seth Nicholls, "Perpetuating the problem: neoliberalism, commonwealth public policy and housing affordability in Australia." *Australian Journal of Social Issues* 49, no. 3 (2014); Keith Jacobs, "A reverse form of welfarism: some reflections on Australian housing policy." *Australian Journal of Social Issues* 50, no. 1 (2015): 53.
- ¹³ Spike Boydell and G. H. Searle. "The contemporary urban commons: a case study of Darling Harbour, Sydney." In *COBRA Legal Research Symposium*. RICS Org, (2010), 814
- ¹⁴ Kane Pham, "Ready or Not – The Inevitability of Another Casino in Sydney" (Paper presented at the Urban Affairs Conference, San Diego, California, March 16-19, 2016)
- ¹⁵ Kane Pham, "Vanity Unfair-Examining the Impact of development authorities on the designation and development of public space: Barangaroo Case Study." (2015)
- ¹⁶ Pham, "Ready or Not."
- ¹⁷ The government has recently launched a website to signify the renewal and shift to a strong image based cosmopolitan area that is a sharp about face from the community it is currently evicting. <http://rediscovermillerspoint.com.au/>
- ¹⁸ Charles Jencks, "The iconic building is here to stay." *City* 10, no. 01 (2006), 3-20
- ¹⁹ See Beer, Morris and Paris, "Housing." Also see John F. McDonald, "Affordable Housing: An Economic Perspective." *Architecture_MPS* 7, no. 3 (2015), 11 for evidence of the ineffectiveness of supply side subsidies in the U.S. context.
- ²⁰ Jacobs, "A Reverse Form." 60-61
- ²¹ See Manuel B. Aalbers, and Brett Christophers. "Centring housing in political economy." *Housing, Theory and Society* 31, no. 4 (2014), 373-394
- ²² See Richard Hu, Edward J. Blakely, and Yimin Zhou. "Benchmarking the competitiveness of Australian global cities: Sydney and Melbourne in the global context." *Urban Policy and Research* 31, no. 4 (2013), 435-452 on the competitive model of connectivity especially comparing Sydney with Melbourne on regional competitiveness.
- ²³ As of late 2015 the SHFA has been consolidated under Government Property NSW within the Department of Finance, Services and Innovation portfolio.
- ²⁴ Bill Randolph, *East Darling Harbour And The Intermediate Housing Market*, (2006)
- ²⁵ JBA, *Environmental Assessment Report: Concept Plan Modification 8 And Major Development SEPP, State And Regional Development SEPP And Sydney Harbour SREP Amendments*, (2014), 92

- ²⁶ "Lend Lease Baulking At Providing Affordable Homes In Barangaroo". Nicole Hasham, accessed June 01, 2016. <http://www.smh.com.au/nsw/lend-lease-baulking-at-providing-affordable-homes-in-barangaroo-20140814-1049rr.html>
- ²⁷ SGSEP, *Millers Points And The Rocks: An Alternative Way Forward*, (2014)
- ²⁸ City of Sydney, *Housing Issues Paper*, (2015)
- ²⁹ See Mark Purcell, "Excavating Lefebvre: The right to the city and its urban politics of the inhabitant." *GeoJournal* 58, no. 2-3 (2002), 99-108
- ³⁰ See David Hayward, "The reluctant landlords? A history of public housing in Australia." (1996), 5-35. Observing the government as a 'reluctant landlord'.
- ³¹ See Shirley Fitzgerald and Christopher John Keating. *Millers Point: the urban village*. (Halstead Press, 2009) for an in-depth account of the changes surrounding the condition of Millers Point from the 19th to the end of the 20th century.
- ³² Ibid, 104
- ³³ See Minister for Family and Community Services Minister for Women (MFCSMW). *High Cost Harbourside Assets To Be Sold For A Fairer Social Housing System*. (2014)
- ³⁴ Anita Blessing, "Magical or monstrous? Hybridity in social housing governance." *Housing Studies* 27, no. 2 (2012), 189-207.
- ³⁵ Global and World City Database. <http://www.lboro.ac.uk/gawc/world2012t.html> Accessed 12/05/2016
- ³⁶ <http://www.peabody.org.uk/>
- ³⁷ Tim Pitman, Luke Tozer, and Edward Wainwright. "Regarding the residential." *Arq: Architectural Research Quarterly* 18, no. 2 (2014), 182.
- ³⁸ <http://www.peabody.org.uk/homes-in-development/tower-hamlets/mint-street>
- ³⁹ Pham, "Vanity Unfair."
- ⁴⁰ Pham, "Ready or Not."
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DIVERSITY AND DISPARITY: RETIREMENT HOUSING IN AGE-FRIENDLY CITIES

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INTRODUCTION

Housing is a major variable in the quality of life of older people with increasingly diverse and uneven housing histories. In a home-owning society, such as Australia, home ownership forms a ‘fourth pillar’ of retirement income within the ‘wage-earners’ welfare state’ defined by Castles,¹ mitigating the fiscal impact of the ageing population and allowing the age pension to remain relatively low.^{2 3} In growing cities such as Melbourne, approaching the limits to acceptable urban sprawl, the housing options available to older people are shaped by a range of contested urban pressures. In other words, housing for an ageing society has interrelated dimensions of political economy, individual experience, and urban arrangement. Anxiety about economic sustainability and intergenerational equity is currently one of the noisiest ‘problems’ of housing and ageing in Australia, with policy influencers noting the nation’s ‘locked up’ housing wealth⁴ that could be used to fund longer retirements and later life care. The impact of insecure, unaffordable and inadequate housing for older people in the private rental market, disproportionately impacting single women, has for many years been the most urgent policy issue.^{5 6 7 8} This paper, however, will focus in particular on the urban dimension, and the relationship between urban arrangement and the challenges of achieving age-friendly cities.

Beyond the issue of design, how housing is supplied to meet the needs and choices of an ageing population – where, what type, by whom and for whom – is an under-researched area. Academic, commercial and government literature acknowledges that current options for accessible, affordable and well-located housing suitable for people to age in place are insufficiently diverse. This concern is reiterated in many western liberalised societies, including in Park and Ziegler’s⁹ Sheffield study – finding a ‘chronic lack of housing choice in the right locations’. In Australia, Howe¹⁰ considers the growth in the 1980s and 90s of retirement housing as an indicator of a ‘lack of alternatives in the general housing market’. Judd et al¹¹ find the availability of suitable housing to have been a factor for two-thirds of those older people who found the process of ‘downsizing’ to different (smaller, lower-maintenance) housing difficult. Concerns about an ageing population and housing affordability support policy makers’ enthusiasm both for downsizing – contributing to efficacy of housing stock¹² - and for the involvement of the private sector in providing solutions.

It is in this space of concern for housing and concern for the increasing costs of care that interest in age-segregated retirement housing has grown, and that policy makers and private enterprise can ‘influence spatial patterns of ageing’¹³. Despite providing the housing choice of just over 5% of over-65s in Australia,¹⁴ the retirement housing sector claims a privileged position in developing solutions to the housing ‘problems’ of an ageing population. Industry publications and key informants from the

sector define the solution primarily in three ways. First, as an *ageing in place* solution focused on the independence, quality of life and care of the individual. Second, as a *housing supply* solution providing accessible and well-located units, a path to downsizing and more efficient use of existing housing stock in growing cities. Third, as part of the solution to the *ageing population problem* itself – that is, providing financial relief to government budgets at local, state and federal levels through delaying entry to aged care and delivering targeted local infrastructure. The lived experience, reasons for moving and demographics of retirement housing are investigated in academic research,^{15 16 17 18} as well as by industry.¹⁹ However, the implications of the patterns of housing supply are often overlooked. The paper begins by setting out the rationale for investigating housing supply and retirement housing outcomes. It then presents descriptions of two emergent retirement housing solutions with distinct urban arrangements, and with implications for the potentials of age-friendly cities.

‘A REALLY TOUGH ONE’: HOUSING IN AGE-FRIENDLY CITIES

The importance of the built environment for an ageing society has inspired a significant body of interdisciplinary research. Driving this are ideas of positive ageing, in which active engagement with wider society after retirement is encouraged, and the ‘Ageing in Place’ approach, in which care services, when needed, are brought to the older person in their own home. Ageing in Place responds to principles of personal choice and self-determination while simultaneously achieving fiscal savings for governments. Support for positive ageing and the Ageing in Place approach to care has generated gerontological and architectural research of human experience and dwelling design,^{20 21 22 23} and an international folio of best-practice exemplar projects, as well as design regulations and guidelines (Lifetime Homes, Lifetime Neighbourhoods, Universal Design).

The convergence of the aims of positive ageing with the continued growth of cities is addressed by the principles of the WHO’s Age Friendly Cities and Community (AFCC) model.²⁴ These eight principles relate to the built environment (outdoor spaces and building, transportation, housing), the social environment (respect and social inclusion, social participation, civic participation and employment), communication and information, and community support and health services. The Age Friendly Cities network currently includes 287 registered cities globally, four in Greater Melbourne, and has provided an impetus for the development of policy based on Age Friendly principles by local governments. The take-up of the AFCC model in Victoria is criticised for a lack of whole-of-government support,²⁵ and initiatives have focused largely on capacity building and lobbying.²⁶ Further, while the majority of the eight principles of Age Friendly Cities are broadly within the remit of local government, the principle of housing is an uneasy fit. One local government representative described it as ‘a really tough one’, the ‘only item on the Age Friendly checklist that was really not in the scope of what [local government] deal with.’ Beyond development approval, the local level of government tasked with developing Age Friendly cities can only immaterially influence the quantum, type and location of housing options suitable for a diverse ageing population.

Enter retirement communities. Demand for retirement housing is fuelled by two sources; lifestyle expectations and care needs,^{27 28 29} although concerns for future care needs and security tend to be the dominant motivation. Retirement housing models are shaped by an array of locally-specific economic, policy, geographic and cultural conditions and therefore vary between different countries. However many western liberalized countries share common concerns, as well as some of the characteristics of the industry and product. The development of age-segregated retirement housing in Australia has been led largely by private market development and without a guiding housing policy.^{30 31} It is promoted

alternately as a lifestyle choice and as an Ageing in Place solution. Partly as a result of this two-sided emphasis, retirement communities suffer from imprecise definitions and perceptions.

INVESTIGATING RETIREMENT HOUSING

Retirement housing provides a useful case study for considering housing supply for three reasons. Firstly, this sector is currently positioning itself as a solution to many of the ‘problems’ of the ageing population. Secondly, the housing product currently being designed and built responds to the spatial requirements of accessibility for ageing in place, and to a defined ageing baby boomer market. The product can therefore be investigated as an industry response, more or less, to concerns and choices of older people articulated by the conditions of property development. Finally, Australia’s retirement housing sector is valuable to study because it involves a wide cross section of organisations – providers from not-for-profit groups, from small family run businesses, as well as from large listed companies from both property and aged care backgrounds, operating with a range of motivations and constraints.

The next section of the paper presents an analysis of two forms of housing product currently being built and talked about by the retirement housing sector. The research incorporates both quantitative and qualitative methods. Online data of retirement communities³² and industry documents provide a rough overview of the industry; and policy documents and news media describe an unclear perception of the industry and its product. The research also draws on in-depth semi-structured interviews with 17 senior professionals working in the development and management of retirement housing. These reveal a diversity of motivations and challenges within an overlapping network of property developers and service providers negotiating needs, choices and markets of an expanding and diversifying old age.

URBAN FORMS OF RETIREMENT HOUSING

The urban form of the traditional suburban retirement village is shaped to a large extent by its financial model; the homeowner sells their house and buys a long-term lease on a unit in a retirement village, at a marginally reduced price, to release additional cash for retirement. This price differential is achieved partly through a deferred payment structure, and partly by building smaller homes on smaller plots of cheaper land. This model of retirement village supply is challenged by urban growth and the unevenly rising cost of land. Building ‘just a little bit further out’ is questioned by aims of urban consolidation and by expectations of a lifestyle more integrated with local community networks. Two emerging alternatives to the traditional ‘broad acre’ suburban village that reflect the economics and geography of housing supply are premium retirement apartments and manufactured home parks.

Premium retirement apartments

In the context of rapidly increasing house prices in established suburbs, it is not surprising that retirement housing companies have aspirations for higher density retirement apartments that cater to the ‘premium’ end of the market. Medium-density retirement apartments have emerged in the past decade as a way of locating accessibly designed dwellings with a degree of security within established neighbourhoods with high property values. Existing stock in the general housing market is often homogenous; detached large houses and few accessibly-designed units. A lack of options for downsizing within existing communities is noted by the property sector.³³ The high cost of land has joined with the high expectations and appreciating housing wealth of ageing baby boomers in the local area to shape a new interest in medium-density developments. These apartments are on average

twice, and often three times the price of the equivalent broad acre product. The price tag includes an expectation of service, and representatives of the industry expect this area to develop further. One market consultant described the future experience; ‘like living in a 5-star hotel’.

Manufactured Home Parks

In counterpoint, but also shaped by the geography of housing wealth, are manufactured home parks. While caravan parks have always been used by older people – often ‘a lifestyle choice in the context of limited options’³⁴ - the development of parks specifically aimed at the over-55 age group is more recent. This pattern of gentrification, realigning the product with retirees, is reflected in the UK³⁵. Newly constructed villages do not resemble their caravan park pedigree, but ‘look like, smell like, feel like retirement villages’ (For-profit provider). However, parks operate on a different tenure and regulatory structure to retirement villages. Generally, the resident owns their ‘moveable’ dwelling and pays a site fee to rent the land. This achieves an affordable downsizing option, however a lack of regulation and insecurity of tenure, especially for ageing long term residents, is a key concern for resident advocates.³⁶ While the majority of existing parks in Australia are located in coastal and other ‘holiday’ destinations, others are located on the fringes of capital and larger regional cities. In a desktop review of the product of three ASX listed companies involved in Manufactured Housing Parks for seniors,^{37 38 39} one third of the communities are located in the fringe areas of Australia’s three largest cities.

IMPLICATIONS FOR AGE-FRIENDLY CITIES

Both housing solutions described reflect the segmentation that characterises the wider housing experience of Melbourne. This is a city of ‘two Melbournes’ - a well-serviced inner core with rapidly appreciating property values, and poorly-connected but affordable outer suburbs. It is the outcome of complex combinations of history, geography, urbanisation, the dominant practices of the house building industry, and the pervasive ‘wrap around tenure’⁴⁰ homeownership dream, embedded in taxation and pension settings. This segmentation has clear implications for the equitable growth of Melbourne. It also has implications for the efficacy of positive ageing as revealed in the Age Friendly Cities aims. Releasing housing equity to fund retirement through the process of downsizing requires a move to a smaller property, or, if the housing options in the local area are not sufficiently diverse, a move to where housing is more affordable. The same conditions that have led to the privileging of certain forms of housing supply amplify opportunities or increase barriers to choice in old age; choices for social, health, wellbeing and care opportunities.

Geographic location presents challenges to the principles of Age Friendly Cities, where connection to service, social and transport networks are fundamental. The offer of a retirement development includes the creation of a ‘ready-made’ community – providing targeted facilities and engaging residents in social activities. It also provides safe and accessible outdoor spaces, a particular focus of local governments addressing age-friendly principles, albeit also reflecting a shift from public to private provision of open spaces. Some retirement communities also provide on-site well-being services, meals, and drivers or shuttle buses. Beyond the development boundary, however, the quality of open spaces is dependent on the same factors of urban connectivity, wealth and critical mass that privilege some urban and inner suburban locations over other outer suburban, regional and rural locations. As car use reduces through older age, access to social and health opportunities is further constrained.⁴¹

As consumer-directed care policies delivered to the home become the norm, the capacity to access a choice of services is also impacted by this geography and embedded in retirement housing outcomes.

Representatives of retirement housing providers emphasise the efficiencies of scale achievable in the delivery of care to retirement communities, as opposed to individual homes. Notwithstanding this critical mass, the delivery of services supporting ageing in place – ranging from household help and maintenance to personal care – is impacted by the geography of the community. Key informants describe the increased choices and access to care and rehabilitation support in established areas. One representative focusing only on inner-suburban apartments emphasised both the capacity for care and social interaction in this form - ‘you can’t do that when you’ve got 15 acres of land’ – as well as the support provided in the local neighbourhood. While operators of both types of housing talk about Ageing in Place, it seems that opportunities for social, well-being and health care amenities are maximised for well-located apartments and limited for communities being developed in regional and suburban fringe locations; constituting one of the trade-offs of housing that amplify advantage and disadvantage over the life-course.

CONCLUSION

Academics, consumer groups and policy makers agree that housing is central to other concerns of social inclusion, participation, and access to services. Beyond housing and neighbourhood design, the conditions of housing supply can ‘make or break’ the realisation of Age Friendly Community aims. Of concern for the development of age-friendly cities then is that housing, arguably the most central principle, is beyond the power of the level of government concerned with age-friendly communities. The two formal housing options for downsizing explored here both have the potential to, and in many cases succeed in, supplying high quality, well-designed and well-managed housing and amenities that are enjoyed by residents. Beyond the design and management of the community, however, they demonstrate the forces of the general housing market. The impact of the disparity between well-connected but unaffordable housing, and less well-connected affordable housing is amplified in old age when people spend more time in their homes, and creates particular challenges for both downsizing and ageing in place. This has implications for policy makers as paths for increasing diversity rather than disparity are unlikely to come from the retirement housing sector (operating in the general housing market) without involving concessions and mechanisms of planning policy. I argue that the focus of Age Friendly Community principles needs to expand to include the processes and statutory mechanisms of housing production and consumption. Expanding the principle of housing in age friendly cities beyond the focus of local governments, enabling planning mechanisms at a wider level, could encourage targeted progress in the supply of better housing for a diversifying old age.

NOTES

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ALTERNATIVE INFILL STRATEGIES FOR ESTABLISHED RESIDENTIAL SUBURBS IN ADELAIDE AND LONDON

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INTRODUCTION

Current approaches to urban planning and development are often based on models of either restrictive rules or of large-scale master planning. The problem with these approaches is that they allow for little flexibility in dealing with established suburbs and struggle in effectively accommodating changes in population densities and habitation patterns – thereby often exacerbating rather than addressing affordability and housing choice problems. While recent policy initiatives such as localism and neighbourhood consultations¹ are intended to involve local stakeholders more closely in the planning process for existing residential areas, in practice they often struggle to achieve that goal. The authors have both encountered these issues while working as architects on infill, adaptive reuse and extension housing projects in London and Adelaide.

This paper documents approaches to infill projects in established residential suburbs in Adelaide and London that deliberately sit outside current statutory planning norms. We discuss this by drawing on a number of examples from our own practice and research. This paper brings together perspectives on the topic from our experience as architects and lecturers involved in housing design, research and teaching. Both lecturers in architecture at the University of South Australia – Damian for over 10 years, and David from early 2015 – we discovered in conversations that we have both encountered similar issues in dealing with established suburbs, even if the context and its politico-economic conditions are different between Adelaide and London.

The text is structured in two parts. It begins with a London-focused and personal perspective on the issue, based on David Kroll's work on infill housing in architectural practice in London. Damian Madigan then draws on his PhD thesis work and student design experiments, which have explored these issues in detail in the Adelaide context and have pointed to new directions of how the problem can be approached. It should be noted that this joint paper addresses a common topic but there also are two distinct perspectives and it is not a joint research project. While we do not claim to have resolved the problem, the aim of the paper is to point out that current planning approaches could benefit from a degree of architectural speculation outside of current rules.

A LONDON PERSPECTIVE – DAVID KROLL

Unlike many other major European cities, much of London's housing built from the 18th to mid-20th century has been of low- to medium-density, as houses rather than flats – an aspect that Rasmussen highlighted as an important quality in his seminal book on London.² These qualities of London should

be carefully considered in plans for its future but it should not be a reason for stagnation. London has faced its fastest population growth since the war in the last decade, which it has been struggling to accommodate. The Greater London Authority undertook a major study to identify available land to build on, largely sites suitable for major high-density development, but had to admit that there are not sufficient sites available to meet the projected need of 49-60,000 new dwellings per year.³ The current rate of building new dwellings falls woefully short at about 25,000 a year. Even if the plan to build this amount of housing on suitable sites as high-rise can be realised, this key quality of London as a city of low- to medium-rise dwellings, would be lost. Could the existing low-density areas that form much of London play role in providing the new needed housing?

A key planning tool that has regulated changes in London's established suburbs in recent years are the so-called permitted development rights.⁴ These rights follow a set of specific rules of how existing dwellings can be extended. These rules have been very effective and have created an extension-building boom in London.⁵ However, these rules do not necessarily address the dwelling needs of an increasing population and number of households. It is not that larger houses are needed, but actually that more dwellings are needed of various sizes.

In terms of methodology, I would like to reflect on this issue by discussing three projects that I worked on during my time in London. As a context to the following, I need to explain that I was working in architectural practice in London for a period of about 10 years and that, during that time, I have been involved in residential projects at various scales, mainly as an employee but for some also in my own practice. Many of these projects have been built and have successfully achieved planning permission. However, it is not those projects I would like to discuss here. Instead, I would like to discuss a number of 'failures' – those projects that never saw the light of day and that were rejected during planning, sometimes even at an early stage. The reason why I would like to focus on these is that they are more telling in terms of what current planning policies and practices do not allow for. The question, however, is if they should, and if planning practices could be more pro-active to allow at least aspects of these proposals. The research for this paper is based on an admittedly subjective, personal experience. The perspective, however, is one that could hardly be any closer to the primary source. And it addresses wider issue of London's potential future housing.

The first failure is a project I worked on with Mark Zudini. It is an extension of an existing 19th century building in Hackney (not heritage listed), with a pub downstairs and a flat upstairs (**Figure 1**). The proposal was for a roof extension, which could accommodate an additional storey. The client was open to either a residential or commercial use of this additional space. But a key point was that he wanted an extension with an unusual roof, not just a standard mansard roof. We developed in collaboration with him this dome like roof shape, with a nice view out to the back. The proposal was submitted to the planning department with this design, although we were aware and discussed the high risks of it being refused. It was, of course, refused. The client was so keen on the roof that he used his rights to appeal but it was again turned down. Key reasons were that there was no precedent in that area for this type of roof and that it is 'out of character'. I would suggest that the proposed extension would have actually contributed to the character and longevity of the building by adding to its architectural interest. Since the proposal has been revised to a conventional mansard roof, which imitates those typical in other areas of London (not actually those on houses next door).



Figure 1. Proposal for roof extension in Hackney, North London

The second failure is a project in Southgate, North London, in an area typical for 1930's, garden city inspired housing with large gardens (**Figure 2**). Considering the population growth and pressures in the area, it is a question if this is the most appropriate use of space. The current owner's family of a couple with two children hardly ever use half of the existing garden, which is enormous for London's standards. The clients wanted to apply for another, even larger extension of the existing house, of the kind that many of the neighbours had already built on their houses. However, these enlarged houses do not address housing needs for an increasing number of households. The clients were interested to explore if some of the garden could be used for new dwellings, which is not unprecedented in more central areas of London. We therefore developed a proposal, which could accommodate up to three new dwellings within the rear of the existing garden. We knew the risks of such a proposal being refused but decided to still explore the option and enter a conversation. We approached the planning department in a formal meeting, but the response in the report was a resounding no, again as it was considered 'out of character' with the area and there were no precedents. The concern was that this would set a precedent that would open the gates to others and alter the area unrecognisably.



Figure 2. Feasibility for Summit Close, North London, with new infill housing

The third project is located in Streatham in South London (**Figure 3**). It is currently under consideration with the local planning department and therefore so far only a possible failure. However, it is again a high-risk proposal because it pushes the boundaries of local planning precedents and guidelines in a number of aspects. For one, it does not quite fit into the space standards of a typical 2-bed room residential unit by proposing a lower ground floor workspace that can double up as a living area. The workspace could be used by the client for his own business with direct access for customers, accommodating changing work patterns. Furthermore, it is not typical in that quite a few of its windows are directly located adjacent to the pavement at various heights. The dwelling also does not follow a typical front and rear garden arrangement, with its small internal yard. At the same time, however, the proposal makes the most of a restrained site and could potentially create good-quality new dwelling space.

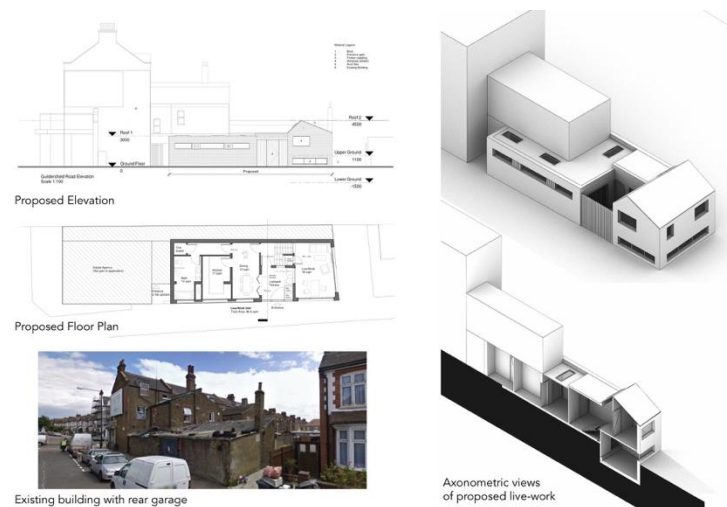


Figure 3. Proposal for a Live-work infill project in Streatham, South London

More generally, these three proposals demonstrate what is not allowed, what does not follow conventions under current planning policy and practices. They highlight the distinction between permitted and not permitted. I was pleased to realise that I was not the only one who questioned these and who has been interested in challenging the role that suburbs can play in responding to housing pressures. In the London context, HTA Design's Supurbia⁶ concept has attempted to address this more systematically and with larger resources. The project for London's outer suburbs seeks leverage off under-used allotments. Designed as a speculative staged development of an entire neighbourhood block⁷ over 20 years, the concept sees small changes to established suburbs at first, resulting in eventual wholesale replacement of the existing dwellings by the end of the program in most scenarios.⁸ Its ambition is to increase density throughout London's suburbs by creating avenues for property owners to become developers of their allotments.

DAMIAN MADIGAN: AN ADELAIDE PERSPECTIVE

In a suburb-led response to housing pressures, HTA Design's Supurbia⁹ concept for London's outer suburbs seeks leverage off under-used allotments. Designed as a speculative staged development of an entire neighbourhood block¹⁰ over 20 years, the concept sees small changes to established suburbs at first, resulting in eventual wholesale replacement of the existing dwellings by the end of the program in most scenarios.¹¹ Its ambition is to increase density throughout London's suburbs by creating avenues for property owners to become developers of their allotments.

Like London and so many other cities, Adelaide in South Australia is facing housing pressures resulting from increases in population, changing household structures and a lack of housing choice.¹² While Adelaide's population is small,¹³ its demographics are evolving, with households getting smaller and housing pressures mounting.¹⁴ Put simply, more houses are needed to accommodate the same number of people as in the past and these houses need to be of a far greater variety. The State Government's response to these pressures matches those of other, much larger cities: to centre housing intensification in transit corridors through the encouragement of medium-density, medium-rise apartment buildings.¹⁵ However Adelaide's transit corridors are road- not rail-based, meaning the underlying public transport infrastructure needed to support the intensification strategy is years away from being realised. Coupled with this is a tension between housing models. Located immediately adjacent low-rise established housing, the transit corridor apartments face stiff opposition from neighbours, particularly in residential areas with heritage and character overlays. Politically, there is no policy around density in the established suburbs; they are to be retained in their current form and present as intensification no-go zones, despite their adjacency to the targeted transit corridor development areas.

London's Superbia project is a significant indicator of what housing choices are possible when people are allowed to leverage off their available back yard. But what of housing options for established suburbs that seek a whole-of-site solution – one where the existing housing, its open space and its mature landscape are read as a coherent whole to be developed holistically? And what if a localised alternative intensification model is proposed; one which seeks to achieve the same medium-density targets of Adelaide's transit corridor proposals, but in Victorian-era suburbs where the masonry villa and cottage establish an identifiable settlement pattern? These questions were posed to a cohort of third year Bachelor of Architectural Studies students at the University of South Australia.¹⁶

Students were tasked with imagining a suburban future – indeed, *their* suburban future – where traditional notions of backyard subdivision were abandoned in favour of new patterns of living. Rather than section off housing allotments into smaller versions of themselves, the students were to imagine what it might be like to design larger shared spaces coupled with smaller individual semi-private spaces and to think not of simple 2-for-1 intensification models but of dwelling densities that would meet the medium-density metrics of at least 34 dw/ha,¹⁷ but within the norms of currently accepted suburban practice. By leveraging off the language of residential additions and alterations that the suburbs already accept, the students were encouraged to experiment with new housing models that continue this development conversation but at a different grain to suit changing housing needs.

The work of the student cohort saw detailed design studies over two adjacent sites in an imaginary established Adelaide suburb.¹⁸ Significantly, the two site strategy afforded the opportunity to reconsider the established house not as a single entity, but as one element in an overall housing system of Victorian- and early Edwardian-era cottage and villa housing. To achieve a medium density target, students were to provide at least five entities¹⁹ for every two sites, thereby establishing a proposition for the project: to achieve the same density figures of the proposed transit corridor policy, but by alternative suburban means.

Having been advised there were no right or wrong approaches, observable and meaningful patterns emerged in the students' work:²⁰

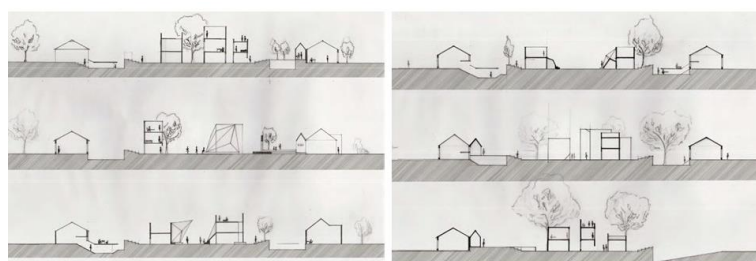
Three-storey development (Figure 4) appeared as a generally agreed, although not directed, sense of comfortable fit. This sensibility was seen as a tacit middle ground between providing the requisite floor area required to provide additional living and working accommodation whilst not diverting too dramatically from the established scale of the neighbourhood. For some, three storeys represented a polemic reduction in scale from that of the proposed transit corridor apartments, whilst

simultaneously speaking of a new intermediate scale respectful of but not obsequious to the prevailing single storey pattern of Adelaide's villas and cottages.



*Figure 4. Pattern 1: 3 storey development.
Student: Claire-Marie McQuillan*

Half-level excavation (**Figure 5**) was a device used by some to mediate this change in scale. In some instances, a semi-basement level was incorporated into an existing villa or cottage in order to create a second storey in the lean-to zone without building up or to create a more spatially dynamic space through the incorporation of a mezzanine level. In other work, embedding a taller infill building in a half-level basement sought to minimise bulk and overshadowing whilst creating varied landscape spaces along the ground plane. For some, excavating the entire site in order to create undercroft car parking, storage and servicing provided the benefit of a *tabula rasa* between existing housing on which new built and natural landscapes could be formed holistically, unencumbered by existing site limitations and established only by the presence of a villa or cottage. This approach was seen as a potentially attractive proposition for sites where the existing landscape might be immature or of a low quality.



*Figure 5. Pattern 2: half-level excavation.
Students: Michael Barilla, Talullah Barker-Gale, Evelyn Makris and Ben Mammone*

Pilotis (**Figure 6**) formed a counterpoint to this position. For some, elevating the new building mass became an important device to maintain movement and views at the ground plane behind the established houses, particularly in design experiments across a large number of sites. When applied at a smaller scale and as a connective device between adjacent existing houses, the elevated building took the form of a mews, whereby additional building mass could be achieved without blocking access to the remainder of the site. This was considered particularly important for students who

imagined one set of users at the front of the site and another at the rear, where site entry for all parties was necessarily from a single point at the front of the allotment.



Figure 6. Pattern 3: pilotis.
Student: Mark Frost

Intensifying in and around villas and cottages (**Figure 7**) at the front of the site continued this theme and was somewhat surprising given a generally deferential approach to mass and scale evidenced in many of the students' early design experiments. Building hard up to the backs and sides of villas and cottages was seen by some as an effective mechanism for freeing space at the rear of sites for larger areas of landscape than might otherwise have been achieved. For others, concentrating program in the interstitial spaces between villas and cottages served as a deliberate mechanism with which to introduce more socially diverse space.

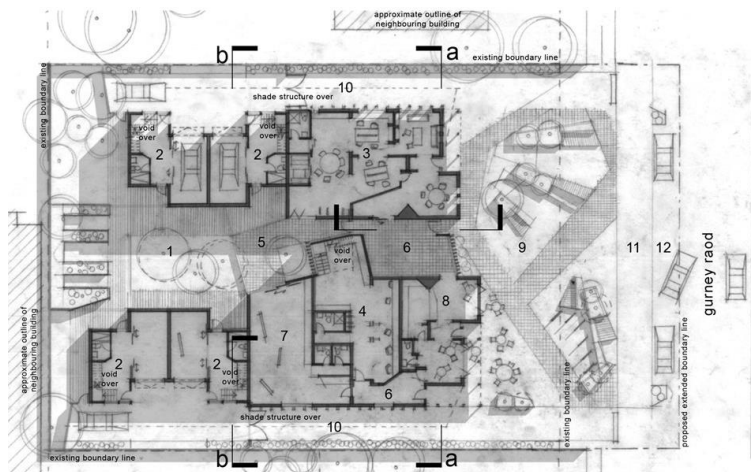


Figure 7. Pattern 4: intensifying in and around villas and cottages.
Student: Christopher Hill

Front additions (**Figure 8**) further pushed the intensification of the front of sites by re-establishing an approach not commonly practiced in the suburbs since concepts of heritage preservation became more widely adopted in the 1980s. Subsuming of the existing villa and cottage was an artefact of the student design process where many of those undertaking the experiments did so unencumbered by suburban statutory norms that state such development is inappropriate or outright disallowed.²¹

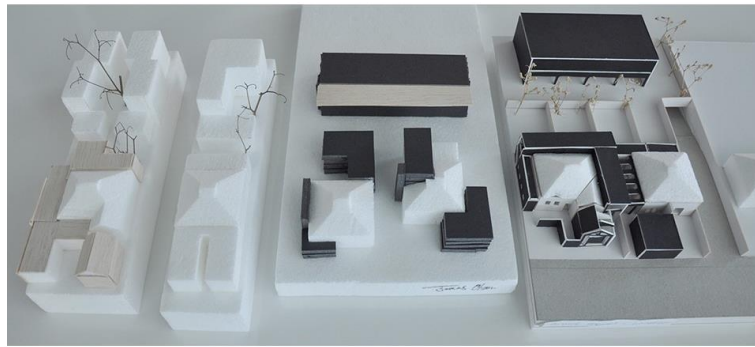


Figure 8. Pattern 5: front additions.

*Students: Craig Williams (left and second from left),
Jomas Chung Ming Chan (centre) and Patrick Holmes (right)*

Lateral courtyards and sideways views (**Figure 9**) were likewise deployed as alternative ways of increasing amenity through landscape. Often achieved by attaching new building work directly to the rear of an existing dwelling, these projects sought to take advantage of newly connected side-by-side allotments and rotate the direction of traditional landscaped open space laterally across allotments. This approach often looked to create visual and acoustic privacy through separation that might otherwise be difficult to achieve in more traditional front yard / back yard courtyard spaces between old and new development.

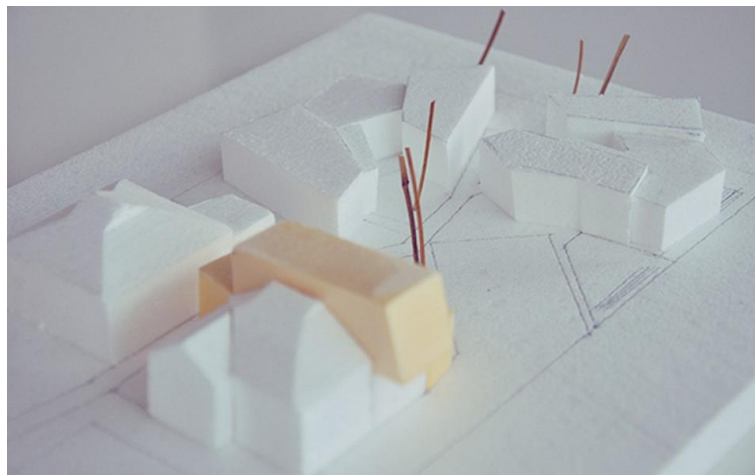


Figure 9. Pattern 6: Lateral courtyards and sideways views. Student: Wei-jung Hsu

So what might this experimentation mean for our established suburbs? Apparent in this student work is an approach to suburban character that in the first instance resists defaulting to aesthetic judgements and manoeuvres, preferring instead to have a design discussion around the character of *activity* that our established suburbs might support as housing pressures mount. The patterns identified amongst individual design projects displayed clear and significant resonances amongst the group as they sought means by which to increase housing density and diversity whilst forming new modes of domesticity.

Designed by students, it presents architectural provocations that sit outside current statutory norms: reacting not to existing planning measures, but to their own future housing needs.

Be it in London, Adelaide or other cities with similar statutory restrictions, how might experimentation for future housing of the kind we have shown here sit within planning discussion and process? The projects we have discussed were undertaken not because they were allowed, but because they were not. We would like to think that there can be room for them in policy discussions around the future housing our cities need.

NOTES

¹ For further details about localism, see for example: "Localism Act 2011," accessed September 13, 2013, <http://www.legislation.gov.uk/ukpga/2011/20/contents/enacted>; Stephen Hill, "Guide to Localism: Opportunities for Architects, Part One: Neighbourhood Planning," ed. James Parkinson (RIBA, 2011).

² Steen Eiler Rasmussen, *London: The Unique City* (London: Cape, 1937).

³ Greater London Authority, "The London Strategic Housing Land Availability Assessment 2013" (Mayor of London, January 2014), <https://www.london.gov.uk/file/15569/download?token=M9dckY12>.

⁴ "Mini Guide: Extensions," *Planning Portal*, accessed June 6, 2016, https://www.planningportal.co.uk/info/200130/common_projects/17/extensions/10.

⁵ "London's House Extension Market Explodes as Tastes Improve," *Dezeen*, March 11, 2016, <http://www.dezeen.com/2016/03/11/london-house-extension-market-explodes-tastes-improve-grand-designs/>.

⁶ Ben Derbyshire, "Supurbia: A study of urban intensification in outer London - work in progress," (London: HTA Design, 2015).

⁷ A note on the nomenclature of this study: 'allotment' is used to describe a single house site, while 'block' is a collection of allotments, usually bordered on all sides by a street or laneway, for example a neighbourhood block.

⁸ Derbyshire's initial Superbia concept was later adapted in association with Pollard Thomas Edwards to include more financially-led models, which include the options for retention of existing housing stock, as discussed in Ben Derbyshire et al., "Transforming suburbia: Superbia semi-permissive," (London: HTA Design, Pollard Thomas Edwards, Savills, Nathaniel Lichfield and Partners, 2015).

⁹ Ben Derbyshire, "Supurbia: A study of urban intensification in outer London - work in progress," (London: HTA Design, 2015).

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¹² Significantly, the repeated construction of single family housing models is creating entire suburbs lacking in housing choice, as discussed in Jane-Frances Kelly et al., "Tomorrow's Suburbs," (Melbourne: Grattan Institute, 2012).

¹³ By 2036, Adelaide's population will grow by 54% to 1.85 million people. Data source: Government of South Australia, "The 30-Year Plan for Greater Adelaide: A volume of the South Australian Planning Strategy," ed. Department of Planning and Local Government (Adelaide: Government of South Australia, 2010), 31.

¹⁴ A rise in smaller households is resulting from a decrease in the proportion of couples with children, but increases in couples without children, one parent families and those living alone, as identified by the South Australian State Government in "Renewing Our Urban Future: Unlocking South Australia's Potential," (Adelaide: Government of South Australia, 2015), 3.

¹⁵ "The 30-Year Plan for Greater Adelaide: A volume of the South Australian Planning Strategy."

¹⁶ The studio, titled 'Adelaide', takes its name from Damian Madigan's PhD by major design project at Monash University. Run in the first half of 2015, Architectural Design Studio 5 at the University of South Australia took seven suburban design tactics developed through the PhD and asked students to test them at various territorial scales from 12 adjacent allotments to two.

¹⁷ 34 dw/ha was set strategically in order to match the state governments' definition of the metric trigger for "medium density". All density figures discussed are net and not gross, to match the manner in which the State Government discusses density targets. Refer: Government of South Australia, "Understanding Residential Densities: A Pictorial Handbook of Adelaide Examples," (Adelaide: The Government of South Australia, 2006), 5.

¹⁸ A combined two site scheme was deemed important to study, as this broke the mould of normative single-allotment residential development and provided a broader territory over which to explore new housing forms. Such new housing patterns included collective housing, where students proposed alternative ageing in place or affordability models that explored a mix of shared, private and semi-private built and unbuilt space.

¹⁹ Students were asked to consider mixed use development models. The term 'entities' was used in the stated density targets instead of 'houses' or 'dwellings', as students were simultaneously being asked to explore the possibilities of flexibility and mixed-use by designing for dwellings, businesses, civic functions and public space

over multiple sites. This mixing of program was perhaps the most difficult aspect of the project for most students, as many of them found it difficult to imagine what types of civic or commercial functions might be suited both physically, programmatically and socially to small domestic-scale spaces, both new and existing. However, where this aspect of the exercise did succeed was the forcing of consideration around private and public space and the degrees of privacy that might be achieved (or lost) as densities and diversities increased.

²⁰ The patterns in the student work discussed here have since influenced the development of a set of graphical manoeuvres that describe in simple visual terms the various means by which one might add to an Adelaidean villa or cottage. These 'Suburban Operations' are described in the PhD thesis and are intended to provide a bridge between traditional statutory codes and graphic cues to those outside the discipline. The Spatial Operations may prove useful for anyone working in an established suburban context that can be described in similar terms to the suburbs of Adelaide.

²¹ This maximising of the existing houses and their front yards was also noted as common amongst the work of international students from high density cities, as their approach to housing and density is often more finely attuned to making the most of available space for habitation without the same level of heritage or streetscape retention limitations.

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NEIGHBOURING PATTERNS IN AUSTRALIAN SUBURBAN HOUSING DEVELOPMENTS

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INTRODUCTION

‘Sense of community’ and ‘neighbouring’ are two key concepts that are integral to social cohesion. They have been the subject of extensive studies in several disciplines including sociology, psychology and built environment. Sense of community is used to describe a feeling of belonging and shared interests among members of a community. Neighbouring is used to refer to the activities engaged in by and between neighbours¹.

Although the physical qualities of neighbourhoods and suburbs may affect the formation of the sense of community and neighbouring relationships, studies that focus on the contribution of the built environment are limited. According to Silverman (1986), a number of researchers have noted the importance of housing in predicting neighbouring behaviour, but typically have not developed a full model to account for it².

To address this gap, this study aims to evaluate the physical structure and characteristics of suburbs and how they contribute to neighbouring interactions and sense of community. Three suburban residential streets in the City of Greater Geelong have been selected for this study. A short survey was conducted in these streets to evaluate the intensity of interactions between the neighbours that reside here. The intensity of neighbouring interactions and the pattern of relationships was documented through Appleyard’s mapping technique³. The built environment qualities have also been assessed through extensive field studies and observations.

This study will compare the physical qualities of the most successful and unsuccessful street in terms of the number and intensity of interactions to discover how the built environment contributes to a sense of community in suburban developments.

NEIGHBOURING: MEANING AND FRAMEWORKS

The way neighbouring is defined can be a determinant factor in the role of the built environment on neighbourly interactions. Silverman (1986) argues that the correlation between neighbouring and urbanism is an artefact of how neighbouring is defined. Neighbours are defined as those people who live in close proximity to the private space of a person’s home⁴. These relationships are characterised by shared physical residential boundaries as well as potentially a common constructed history centred around overlapping private aspects of their lives. Keller (1968) has defined ‘neighbouring’ as “the activities engaged in by neighbors as neighbors and the relationships these engender among them”⁵.

Neighbouring has also been defined as a sense of ‘we-ness’. This kind of involvement with neighbours, has been correlated with the physical aspects of the neighbourhood⁶.

Lofland’s (1989) model of social realms offers a framework for understanding urban interaction by distinguishing three realms: the private, the parochial, and the public⁷. Based on Lofland’s model, Kusenbach identifies four distinct patterns of neighbouring: (1) friendly recognition, (2) parochial helpfulness, (3) proactive intervention and (4) embracing and contesting diversity (Table 1)⁸.

Public Realm (Lofland 1998)		Parochial Realm ‘Neighboring’
Cooperative Motility		
Civil Inattention	☐	Friendly Recognition
Restrained Helpfulness	☐	Parochial Helpfulness
Audience Role Prominence	☐	Proactive Intervention
Civility toward Diversity	☐	Embracing and Resisting Diversity

Table 1. principles of interaction in the public and parochial realms, Source: Kusenbach (2006)

Kusenbach (2006), by comparing Lofland’s model of the public realm with neighbourhoods’ context, identifies a neighbourhood as a parochial realm. Here neighbours differ from the strangers encountered in the public realm through their patterns of neighbouring. For example, the ‘civil inattention’ in the public places in cities becomes the ‘friendly recognition’ or ‘saying hi’ among neighbours in a neighbourhood. ‘Restrained helpfulness’ in the public realm such as telling the time and giving directions is replaced by ‘parochial helpfulness’ or the ‘cup of sugar’ example. In comparison to the public realm, residents of the local communities are much less prone to ignore any threat or danger a neighbour might experience. Therefore, the ‘audience role prominence’ in the public realm changes to the ‘proactive intervention’ in neighbourhoods⁹.

Most studies on neighbouring focus on the importance of social interactions and mutual aid in neighbourhoods¹⁰. Kusenbach’s model of neighbouring is very similar to the social components of neighbouring in Unger and Wandersman’s (1985) model¹¹. The importance of social components in some models, has in fact caused some scholars to refer to neighbouring as the exchange of social support between neighbours¹². However, Unger and Wandersman’s model which does not consist solely of social components, but also takes account of cognitive components and affective components and therefore provides a more comprehensive approach to the concept of neighbouring¹³. Based on different definitions, several indicators have been used to measure neighbouring. While Tsai and Sigelman measure neighbouring by the frequency respondents reported spending a social evening with neighbours¹⁴, Kasarda and Janowitz measure it by the number of friends in the neighbourhood¹⁵, and McGahan by whether the respondent had friends in the building, went to social events with neighbours, talked with neighbours about personal problems, and borrowed from neighbours¹⁶. When neighbouring is defined in terms of recognition of connections, then the explanation is straightforward; several factors combine to encourage or discourage recognition¹⁷.

Taking the existing indices into account, neighbouring in this study has been examined through four stages of intensity: the number of neighbours that residents can recognise by face, the number of neighbours that residents can recognise by name, the number of neighbours that residents greet, and the number of neighbours residents consider as their friend.

STUDY AREA AND METHODOLOGY

The suburban lifestyle is associated with a lack of vitality and social life¹⁸. According to Richards, suburban living has two faces: the dream achieved and the nightmare of dreary living, deprivation and isolation¹⁹. To address the social life of suburban developments, this study examines three suburban case studies in the City of Greater Geelong (the state of Victoria's second largest city, 75km south-west of Melbourne). Highton, Geelong West and Bell Park are three residential suburbs that have been selected for this study, arguably as places that are representative of wider suburban conditions.

The map below illustrates Curtin St in Bell Park with detached housing and large lots of about 600 square metres. The footpaths are wide with nature strips and trees (Figure 1). As the map shows, five houses have a second unit at the back of the house. This is a consequence of the large lots that have given residents the opportunity and room to build new structures in their backyard.

McDougall St is a residential street in the suburb of Geelong West. Similar to Marcus St, the typology of the housing in this street is in the format of single storey detached housing. McDougall St differs from Curtin St as the size of the lots are much smaller (almost they are half in size in comparison to Marcus St) and therefore the houses are more congested. As it can be seen in the map, the footpaths are very narrow without any nature strip and the front setback is usually small. Marcus St is a residential street in the suburb of Highton. The map below represents the detached housing morphology alongside the large lots, front yards and backyards. Although the lots are very large and similar size to Curtin St, the residents have not built a second unit in their backyard. It also shows the wide footpaths and nature strip designed on both sides of the street.



Figure 1. street maps

Based on the field studies and observations, residential streets were found to be quite inactive with minimal activities happening on the streets. The survey is therefore designed to capture the sense of community and neighbouring relationships occurring on the three streets, which might not be noticeable through the course of observation of activities.

In order to evaluate the pattern of neighbouring relationships, a methodology that build on Appleyard's approach outlined in his book 'Livable Streets' was utilized²⁰. Appleyard's survey and mappings show the network of acquaintanceships and friendships among neighbours on three streets with different volume of traffic (Figure 2).

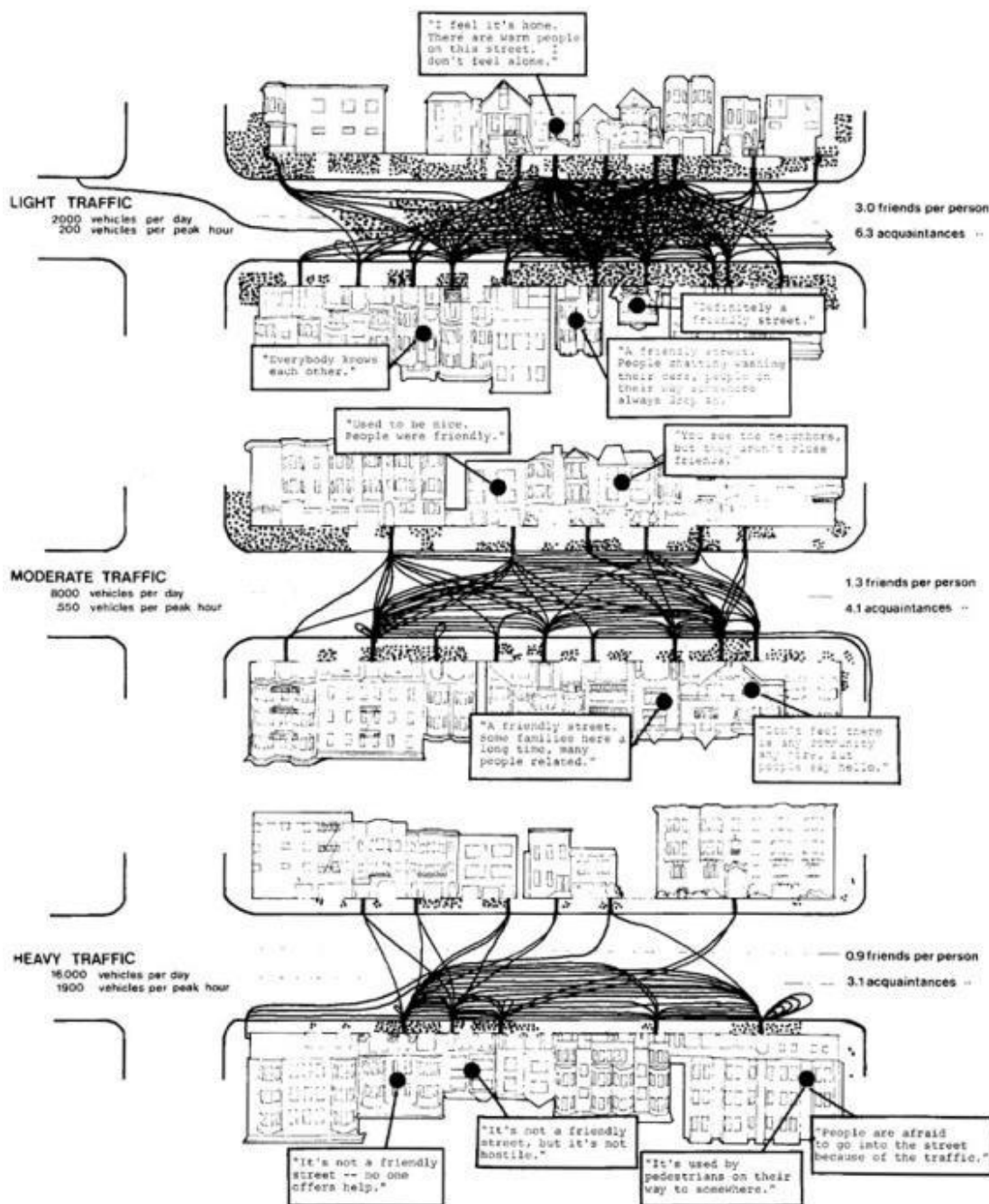


Figure 2. the pattern of acquaintanceship and friendship among neighbours on three streets with different volume of traffic; Source: Appleyard (1981)

SURVEY ANALYSIS

Patterns of neighbouring in the three streets (from face and name recognition to greetings and friendships)

Question one on the survey asks the residents to identify the neighbours that they can recognise by face. Question two asks the residents to identify the neighbours that they know by name. Question

three asks the residents to identify the neighbours that they greet on the street. Question four asks the residents to identify the neighbours that they consider as their friend.

There seem to be a consistent drop between the responses to the survey questions when asked in this order, suggesting the process of neighbourliness starts from the recognition by face and then it moves to greetings on the street and then to introducing themselves and a possible friendship. In other words, the process of minor acts of neighbouring (such as face recognition and greetings) to name recognition and friendships among residents has a similar pattern in all the three streets. The number of neighbours that residents can recognize by their face is more than the other categories. The second category is the neighbours they greet, and the third category is the neighbours they can recognize by name. Lastly, the number of friendships among neighbours is by far less than the other categories. This pattern has been repeated with similar weight in all the case studies (figure 3).

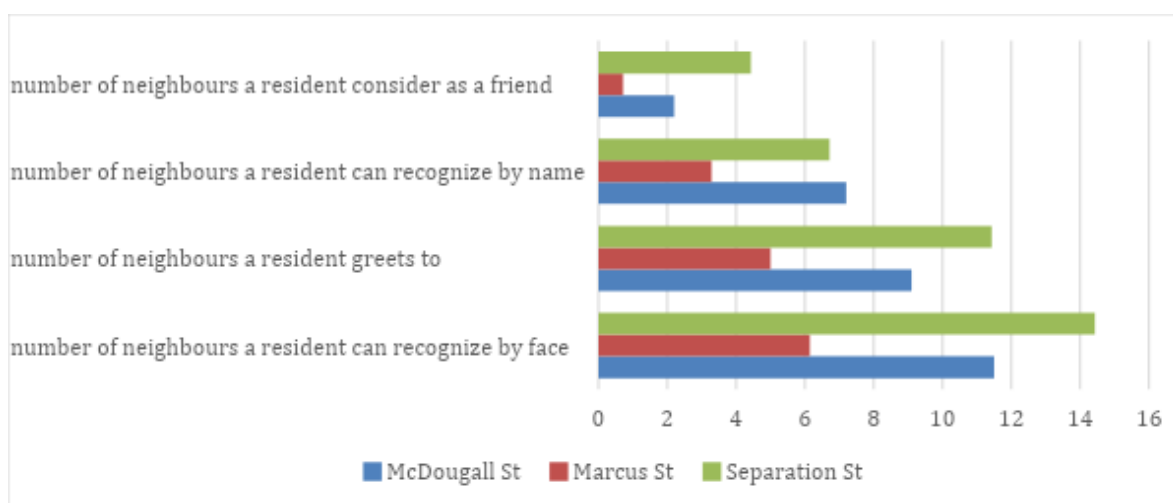
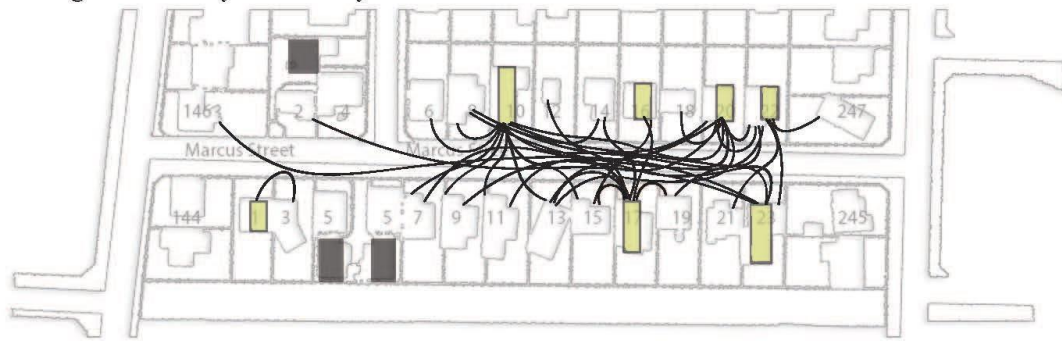


Figure 3. the pattern of neighbouring interactions on the three streets

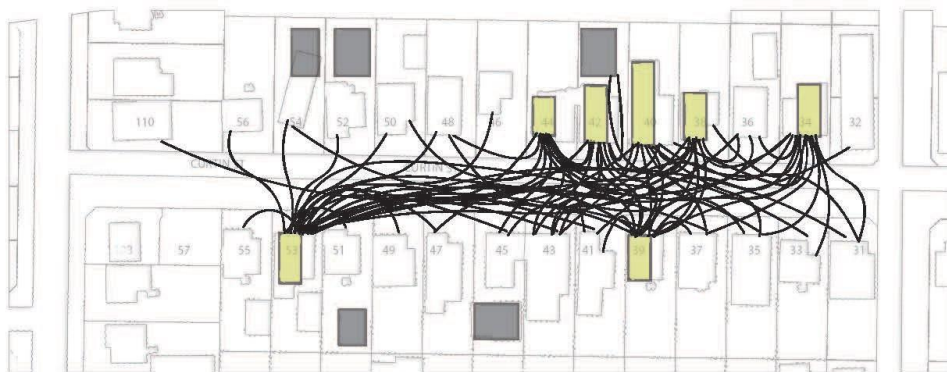
The Spatial pattern of Neighbouring

As it can be seen in figure three, Separation Street in Bell Park falls first in all stages of neighbouring (the four questions asked). McDougall St in Geelong West is placed in the middle followed by Marcus St in Highton with the least number of neighbouring activities/interactions among the residents. The figure below illustrates the difference between the intensity of neighbouring interactions (in terms of recognizing neighbours by name) in the three streets (Figure 4).

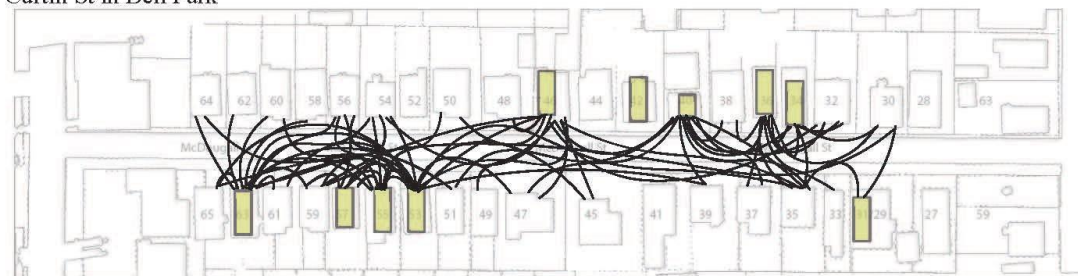
The neighbours that you know by name



Marcus St in Highton



Curtin St in Bell Park



McDougall St in Geelong West

■ Houses that responded to the survey

Figure 4. result of the survey for name recognition by neighbours

Enumerating the number of relationships between the side neighbours and front neighbours for all the four questions has revealed a spatial pattern on the streets (figure 5).

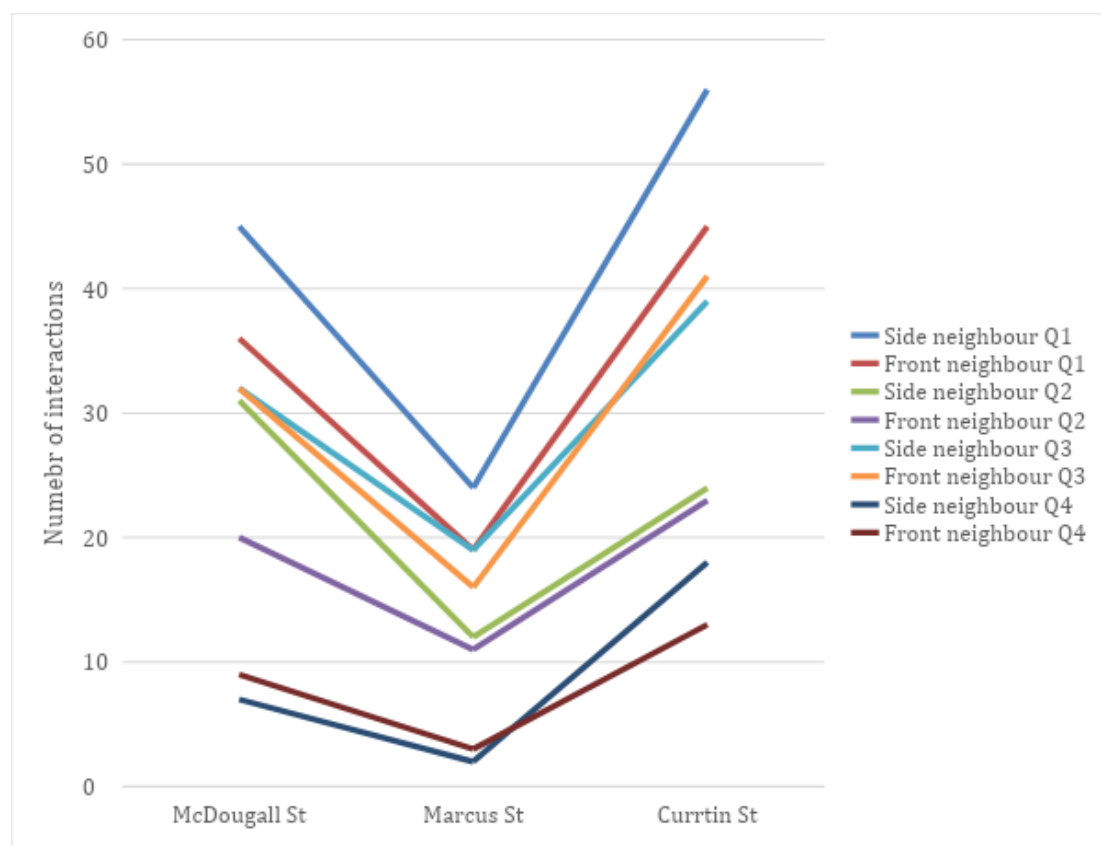


Figure 5. enumerating the number of relationships between the side neighbours and front neighbours

The graph above reveals that residents of all the three streets recognize more side neighbours rather than the ones that are across the street. In this sense, the process of acquaintanceship among neighbours happens through a spatial hierarchy. The early interactions occur more frequently among the next-door neighbours rather than between the across the street neighbours.

Again there seems to be the same spatial pattern among the residents that know their neighbours by name. In all streets, residents seem to know more neighbours around their immediate locality and on the sides of the house rather than the neighbours across the street.

For the third question, the spatial pattern of McDougal St and Marcus St is similar to the last two question, where residents had more interactions with their side neighbours. However, in Curtin St, the trend changes and residents greet to neighbours across the street, more than the neighbours on their side.

For the fourth question, the spatial pattern of McDougal St and Marcus St is similar to the first three questions where residents had more interactions with their side neighbours. However, in Curtin St, the trend is similar to the third questions, where there were more greetings to the neighbours across the street, more than the neighbours on their side.

Street	Suburb	Street width	Sidewalk Width	Front yard setback	Average distance to the front neighbours	Average distance to the side neighbours
McDougall St	GEE LONG WEST	8 m	1.8 m	4 m	15.6 m	4.8 m
Curtin St	BELL PARK	6.5 m	4.5 m	6.2 m	21.7 m	4.8 m
Marcus St	Highton	6,5 m	4.5 m	7.8 m	24.3 m	6.6 m

Table 2. Distance to the front and side neighbours

In all the three streets the average distance to the side neighbours is much less than the average distance to the front neighbours (Table 2). This spatial placement of the housings has developed a greater sense of community among the side neighbours rather than the front neighbours (except for few exceptions in Curtin St). The farthest the houses are apart there would be less chance for interactions among neighbours (assuming that other contributors are the same). However, this does not mean that if the houses should be as close as possible to enhance a great sense of community among residents. Sometimes lack of enough distance between neighbours may cause an intrusion in privacy. Rapoport defines privacy as the ability to control social interaction and being able to choose the desired rate of social interaction²¹. There needs to be an optimum privacy for enhancing social interactions and exorbitant proximity might cause an intrusion in privacy. This optimum proximity might change in regard to the background, culture and social behaviour of the residents. Lang argues that if the social needs of people are in balance with the sense of independence provided by privacy, social interaction will be easier²².

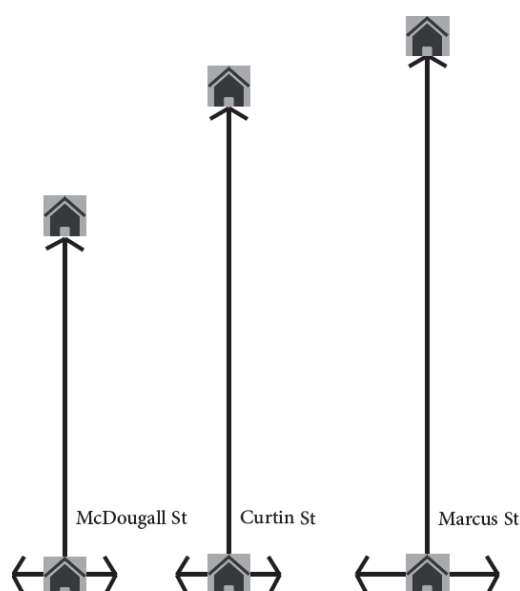


Figure 6. Average distance to front and side neighbours

The average distance to front neighbours is dependent on the street and sidewalks width alongside with the housing setbacks. The result of this study suggest that narrower streets with less front setback might actually encourage interactions among across the street neighbours.

A study by Verbrugge and Taylor concluded that the accessibility of residents to each other had little impact on social ties, as compared to their social and demographic characteristics, the number of residents in the area (density), or their subjective feelings about their environment²³. In contrast a more recent study showed that immediate neighbours tend to communicate more with each other than residents living further apart²⁴. Likewise, the result of this survey suggests that the visual accessibility of neighbouring houses have a contributing effect on the formation of the sense of community neighbouring relationships.

The mapping below represents all the houses that responded to the survey extracted and separated from figure four (figure 7). They have been sorted based on the length of residence from 0 (two weeks) to 53 years. The lines represent the neighbours that the participants greet, when they see them on the street. The pattern of growth of these networks/relationships during the years of residency among different households suggest that residents usually start their neighbouring interactions with their immediate neighbours and through time they expand this proximity to neighbours further apart. There are exceptions and other non-spatial factors affecting the intensity of this expansion and relationships. However, there seems to be a general spatial pattern. The closer neighbours are the more chance there is for interaction and this has reflected in the mappings. After some years (as mappings show a decade or so), households start to get to know the neighbours, who are much farther down the street.

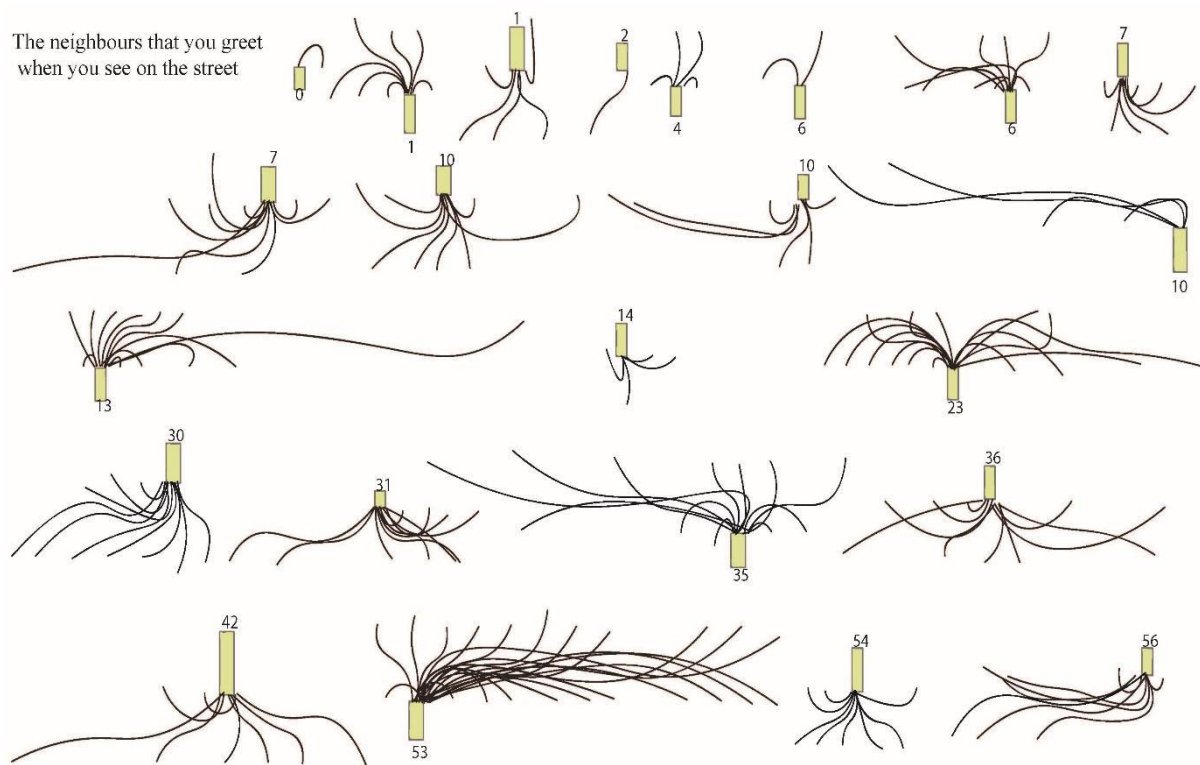


Figure 7. the pattern of greetings arranged based on the length of residency extracted from figure 4

The figure below is a similar mapping representing the neighbours that participants consider as their friend. Comparably, the houses have been arranged based on the length of residency (figure 8). Comparing figure 7 and 8 shows that unlike informal interactions and greetings, friendships on the street won't expand to the farther neighbours through time. The number of friendships also does not

necessarily increase through time. The mapping below may suggest that proximity is a more critical factor for the formation of friendships.

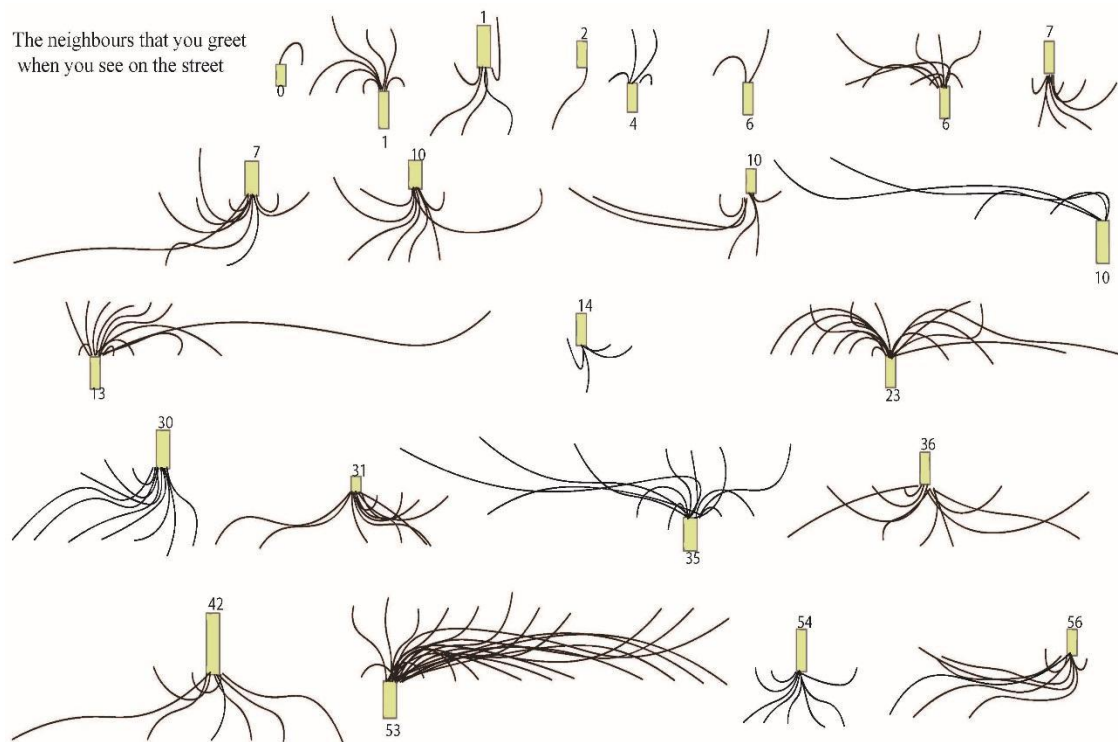


Figure 8. the pattern of friendships arranged based on the length of residency extracted from figure 4

The fact that more chances of interaction generate more opportunities for friendships among neighbours is not in dispute. When neighbours are farther apart, there is a less chance of interactions and less chance of friendships. Even through several decades of residency, the number of friendships does not increase considerably. Therefore, the formation of friendships among neighbours is more dependent on the proximity to neighbours and much less correlated with the length of residency (assuming that all the other factors are the same).

The mappings above suggest that the spatial design of neighbourhoods can be a considerable factor in enhancing neighbouring interactions. The distance to neighbouring houses and the distance between the entries can be determinant of the number of interaction occurring through the length of residency.

Housing quality and neighbouring interactions

Based on the literature review, a framework has been developed for analysing the housing qualities²⁵. According to the framework, the architectural qualities of each house will be analysed regarding composition, transparency, permeability and personalization (figure 9).

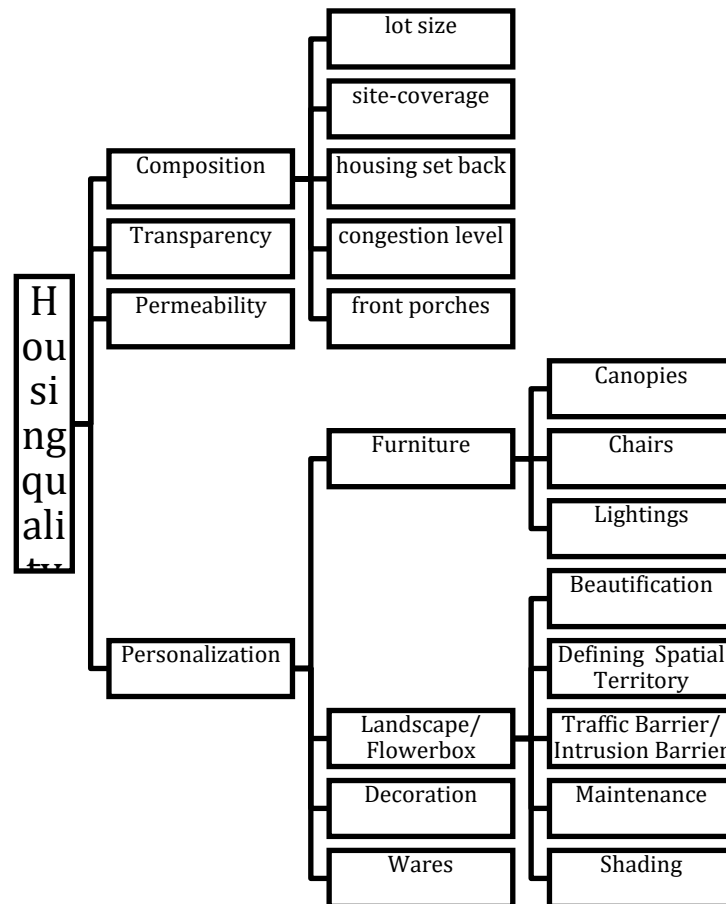


Figure 9. the study framework

All the 21 houses across all three streets who have responded to the survey have been categorized based on their number of greetings. The houses with the most number of greetings have been compared to the houses with the least number of greetings in terms of their architectural qualities of the houses. Therefore, the ten households who greeted more than nine neighbours have been compared to the households who greeted less than eight neighbours on the street. The architectural qualities of each household have been registered through the field studies and by the author.

COMPOSITION

Composition in this framework is a general term and includes all the architectural spatial qualities of the housing that may affect neighbouring interactions including site coverage, lot size, front setback, congestion levels (the sum of the distance to the side neighbours) and the presence of front porches.

Greetings	Site coverage	lot size	Front setback	congestion level	Front porch
below 8	0.46	562	6.92	6.2	0.3
over 9	0.519	571	5.28	7.94	0.8
over 9 without the outlier	0.55	501	5.08	5.71	0.8

Table 3. composition table

The average site coverage of the two groups of houses are very similar. The lot sizes are also quite similar (table 3). The reason for this similarity, however, is that one of the houses on Marcus Street is on two lots that is around 1200 square metre. This unusual house has acted as an outlier and has affected the site coverage, lot size and congestion level results. Considering the average without this outlier, the site coverage is 10 % higher in houses with most interactions. When the site coverage is higher, the yards are usually smaller and therefore, this might cause the outdoor activities to emerge on the sidewalk.

The lot size is also on average about 60 square metre smaller in houses with the most number of interactions. Although large lots need more outdoor activities for maintenance and gardening, they cause an unavoidable distance between neighbouring houses, which can negatively affect the number of interactions among neighbours.

The setback in houses with the most number of greetings is about two metres less than the houses with the least number of greetings. As with a smaller setback the fronting neighbours are closer, there is a higher chance of interactions and greetings among neighbours. A similar pattern is expected for the distance with the side neighbours as well. As it can be seen in table nine, houses with the most number of greetings are about a half metre closer to their neighbours (Table 2).

The presence and use of front porches can enhance the number of activities happening in front of the house. From the houses with the least number of activities, three houses (30%) has a front porch with a sign of usage (outdoor furniture or traces of use), whereas among the house with the most number of greetings eight houses (80%) has an active front porch (Table 2).

TRANSPARENCY

Greetings	Transparency	Fences Height
below 8	0.54	1.15
over 9	0.65	1.05

Table 4. transparency

Depending on how transparent the front yard and the fences are, the houses has been ranked between 0 (non-transparent), 0.5 and 1(completely transparent). Transparency seems to be 10% higher among houses with more greetings (table 4). Another measure of transparency can be the height of fences which is again 10% (average 10 centimetres) shorter in the houses with more greeting. Therefore, transparency seems to be a contributing factor to the greetings and interactions on the residential streets.

PERMEABILITY

The permeability pattern shows an unexpected result. In fact, the permeability of the houses with fewer greetings is 15% higher than the house with the most number of greetings (table 5). This contradiction with the result of the transparency may suggest that permeability of the street fronts is not as important factor as transparency or composition for enhancing the number of interactions on the street. Therefore, as long as front yards are transparent and fences are very tall, the permeability is not a contributing factor.

Greetings	permeability
below 8	0.45
over 9	0.3

Table 5. Permeability

PERSONALIZATION

Personalization has been calculated and ranked based on factors such as the presence of outdoor furniture, landscaping, decorations and wares (Figure 10).

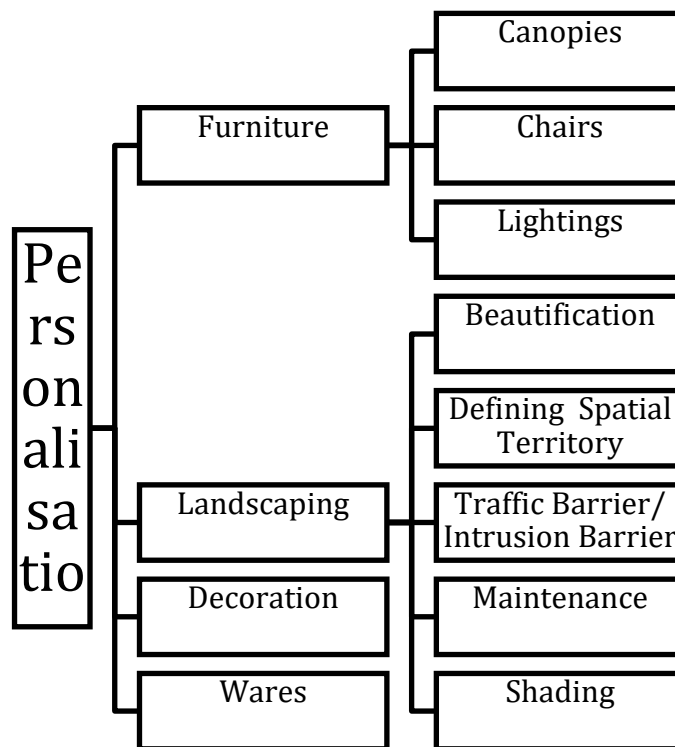


Figure 10. factors considered in personalisation

In order to measure and quantify personalisation of different houses, the average score for the abovementioned physical cues for personalisation has been calculated. Each item (furniture, landscaping, decoration and wares) have been rated and calculated from 0 to 1 (1 being the highest). The four items have been added and divided by four to calculate the average personalisation observed for each house.

To calculate furniture, a score of 1 has been given to each item of furniture (canopies, chairs, lightings) observable from the street and 0 to each item that was not used in the front yard or porch. Then the average for these three items has been calculated and used as a score for furniture.

The same ranking system has been applied to landscaping. Based on the observations, the landscaping qualities have been categorised in five groups: beautification, defining a spatial territory (territorialisation), acting as traffic or intrusion barriers, maintenance, and shading.

To calculate and compare landscaping among case studies, a score of 1 or 0 has been given to each abovementioned item (beautification, defining a spatial territory, acting as an intrusion barrier, maintenance, and shading). The score of 1 refers to the presence of these features in front yards and 0 refers to the lack of presence of these items (the score does not consider the number of items).

Afterwards, the average score on these five items has been calculated to represent the score of landscaping in the front yard of each house.

Similar methods have been applied to calculate decorations and wares (non-decorative items). A score of 1 has been given to each house presenting a decorative feature or putting wares and goods in the front yard. Otherwise, a score of 0 has been given to the houses without any decorative elements or additional wares.

Houses with the highest number of greetings ranked higher regarding average wares and decorations score in comparison with the houses with the lowest number of greetings. However, this average was similar in terms of furniture and landscaping (table 6).

Greetings		personalization	Furniture	landscape	decoration	wares
below 8	Greetings below 8	0.33	0.090909	0.69	0.272727	0.272727
over 9	greeting over 9	0.53	0.1	0.63	0.7	0.7

Table 6. average personalisation score

All in all, the houses with the highest number of neighbouring interactions have 20% more personalization than the houses with the least number of greetings.

CONCLUSIONS

The present study was designed to determine the effect of housing qualities and the neighbourhood environment on the formation of neighbouring interactions. This study identified that the visual accessibility of neighbouring houses have a contributing effect on the formation of the neighbouring relationships.

This research has also shown that the spatial pattern of residential developments contributes to the pattern of neighbouring interactions. In all the three streets the average distance to the side neighbours is much less than the average distance to the front neighbours. This spatial placement of the housings has developed a greater sense of community among the side neighbours rather than the front neighbours. The distance to the neighbouring houses affects the number of interactions.

By utilising a framework developed according to the literature review, the built environment qualities (such as composition, transparency, permeability and personalization) that may contribute to the neighbouring relationships were investigated. While factors such as composition, transparency and personalisation were shown to have a contributing effect, other factors such as permeability, furniture and landscaping did not have a meaningful correlation and were concluded not to be as important as the other factors (figure 11). The houses with the least number of interactions on average have larger lots with less site coverage, larger setback, smaller congestion level, and use their front porches less than the houses with the most number of activities. The houses with the most number of activities are usually more transparent and use different types of personalisation techniques to demarcate their residence.

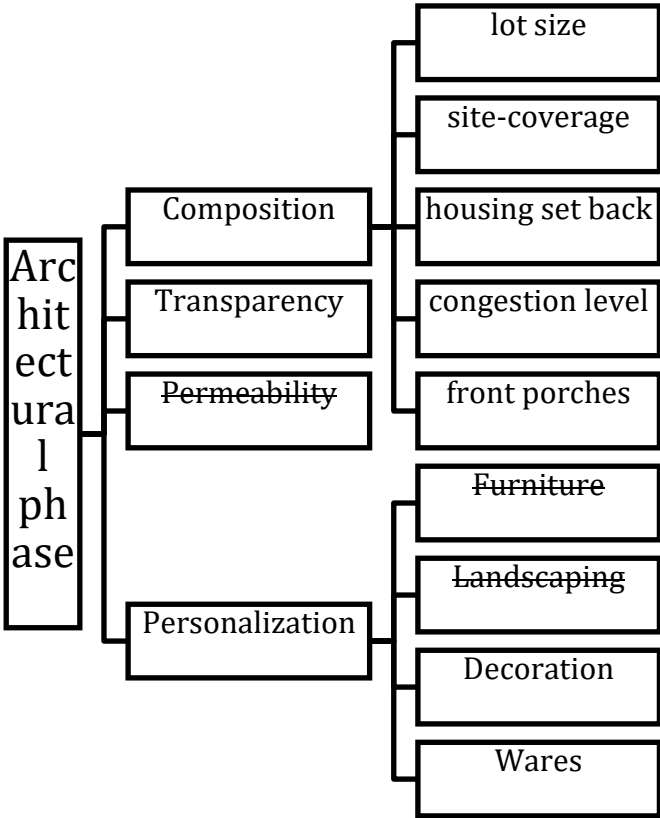


Figure 11. architectural qualities

NOTES

- ¹ Farahani, "The Value of the Sense of Community and Neighbouring."
- ² Silverman, "Neighboring and Urbanism Commonality versus Friendship."
- ³ Appleyard, *Livable streets*.
- ⁴ Silverman, "Neighboring and Urbanism Commonality versus Friendship."
- ⁵ Keller, *The urban neighborhood: A sociological perspective*, 29.
- ⁶ Silverman, "Neighboring and Urbanism Commonality versus Friendship."
- ⁷ Lofland, "Social life in the public realm: A review."
- ⁸ Kusenbach, "Patterns of neighboring: Practicing community in the parochial realm."
- ⁹ Ibid.
- ¹⁰ Greer, "The social structure and political process of suburbia."
- ¹¹ Unger and Wandersman, "The importance of neighbors: The social, cognitive, and affective components of neighboring."
- ¹² Farrell et al., "Neighborhoods and neighbors: Do they contribute to personal well-being?."
- ¹³ Unger and Wandersman, "The importance of neighbors: The social, cognitive, and affective components of neighboring."
- ¹⁴ Tsai and Sigelman, "The community question: a perspective from national survey data-the case of the USA."
- ¹⁵ Kasarda and Janowitz, "Community attachment in mass society."
- ¹⁶ McGahan, "The Neighbor Role and Neighboring in a Highly Urban Area*."
- ¹⁷ Silverman, "Neighboring and Urbanism Commonality versus Friendship."
- ¹⁸ Davidson and Cotter, "The relationship between sense of community and subjective well-being: A first look." Richards, "Suburbia: domestic dreaming."
- ¹⁹ ---, "Suburbia: domestic dreaming."
- ²⁰ Appleyard, *Livable streets*.
- ²¹ Rapoport, *Human aspects of urban form : towards a man-environment approach to urban form and design*.
- ²² Lang, *Creating architectural theory: The role of the behavioral sciences in environmental design*.
- ²³ Verbrugge and Taylor, "Consequences of population density and size."
- ²⁴ Williams, "Designing neighbourhoods for social interaction: The case of cohousing."
- ²⁵ Farahani and Lozanovska, "A Framework for Exploring the Sense of Community and Social Life in Residential Environments."

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RETHINKING HOUSING SOLUTIONS: ADAPTIVE REDESIGN APPROACHES FOR AGEING APARTMENT BUILDINGS

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INTRODUCTION

A raft of challenges face multi-unit residential housing design, at the forefront of which is a triad of interrelated needs – to make dwellings more economically, socially and environmentally sustainable. To date, this discussion has primarily focused on the provision of high quality new housing designs. In comparison, the renovation of the significant existing housing stock dating from the post-war period is rarely seen as a viable option. Often seen as a failure and technically outmoded, demolition and rebuilding is often seen as the most viable option. Contributing to the choice of rebuilding over renovation are the difficulties associated with multiple ownership, which complicate decision-making processes.

However, the existing housing stock offers rich opportunities for creating more liveable, affordable, and environmentally-friendly solutions, which remain largely underexplored in Australia. In this paper we explore the opportunities of what we term “adaptive redesign” of existing multiple-owned housing. By this, we mean an approach that is based on customised solutions that fundamentally rethink the design starting from the needs of current inhabitants and the opportunities of the building ‘as is’, rather than a mere renewal of its existing building fabric and the updating of its external appearance. The paper draws on a broad church of research, and argues that by thinking creatively it is possible to make advances that create productive links between environmental, social and economic factors. In so doing, the large amount of existing housing stock can be adapted to be more environmentally, socially and economically sustainable, providing immediate solutions for the present and impacting on the lives of urban dwellers. What is needed is a meta-framework for “adaptive redesign” approaches that draws on successful precedence in Australia and in comparable countries and facilitates the transition from disparate examples to a mainstream housing solution that influences policy.

APARTMENT OWNERSHIP IN SYDNEY

Sydney is the most populous city in Australia. It also has the largest number of flats, units and apartments (henceforth ‘apartments’) of any Australian Capital City. Approximately one-quarter of all dwellings in the Greater Sydney Statistical Area are apartments.¹

In Australia, most privately owned apartments are owned as strata titled properties. Government and community housing providers own some entire apartment blocks, but their numbers are small,

reflecting the small size of the social housing sector in Australia.² There are also a limited number of privately owned apartment blocks rented to tenants by private landlords, but again this market is small and Australia does not have a highly developed institutional rental investor market like those that exist in cities internationally.³ The result is that if a person lives in or owns a private apartment in Australia then the likelihood is that it is a strata titled property. Some other building types can also be owned under strata title including townhouses and villas.

Greater Sydney has the largest number of residential strata properties of any Australian city with over half a million (535,427) dwellings (lots) across 35,619 developments (strata schemes) as of December 2013.⁴ Approximately one-third of these developments (33.1% of all schemes and 31.7% of all lots) were registered before 1980 and of those older schemes, the majority (82.2%) consist of 20 dwellings or less. These figures demonstrate that there are a large number of older apartment buildings in Sydney that make up a significant part of the city's housing stock. They are generally smaller developments (under 20 units) and are spread across the metropolitan area, but especially clustered along the major train lines (see Figure 1).

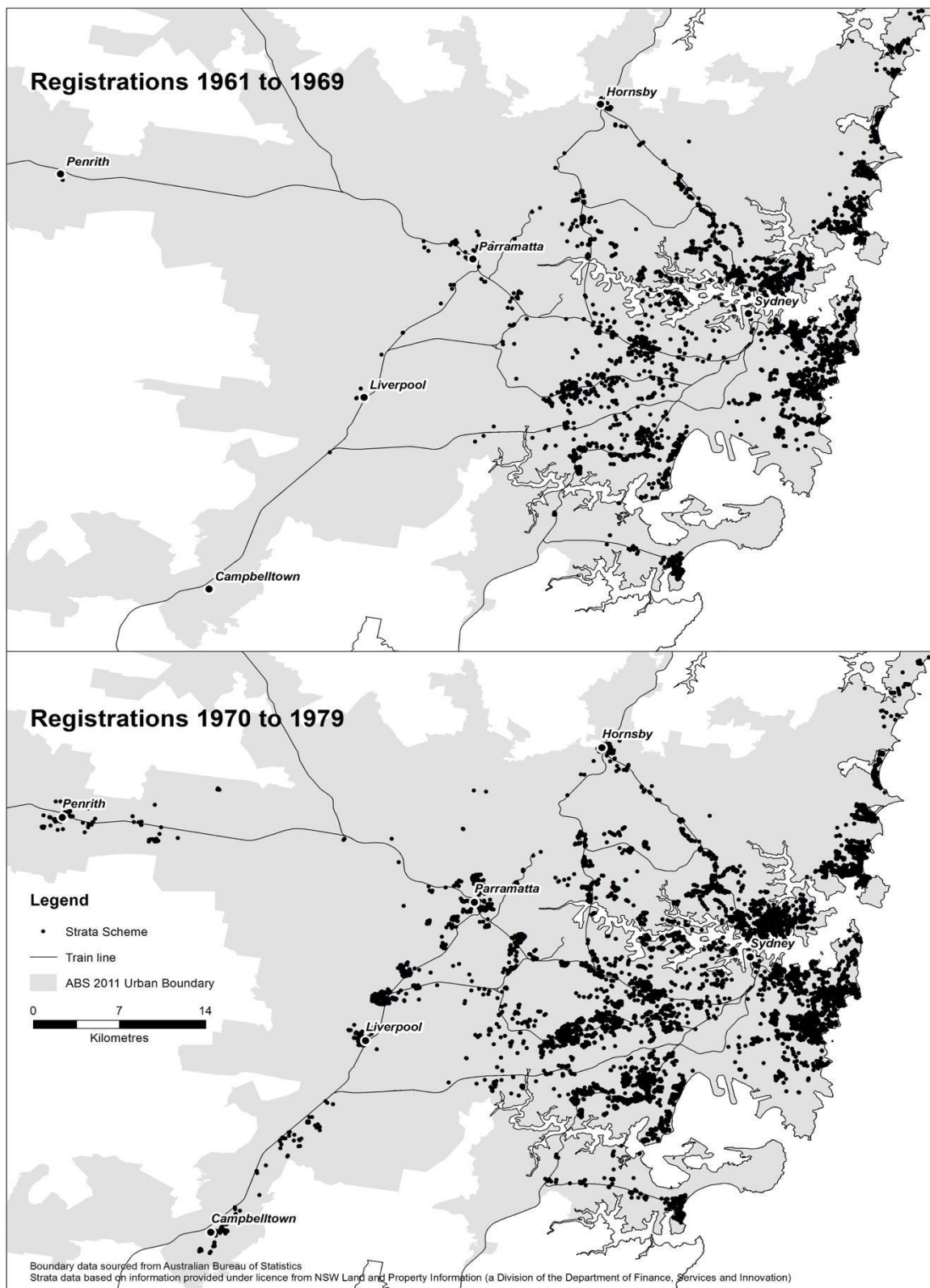
CHANGING RESIDENT PROFILES AND AGEING BUILDINGS

The question that arises is whether these older apartments continue to meet the needs of their residents. The answer to this question relies on the answer to two further questions – who is living in them and how well have they been maintained? In responding to the first question, research undertaken in Australia by Randolph and Tice has demonstrated that over time the resident profile of suburbs, and the apartment buildings within them, can change significantly so that the people who live in these apartment 10 or 20 years after they are built may be quite different to the occupants envisaged by architects, developers and planners when the buildings were first constructed.⁵ For example, Easthope and Tice demonstrate how in one Sydney suburb the resident profile of a new development made up of multiple apartment buildings changed rapidly to include increasing numbers of households with children and lower income households within just a few years.⁶ Indeed, as Randolph and Tice explain, in older suburbs “considerable restructuring of the local housing markets is likely to have taken place over time” with “changing demand segments leading to up- or down-grading”.⁷ The result is that the people living in older apartments may very well not be the types of people envisaged to live in them when they were designed and built, and beyond that the demographic profiles of cities have also diversified as a result of increasing immigration and ageing of the population, which is likely to have led to a diversification of needs, or even conflicting needs. Add to that changing demands on space over time as home technologies, living practices and aspirations continually evolve, and one would expect older apartment buildings may no longer meet the needs of their current residents.

The changing demographic profiles of residents observed by Easthope and Tice are a common occurrence in Europe as well. In fact, a recent housing project in the residential neighbourhood area of Ommoord in Rotterdam/Netherlands cited changes in resident profile as a main motivation for redesign.⁸ The Ommoord apartment blocks were constructed in the 1960s, and in 1999, the housing association commissioned biq architects to upgrade the buildings' technical performance and find an architectural solution to improve the increasingly tense relationships between different resident groups. In particular, younger families from varied socio- economic and ethnic backgrounds and older residents who had lived in Ommoord from the beginning presented conflicting needs and ignorance of respective social codes.⁹ The architects noted that:

“The departure of the stable population of pioneers and the influx of new tenants with different skin colours might be a completely normal manifestation of urbanisation, but for older residents it is a

threat to their ways – new families parking their children’s bicycles on the access gallery is their worst nightmare.”¹⁰



*Figure 1. Location of Strata Schemes by Registration Date. Image from: Laurence Troy et al., *Renewing the Compact City: Interim report* (Sydney: City Futures Research Centre, 2015), 13.*

Negotiating the customised redesign of the buildings to the needs of present residents represented a significant part of the architects' charge and resulted in a time-consuming nine-year process. By rethinking the spatial organisation of the scheme together with the residents, the final scheme proposed a redistribution and sectionalisation of apartments according to social groups, and more specifically, the inclusion of aged care facilities and the reservation of two blocks for older residents. Changes to the demographic profile of residents and habitation patterns can be attributed to various causes. In Australia, increasing immigration rates of disproportionately young adults substantially add to demand for housing and lead to changes in demographic resident profiles.¹¹ Predictions highlight that beyond 2040, as much as 80 per cent of population growth could be attributed to overseas migration, and in Sydney, this figure could reach 100%.¹² The ageing of long-term residents, as witnessed in Ommoord, equally represents a significant issue in Australia. In fact, immigration and the ageing of resident households are the two important aspects that shape resident profiles in Sydney and Melbourne, as recent demographic studies by the Australian Population Research Institute show.¹³ But there is a plethora of secondary causes, too: a recent AHURI report, for example, cites evidence of alternative habitation formats such as shared housing, or children returning to live with their families in response to tightening rental markets, as additional factors contributing to changing forms of habitation and resident profiles.¹⁴

OBSTACLES AND OPPORTUNITIES: REDESIGNING RESIDENTIAL PROPERTIES UNDER MULTIPLE OWNERSHIP

In responding to the question of ageing buildings, research undertaken in Australia¹⁵ and overseas¹⁶ has highlighted the difficulties of maintaining and upgrading apartment buildings under multiple ownership, such as strata titled apartment buildings. For example, Easthope, Randolph and Judd found that disagreements relating to major expenditures, including major repairs, were quite common in strata schemes in New South Wales. They note:

*"A particular issue regarding decision-making in strata schemes ... is the length of time it can take to make a decision and take action on particular issues because of the difficulties that can be experienced in getting consensus within the executive committee or between owners."*¹⁷

These challenges of ageing and inadequately maintained apartment buildings have been recognised by government and industry in the Sydney context and formed part of the NSW government's justification for changing the legislation regarding the proportion of owners who must agree to terminate a strata scheme as the first stage towards knocking down and rebuilding apartment buildings.¹⁸ However, demolishing and rebuilding apartment buildings is both an expensive, and potentially very disruptive, exercise.¹⁹

In those cases where apartment buildings have been redesigned, traditionally, efforts have focused on fixing pressing technical issues relating to the building fabric and updating the external appearance to a more contemporary design. This is a very reductive approach and often does not involve architectural services. Adaptive redesign of buildings rather than simple renovations is likely to offer more viable alternatives towards achieving the goals of improved social and environmental sustainability. As was noted in a 2015 roundtable discussion hosted by the Journal of the Royal Institute of British Architects:

*"In large-scale housing retrofit, clients generally regard the work as a mere technical fix that does not require an architect. In doing so, they potentially miss out on considerable value-adding opportunities that arise from the wider design vision that architects offer."*²⁰

A milestone in the adaptive redesign of older apartment buildings is the acclaimed transformation of the 1960s apartment block *La Tour Bois le Prêtre* in Paris by architects Druot, Lacaton & Vassal in

2011.²¹ The 16-storey tower with 96 apartments underwent adaptive redesign using environmentally sustainable strategies such as minimizing new building works, the intelligent use of materials, and performative upgrading to minimise operational costs such as heating and electricity, amongst others. The use of prefabricated elements permitted the residents to continue inhabiting the building during the construction phase, and thus avoided the considerable financial burden of rehousing them in other locations for the duration of the works. The use of prefabrication and off-the shelf materials also minimised construction cost and time, causing only minor disruption to residents: the addition of balconies and winter gardens, for example, had an installation time of one day per apartment.²²

The architects demonstrated that the cost of adaptive redesign can be less than half the cost of demolition and rebuilding: The project cost came to 15 Million Euros instead of the 26 Million Euros initially envisaged for a new building.²³ But in addition to construction costs, the environmental savings were significant given that the built environment accounts for around 30% of global annual GHG (green house gas) emissions and consumes up to 40% of all energy.²⁴ The energy consumption and GHG emissions of a building can be divided into three phases of the whole-building-life-cycle: construction, use, and demolition. In most building projects, the use phase by far exceeds the other phases with 80% of green house gas emissions occurring in this phase, compared to 10-20% produced for construction, maintenance and demolition.²⁵ Technical upgrades to reduce energy usage and emissions during the use phase of buildings, which are the result of heating, cooling, ventilation, lighting, and other applications, is an effective environmental performance measure that equally contributes to cost savings for inhabitants.

In *La Tour Bois le Prêtre*, social sustainability was of equal importance to environmental and technical factors. Indeed, for the architects, it acted as the main driver of the project. By developing customized measures in close collaboration with the residents and looking at the adaptive potential of the building, the architects deployed a case study approach that built upon the particulars of the project scenario. The residents' needs 'co-determined' the adaptations of the individual apartments to provide simple comforts such as more space, light, views and social contact. Main improvements included: extending habitable spaces through the addition of balcony spaces and winter gardens; providing generous views through the replacement of small windows with full-width glazing (the architects found that "the building's windows were tiny, so [that] even the units on the upper levels of the building had no real view of Paris")²⁶; and rethinking communal areas to facilitate collective activities. Anne Lacaton explains that this approach is distinct from traditional renovation approaches, which reinstate rather than rethink and often focus on external appearance. She insists that in *La Tour Bois le Prêtre*, the design and aesthetics arose from decisions about the quality of the spaces: "We could have done something playful and fashionable on the outside, to look better, if we had put just a few balconies here and there. But our priority was improving the living conditions for everyone."²⁷ Conceived to improve the life experiences of inhabitants, the redesign represented a socially viable alternative to conventional renovation approaches, allowing residents to articulate their individual needs and appreciating the opportunities afforded by the specific housing design.

ADAPTIVE REDESIGN APPROACHES: METHODS, OPPORTUNITIES AND LIMITATIONS

If owners and residents of apartment buildings are to assume a more central role in the design process, there is evidently a need to provide guidance to assist with the decision-making, but more generally a clarification of responsibilities and collaborative processes. However, few details are known about the methodological approaches and design processes used by Lacaton & Vassal, biq or other architects involved in participatory design projects. User consultation and working with the givens of the

existing building constitute an integral part of these approaches, as does a shared interest in ethics over aesthetics. Lacaton & Vassal, for example, have frequently cited an architectural interest in "making do with what you have, working with the inherent qualities of the space or site," and being "attentive to the situation you have in front of you" - architectural tactics which show little interest in designing an object with a particular style or using established design methods.²⁸ Yet in the absence of a clearly articulated methodological framework and the lack of evidence-based approaches, obvious problems come to the fore: **First**, if residents participate in the design process, how are design decisions made and who makes them? The responsibilities, duties, and liabilities of the architect as a professional are tightly regulated by the Architects Registration Boards in Australia and the UK, and by similar bodies in other countries, who do not make allowances for alternative processes. What then happens when residents and unit owners make design decisions, which they are not professionally qualified and not best suited to make? Professionals now find themselves in the role of co-producers whilst not being relieved from the professional obligations under which they find themselves from professional and legal bodies.

Second, what are the implications for the professional self-image of the architect if others now participate in his role and what are the skills that he needs to acquire to assume a meaningful role in the participatory process? In his discussion of participatory processes, architect Markus Miessen has proposed the model of the "cross-bencher" as a creative intervener, someone who belongs to no party, and stimulates argument and debate rather than consensus.²⁹ This line of thought, whereby the architect is no longer necessarily someone who designs buildings, but more generally a creative producer or auteur also aligns with art-inspired participatory practices proposed, for example, by practices such as muf, who do not see buildings as the only architectural outcome but also include the making of relationships, the forging of dialogues and the staging of temporary interventions.³⁰ However, architectural education and CPD (Continual Professional Development) subjects rarely include training in "good people skills" such as teamwork, collaboration, cooperation, communication, respect, empathy and so on, and these are hard to define and difficult to acquire. Yet they are pivotal to the success of participatory projects: to the building of mutual trust and the negotiation of tensions that inevitably occur, even though, as Donald Farquharson, head of capital programme delivery for Kent County Council, bluntly points out: "in my experience working together is not a concept architects enjoy."³¹

Third, how can residents and unit owners be appropriately up-skilled to participate in these processes without losing their autonomy and creativity? Some forms of Co-Housing can provide important insights on the challenges and opportunities entailed in the collective engagement of architects and residents in the design process, although most multiple-owned housing schemes do not form "intentional communities" in the sense of Co-Housing projects.³² In a recent series of seminars, for example, the UK Cohousing Network seeks to tackle issues associated with knowledge transfer, particularly with respect to what they term "the professionalization of the collaborative process between communities and expert partners."³³ Expert partners would include architects who traditionally assume the role of the consultant team leaders. Asking whether "collaboration between groups and professionals" can "take place without undermining grassroots autonomy and creativity", the network points to the fact that client bodies see the involvement of professionals as a threat to their independence and participatory aspirations.

ADAPTIVE REDESIGN APPROACHES: CONCLUDING THOUGHTS

The Paris and Rotterdam housing schemes discussed in this paper can be seen as pilot projects, trialling approaches to adaptive redesign based on user participation. It is important to note that in these projects, the standard design processes used for architectural projects are no longer applicable. In both Rotterdam and Paris, the design consultation phase was ongoing and extensive, whereas the construction phase was comparatively condensed due to processes such as prefabrication and strategies of minimising new built interventions. While these case studies are exemplary in terms of their outcomes, they also suggest the need for improved guidance to streamline the participatory design approach. In Ommoord, for example, the entire project involving 2000 residents extended for nine years (1999-2009), of which the construction phase only took up 2 years (2007-2009).

It is evident that standard design processes for architectural projects do not effectively meet the needs of residents in existing properties nor of architectural professionals attempting to provide services for them. What is needed is a new design process for adaptive redesign that increases the efficiency of what to date have been case-by-case approaches and enables participatory design approaches to become a mainstream design approach. Where adaptive redesign has been employed, the design approaches have not been comprehensively recorded or disseminated and therefore there is a need for knowledge transfer. This would include: a) collecting the information that exists about what has been done internationally and b) collecting new information through case studies. Building on the knowledge now available from these and other case studies, it should be feasible to develop a framework to support this type of participatory design process, thus opening up new solutions for multi-unit residential housing.

NOTES

¹ ABS (Australian Bureau of Statistics), *Basic Community Profiles* (Canberra: ABS, 2012).

² Ilan Wiesel and Hazel Easthope, "Moving into a Disadvantaged Tenure? Pathways into social housing," *Geography Research Forum* 33 (2013): 147-162.

³ Kath Hulse, Vivienne Milligan, and Hazel Easthope, *Secure Occupancy in Rental Housing: Conceptual foundations and comparative perspectives, Final Report* (Melbourne: Australian Housing and Urban Research Institute, 2011).

⁴ Laurence Troy et al., *Renewing the Compact City: Interim Report* (Sydney: City Futures Research Centre, 2015), 1.

⁵ Bill Randolph and Andrew Tice, "Who Lives in Higher Density Housing? A study of spatially discontinuous housing sub-markets in Sydney and Melbourne," *Urban Studies* 50, no. 13 (2013): 2661-2681.

⁶ Hazel Easthope and Andrew Tice, "Children in Apartments: Implications for the compact city," *Urban Policy and Research* 29, no. 4 (2011): 415-434.

⁷ Randolph and Tice, "Who Lives in Higher Density Housing?," 2664.

⁸ See Ellis Woodman, "Post-war estate regeneration: Improvement over replacement," in *Exemplary Housing Estate Regeneration in Europe*, ed. James McLachlan (London: EMAP, 2015), 7-8, accessed March 15, 2016, http://www.architectsjournal.co.uk/Journals/2015/06/29/gly/m/KCA-book_all_low-res.pdf

⁹ James McLachlan, ed., *Exemplary Housing Estate Regeneration in Europe* (London: EMAP, 2015), 34-35.

The reference to the variety of socio-economic and ethnic backgrounds evident in Ommoord's resident profile is repeated by Hans van der Heijden, the former design director at biq architects at the time. See van der Heijden's website, accessed March 15, 2016, <http://hvdha.com/splayed-apartment-blocks/>

¹⁰ Cited in Woodman, "Post-war estate regeneration."

¹¹ A 2008 report cites immigration as a major factor in population growth. See *Senate Select Committee on Housing Affordability in Australia*, report tabled on June 16, 2008. In particular, Chapter 4: Factors influencing the demand for housing, Subsections 4.4 - 4.13: Demographics, accessed February 12, 2016,

http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Former_Committees/hsaf/report/c04

¹² Bob Birrell, *Committee Hansard* (24 April 2008), 31. Cited in *Senate Select Committee on Housing Affordability in Australia*, report tabled on June 16, 2008 Chapter 4, Subsection 4.7.

¹³ Bob Birrell and David McCloskey, "The housing affordability crisis in Sydney and Melbourne Report One: The demographic foundations" (Melbourne: The Australian Population Research Institute, October 2015), 3-10, accessed February 12, 2016, http://tapri.org.au/wp-content/uploads/2016/02/housing-affordability-crisis-in-sydney-and-melbourne_part-1.pdf

¹⁴ Mike Berry and Peter Williams, "Investigative Panel on a socially sustainable housing system for Australia," for the Australian Housing and Urban Research Institute, *AHURI Final Report No. 169* (Melbourne: RMIT Research Centre, June 2011), 7, accessed February 12, 2016,

http://www.ahuri.edu.au/_data/assets/pdf_file/0002/2000/AHURI_Final_Report_No169_Investigative_Panel_on_a_socially_sustainable_housing_system_for_Australia.pdf

¹⁵ Hazel Easthope, Bill Randolph, and Sarah Judd, "Managing Major Repairs in Residential Strata Developments," *A study by the City Futures Research Centre at UNSW provided with the assistance of the NSW Office of Fair Trading in New South Wales* (Sydney: City Futures Research Centre, 2009).

¹⁶ In Russia: Ekaterina I. Borisova, Leonid Polishchuk, and Anatoly Peresetsky, "Collective Management of Residential Housing in Russia: The importance of being social," paper presented at *Workshop Colloquium Series*, Indiana University Bloomington, 24 October 2011. In Canada, the USA, England and Germany: Martti Lujanen, "Legal Challenges in Ensuring Regular Maintenance and Repairs of Owner-occupied Apartment Blocks," *International Journal of Law in the Built Environment* 2, no. 2 (2010): 178-197. In Hong Kong and Taiwan: Ngai-ming Yip, Chin-oh Chang, and Tzu-ying Hung, "Modes of Condominium Management: A principal-agent perspective," *Facilities* 25, nos. 5-6 (2007): 215-226.

¹⁷ Hazel Easthope, Bill Randolph, and Sarah Judd, *Governing the Compact City: The role and effectiveness of strata management* (Sydney: City Futures Research Centre, 2012), 2.

¹⁸ Laurence Troy et al., *Renewing the Compact City: Economically viable and socially sustainable approaches to urban redevelopment, Final Report* (Sydney: City Futures Research Centre, 2015).

¹⁹ Ibid.

- ²⁰ Unknown author, "Keep the faith", *RIBA Journal* (1 September 2015), accessed February 26, 2015, <https://www.ribaj.com/intelligence/championing-the-vision>
- ²¹ The project approach was cited as an answer to the housing crisis in Britain, where the progressive demolition of post-war estates such as the Heygate estate in south London, is seen as unsustainable and the implementation of demolition process often extends over several decades. See Rowan Moore, "10 solutions to the housing crisis – in pictures," *The Guardian* (7 July 2013). For a detailed discussion of the *La Tour Bois le Prêtre* project, see Ilka & Andreas Ruby with the German Architecture Museum (DAM), eds. *Druot, Lacaton & Vassal: La Tour Bois le Prêtre in Paris* (Berlin: Ruby Press, 2012).
- ²² Michael Kimmelman, "At the Edge of Paris, A Housing Project Becomes a Beacon," *The New York Times* (28 March 2012), accessed January 26, 2016, http://www.nytimes.com/2012/03/28/arts/design/renovated-tour-bois-le-pretre-brightens-paris-skyline.html?_r=1
- ²³ For the project details, drawings and photographs, please refer to the architects' website, accessed January 26, 2016, <http://www.lacatonvassal.com/?idp=56#>
- ²⁴ Sylvie Lemmet, "Building Opportunities for Tackling Climate Change," foreword to *Buildings and Climate Change: Summary for Decision-Makers* (Paris: UNEP United Nations Environment Program, 2009), 3, accessed November 2, 2015, <http://www.unep.org/SBCI/pdfs/SBCI-BCCSummary.pdf>
- ²⁵ UNEP United Nations Environment Program, *Buildings and Climate Change: Summary for Decision-Makers*, (Paris: UNEP United Nations Environment Program, 2009), 6, accessed November 2, 2015, <http://www.unep.org/SBCI/pdfs/SBCI-BCCSummary.pdf>
- ²⁶ Cited in Carson Chan, "Lacaton & Vassal: Game Changer", *032c*, no. 23 (Winter 2012/13), 130-141, accessed November 2, 2015, <http://032c.com/2013/o-architects-where-art-thou-game-changer-lacaton-vassal/>
- ²⁷ Anne Lacaton cited in Kimmelman, "At Edge of Paris." For a discussion of ethics and aesthetics in Lacaton's adaptive reuse projects, in particular, the Palais de Tokyo Paris, see "'Materials in Fact': Material Aesthetics and Ethics in Lacaton & Vassal's Palais de Tokyo," in *Materiality and Architecture*, ed. Sandra Karina Löschke, (London: Routledge, 2016), 27-46.
- ²⁸ David Cascaro and Claire Staebler, "Interview with Lacaton & Vassal: Comme Un Paysage Sans Limite / Like an Endless Landscape," *Palais*, no. 15 (Numéro spécial histoire du Palais de Tokyo) (2012): 100, 102.
- ²⁹ Markus Miessen, *The Nightmare of Participation (Crossbench Praxis as a Mode of Criticality)* (Berlin: Sternberg Press, 2011).
- ³⁰ See Jane Rendell's discussion of collaboration and in particular architecture practice *muf's* collaborative practices. Jane Rendell, *Art and Architecture – a Place Between* (London/New York: I.B.Tauris, 2006), 153-61.
- ³¹ Cited in "Brush up your people skills", *RIBA Journal* (1 September 2015), accessed January 28, 2016, <https://www.ribaj.com/intelligence/project-people-skills>
- ³² As Isabelle Priest pointed out, The UK Co-Housing Network identifies three main forms of co-housing: New Built, Property Renovation, and Retrofit which can be related to adaptive redesign projects. In both Co-Housing and adaptive redesign approaches, the notion of community is important, although in the latter, the formation of community might have occurred post- rather than pre-development. See Isabelle Priest, "Different kind of living", *RIBA Journal* (17 September 2015), accessed February 4, 2016, <https://www.ribaj.com/intelligence/different-kind-of-living>
- ³³ To address the issue of knowledge transfer, the UK Cohousing Network ran a seminar titled "ESRC Seminar Six: Mainstreaming cohousing in urban development: barriers to knowledge transfer," June 21, 2016, accessed August 28, 2016, <https://collaborativehousing.net/seminars/six/>

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ALTERNATIVE DWELLING MODELS TO ACCOMMODATE A GROWING CITY: GOLD COAST, AUSTRALIA.

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INTRODUCTION

This paper discusses the current housing situation on the Gold Coast, Australia and presents the work of undergraduate architecture students at the Abedian School of Architecture at Bond University. The students were tasked with designing dwellings for a growing population which responded to the unique environment that is the Gold Coast.

The Gold Coast is claimed to be the “undisputed leisure and entertainment capital”¹ of Australia. With the well-known slogan of “Famous for Fun” used in the Visit Gold Coast tourism campaign². Spectacular surf beaches, thrilling rides at theme parks and the natural wonders of the rainforest on its door step, it is no wonder that the Gold Coast is viewed as a place of tourism.

Located in southeast Queensland, the Gold Coast is a dynamic city, in one of Australia’s fastest growing regions. Australia’s sixth largest city, the City of Gold Coast Council region covers 1333.8 square kilometres, but only 350km² or less than a quarter of this area is urban in nature. When the Gold Coast as a tourism region is considered it extends well beyond the local government area.

The Gold Coast is naturally bound by its place. It is a 41kilometre stretch of land divided by 270 kilometres of rivers, creeks and man-made canals, bordered by ocean to the east and mountain ranges to the west. The Pacific Ocean to the east is perhaps the defining and most recognised feature of the narrow coastal plain with its golden sand beaches punctuated by rocky headlands, the remnants of ancient lava flows, at Green Mount, Currumbin, Burleigh and Miami³. It is however; inland that defines the Gold Coast further, being located at the edge of an extinct shield volcano. During the thousands of years of erosion the environments of place as we know them have been revealed. To the west are 100,000 hectares of heritage listed rainforests which grow from the rich volcanic soils and the topography drains water through a series of creeks and rivers out to sea. These environments supported indigenous communities for thousands of years. Along with its natural constraints, the Gold Coast is also defined by the Pacific Motorway, the road that connects Brisbane and Sydney. The built environment has responded to these conditions and is largely concentrated within a 300 square kilometer area. Figure 1 maps these divisions present on the Gold Coast.

In June of 2015 the population of the Gold Coast was more than 570,000 people. In addition to this the city hosts more than 12 million visitors annually, that’s an average of 32,900 people per day. More heavily tourist oriented areas of the city have density levels of 3728 and 3910 people per square kilometre (Surfers Paradise and Broadbeach respectively)⁴, while beyond the coastal strip and transit-oriented developments “the city reflects the historically dispersed, low-density pattern of urban

development characteristic of South East Queensland”⁵. An example of this is the more recent suburb of Varsity Lakes with a density of 2475 people per square kilometre⁶.

The Gold Coast although commonly viewed as a tourist destination is in fact much more. The Gold Coast is one of the fastest growing cities in Australia. In the 2016 publication *Off the Plan: The Urbanisation of the Gold Coast* the city was described as “substantial and complex... economically and socially it is no longer limited to the characteristics of a resort town. A real city has for some time been emerging from behind the glittering façade.”⁷



Figure 1. The City of Gold Coast extents with the smaller urban area and the division of the city by the Pacific Motorway

From a Beach Side Getaway to a City

The first settled areas of the Gold Coast supported agricultural ventures of sugar, timber, and dairy which were focused on the western extent of the region. The construction of a train line in 1889 connecting the Gold Coast to Brisbane supported the agricultural industries but also gave Brisbane’s residents access to the beach. By 1903 the Gold Coast was a “regional leisure destination” requiring the development of holiday facilities⁸ and holiday ‘homes’, much of which can be contributed to Australia’s “growing cultural attachment to the outdoors, to the beach in particular”⁹. Through the 20th century, cars, motorways and planes expanded the accessibility of the tourism region both nationally and internationally.

This constant attraction and growth of the region resulted in the creation of a “single urban system”¹⁰, following the expansion of what were a string of independent coastal resort towns including Labrador, Southport, Surfers Paradise, Burleigh Heads, Coolangatta and the inland settlements of Nerang and Mudgeeraba. Much of the expansion of these areas has been shaped by cars and roads so that today the Gold Coast is a sprawling car dependent city¹¹.

By “the 1960s and 1970s... the city had become a household name throughout Australia, synonymous with neon signs, motels, beach beauties and a somewhat irreverent and slightly sinful lifestyle”¹². Continued development through the 1980s, including the opening of an international airport and a construction explosion of high-rise hotels and residential towers (refer Figure 2) further emphasised the Gold Coast as a “landscape of consumption”¹³. In the 1990s the Gold Coast was described as “simultaneously brash, trendy, sophisticated, relaxed, over developed and over urbanised”¹⁴. The extensive canal residential estates, which are still being constructed in the region today, commenced in 1957 (refer figure 3) and were the first of their kind in Australia. These canal developments began a love of ‘water front living’, which was only equal to the love of ‘high-rise living’, with extensive views available from penthouse homes. In 2006 the Gold Coast had 212 apartment buildings over 12 storeys high; in comparison, Brisbane had less than 30 at the same time¹⁵.



Figure 2. Highrise buildings, Surfers Paradise, circa 1986¹⁶



Figure 3. Aerial View of early canal development of Florida Gardens, Miami Keys and Rio Vista Estates and Broadbeach, circa 1958¹⁷

In 2006, sociologist David Holmes wrote, that the Gold Coast was not perceived as a real city due to its lack of discernible centre or formal central business district: “there is no radical hub, only parallel zones that are separated by their function – the coastal tourist strip, a belt for the suburban service class, and the ‘alternative’ lifestyles and tourism of the hinterland behind this”¹⁸. The lack of a ‘centre’ has been identified and the establishment as Southport as the Gold Coast CBD is underway. Another reason for not being perceived as a ‘real city’ is due to the Gold Coast being considered by many as a satellite city of Brisbane which is an hour away by train or car. However, the vast majority of Gold Coast residents (almost 80%) work within the Gold Coast and neighbouring Tweed area¹⁹. The Gold Coast is a city of change, undergoing constant evolution and growth. In 1933 the region’s population was 6,602²⁰, by 1961 the figure was over 33,000 and by 1972 more than 100,000 people called the Gold Coast home²¹. The Gold Coast has and continues to record some of the highest population growth in Australia. The dream of a ‘sea change’ and the call of what Raitz²² described as a “climate that is mild, the air clean, and sunshine copious” continues to draw people to this coastal region, including one of the authors of this paper! Once labelled as ‘God’s waiting room’ for its perceived high population of retirees, it is now found that the population of the Gold Coast “is getting younger, with younger people who are looking for opportunities moving in”²³.

The Gold Coast Climate

The Gold Coast climate is subtropical and greatly contributes to the focus of population along Australia’s east coast. Table 1 shows the average temperatures recorded at the Bureau of Meteorology Gold Coast Seaway weather station. Although in winter there is an evident reduction in the minimum temperatures experienced, daytime maximum temperatures are still comfortable. The temperature conditions throughout the year allow residents the opportunity for passive heating and cooling strategies and natural ventilation within their homes with only limited use of mechanical systems needed.

Month	Mean Maximum Temperature °C	Mean Minimum Temperature °C	Mean Wind Speed km/h
January	28.7	21.8	25.5
February	28.6	21.8	24.0
March	27.9	20.8	25.6
April	25.9	18.3	23.0
May	23.5	15.3	20.3
June	21.3	13.2	19.1
July	21.1	12.0	19.9
August	21.9	12.5	22.4
September	23.9	14.8	24.4
October	25.4	16.9	25.3
November	26.8	19.0	24.7
December	27.8	20.5	25.1
Average	25.2	17.2	23.3

Table 1. Average Weather Conditions (Gold Coast Seaway)²⁴

Current Housing Typologies on the Gold Coast

Currently there are limited housing models on the Gold Coast. The two most evident housing types are densely sited high rise residential towers which also help service the tourism industry and detached homes in sprawling suburbs which are now starting to invade and carve into the scenic ranges. Low rise 2 and 3 storey unit blocks are also seen. Figures 4 to 7 show examples of housing on the Gold Coast. The photographs were taken by students as part of a study of housing typology for the Design Studio project.



Figure 4. Gold Coast Housing. Photo credit to William Hickman



Figure 5. A Gold Coast Residential Street. Photo credit to William Hickman



Figure 6. A Gold Coast Residential Unit Block. Photo credit to William Hickman

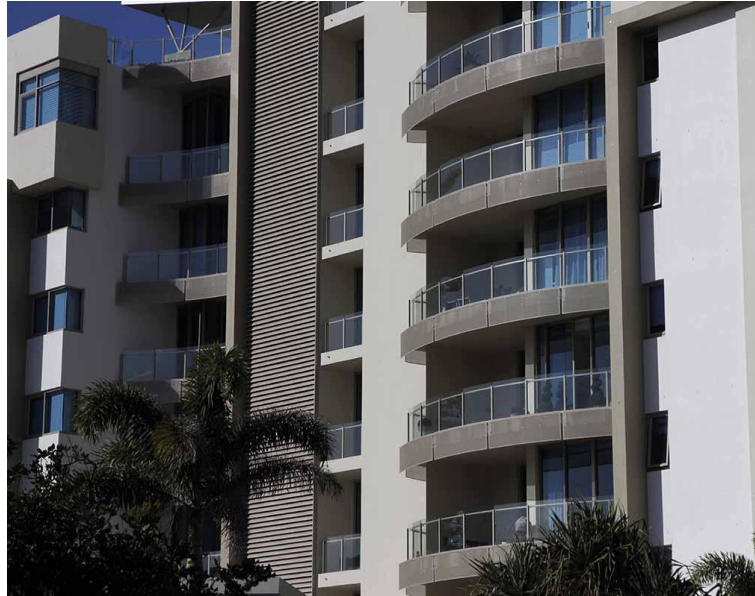


Figure 7. A Gold Coast Residential Highrise. Photo credit to William Hickman

The above figures show housing of a style which could be located anywhere in Australia. In general, there are limited examples of housing types on the Gold Coast which respond to the concept of ‘place’ and take advantage of the generous Gold Coast sun in winter, shades that same sun in summer and welcomes in the cooling sea breezes. The current housing solutions also contribute little to the social vibrancy of the city.

Future Predictions for the Gold Coast

Bernard Salt, a demographer, has stated that the population on the Gold Coast is “predicted to double in the next 35 years – reaching 1.1 million by 2050, the Gold Coast will require a cultural shift to accommodate further growth...”²⁵. A required change in direction for the coastal city is needed, with various authority and expert bodies agreeing on this fact. What isn’t agreed upon is the direction of this change. Bosman states that “the value of built form on the Gold Coast has generally weighed heavily in favour of economic value rather than social and environmental value”²⁶. There have been various studies undertaken by the Gold Coast City Council to establish a vision forward. In the 2015 draft of the *Gold Coast City Plan* a strategic intent to develop the Gold Coast into a ‘world class’ city is specified. The Plan is described by Dedekorkut-Howes and Mayere to represent a “major shift from development on the fringe to redevelopment of urban centres and major inner-city neighbourhoods, thus protecting the hinterland and foothills. Its key features therefore include removal of building height restrictions in selected areas, promotion of small lot development...” with the Urban Development Institute of Australia (UDIA) expressing “concern about the over reliance on residential growth in infill areas around the coastal strip [and] cautioning against the problems this may cause...”²⁷.

The infrastructure of the Gold Coast is developing in response to the strategic goals of the City, although there is still a heavy reliance on its road network, supported by buses and trains. A light rail service was introduced through the most heavily populated coastal areas in mid-2014 and has assisted in giving the City an authenticity. There are plans to extend the light rail to southern locations in the coastal region.

THE PROJECT

The question of housing the predicted growing population together with the concerns raised over the removal of height restrictions was posed to third semester undergraduate architecture students at the Abedian School of Architecture at Bond University. Students were asked to explore an alternative housing typology for the city of Gold Coast. Was it possible to have high density living while maintaining a height that spoke to its surroundings and community? Was it possible to have apartment buildings that responded to the sub-tropical climate?

The project site selected for this Design Studio is a former industrial allotment of approximately 11,200 square metres, in the suburb of Broadbeach. Broadbeach forms an important part of Gold Coasts' cultural landscape and is considered as one of its 'centres'. It was selected as it is close to the beach, and surrounded by a diverse mix of uses including a shopping centre, bus / light rail interchange, industrial facilities, and detached houses. It also fronts the future light rail corridor and is well serviced by the current public transport network.

The 13 week project was broken in to 4 stages, Site Analysis, Precedent studies, Master planning followed by individual apartment building design. Site analysis observed the physical and social context of the site, its current uses and connections. During the remainder of project students explored how these aspects (e.g. the existing 'grain' of the streetscape) might continue while at the same time respond to cultural and social changes, patterns of urban form, densification, and desire for open space.

Housing Aspirations

Students identified the ways and means that the city currently houses its population and considered how it can accommodate growth with varying models to avoid a sprawling city but maintain the essence of what its current population needs. In pairs the students interrogated international housing precedents to learn from those cities where high densities have been maintained while providing dwellings at a human scale. The vibrancy created in these precedents provided inspiration for the students as to the potential for a growing Gold Coast population. Table 2 provides details of the housing precedents analysed by the students with Figure 8 showing an example of the work produced. Many of the students overlaid the site plan of their selected precedent over the Gold Coast project site in order to make direct comparison of scale and density.

Project	Location	Architect
Seijo Townhouses	Tokyo (Japan)	Kazuyo Sejima
Qunita Monroy Incremental Housing	Sold Pedro Prado (Chile)	Elemental
Mountain Dwellings	Copenhagen (Denmark)	BIG
Flamatt 3	Bern (Switzerland)	Atelier 5
Accordia Housing	Cambridge (UK)	Feilden Clegg Bradley
Thins Number 9	Philadelphia (USA)	Onion Flats
La Closeraie	Louviers (France)	Maison Edouard Francois
Harold Way Apartments	Los Angeles (USA)	Koning Eizenberg
Kanchenjunga Residential Tower	Mumbai (India)	Charles Corea
Donnybrook Quarter	London (UK)	Peter Barber
Newhall Be	Newhall (UK)	Alison Brooks Architects

Table 2. International Housing Precedents interrogated by students in pairs



Figure 8. Example of Precedent Studies undertaken by students

The master planning task was undertaken in groups of 5 or 6. The students tested ideas and made proposals about what the site might become resulting in a master plan of 22 independent 400 square metre allotments (1 for each student), public open space and circulation for the site and surrounding areas. Figures 9 and 10 present a selection of the masterplan ideas created by the groups, while Figures 11 and 12 show the final masterplan which was then used for the next stage of the project.



Figure 9. Masterplan ideas (Students: Shane Collins, Amelia de Viana, Juliana Moreira, Sidney Russell, Renae Scanlan)

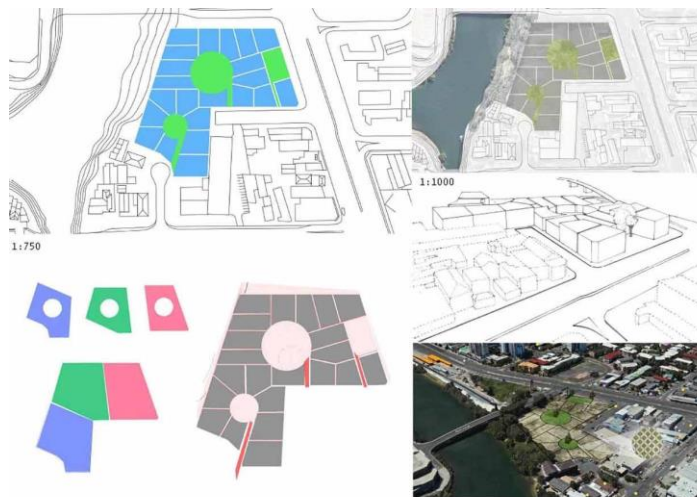


Figure 10. Masterplan ideas (Students: Sam McLintock, Harrison Stallan, Tom Sefton, Rebecca Freeman, Rosabel Horthy, Mattea Horthy)



Figure 11. Masterplan key design moves: public green space, vehicular access, pedestrian access



Figure 12. The final masterplan with the footprint of the students designs (image by Anna Heath)

Each student was designated an allotment and was tasked with designing a residential building of 10 dwellings with a height not exceeding 20 metres. This height was selected to maintain human scale. At the upper levels residents can still clearly view the street and public spaces, children can see if their friends are playing in the communal spaces below, while their parents can maintain a visual connection. The building footprint was to cover no more than 70 percent of the allotment to ensure outside space was available to all. Students were permitted to build to boundaries and ground floor commercial / retail space was explored as a way of creating street vibrancy. Abundant daylight with natural cross ventilation was also required in each building design.

From the minds of babes

The resulting designs were diverse but all responded to the cultural and social dynamics of the Gold Coast, patterns of urban form, densification, and desire for open space. The designs represent an alternative dwelling model, a middle ground between high rise and sprawling suburbs that respect the beauty and character of the amazing landscape in which the city sits.

Early in the process students working on their individual allotments identified the benefits of collaborating with their neighbours. They were able to align their external spaces to provide larger and more useable communal spaces for the residents that also provided amenity for each apartment. Essentially by sharing the courtyard spaces (or the 30% of the site they were not able to build upon) and building to the boundaries the schemes evolved in to thinner apartments that functioned better with regard to daylight and cross ventilation possibilities.

A number of student led 'agendas' appeared during the project. Some students were interested in the social diversity within their building and by speculating the potential mix in users it resulted in mixed apartment types that were expressed in the resultant built form. Others students responded to the existing 'grain' of the surrounding area by continuing this grain and some allowed access through as a way of shortcut. These student observations took the schemes from being generic apartment buildings placed on the site to proposals that grounded them within their place both physically and socially. Figures 13-15 present the final designs of a number of students.

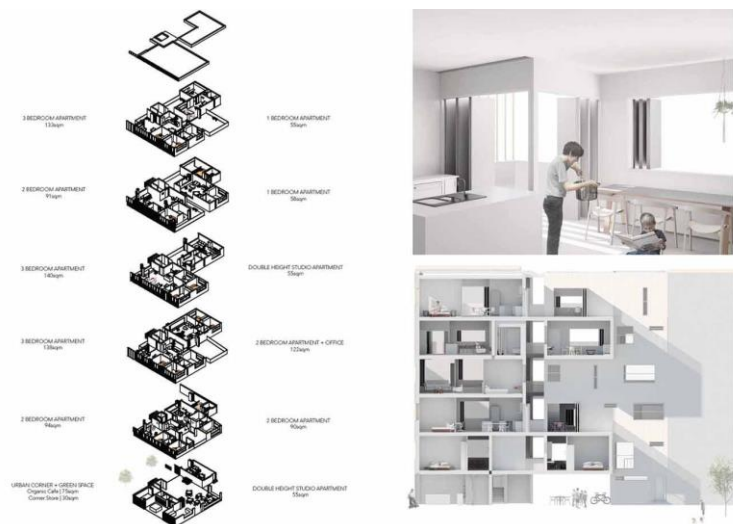


Figure 13. Apartment building design by Juliana Moreira

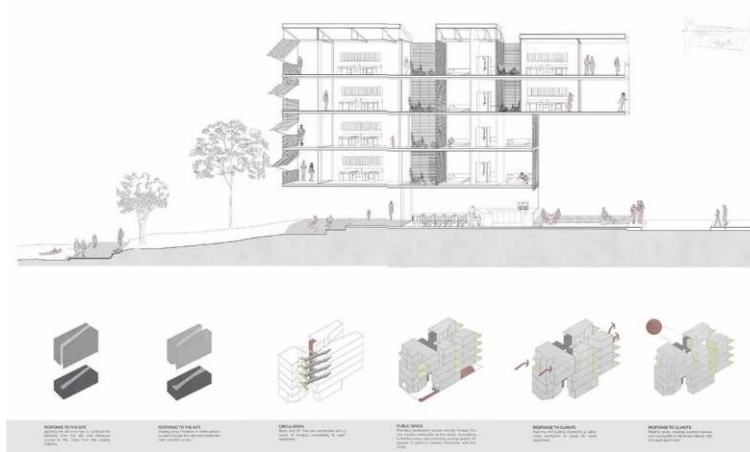


Figure 14. Apartment building designed by Megan King

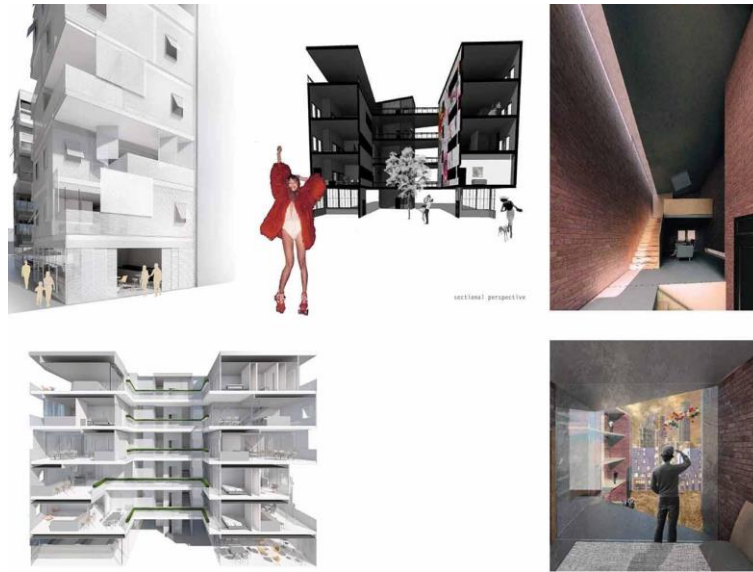


Figure 15. A collection of apartment building designs by Dana Kittel, Sidney Russell, Alex Ewart, and Ryan Fell.

CONCLUSIONS

The design work presented in this paper was undertaken by students in their third semester of the undergraduate Architectural Studies program. At the commencement of this semester long project, students had only completed one third of their undergraduate architectural degree. We emphasize this point to highlight the fact that the solutions presented were created by young and still developing design minds. The design solutions presented were considerate of social aspects of living in a community and aimed to take advantage of what is a benign and generally comfortable climate.

To assess the validity of this housing type with regard to population density it has been established to house a further 600,000 people, with an average occupancy rate of 2 people per apartment, the City would need 1200 of these types of development. This figure translates to less than 15 square kilometres or less than 5% of the Gold Coasts current 350 square kilometre urban footprint.

The future direction for the Gold Coast can learn much from these students and their presented ideas.



Figure 16. Massing models of the proposed housing type. Photo credit to Justin Twohill

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THE FUTURE OF REMOTE INDIGENOUS OUTSTATIONS: OPTIONS FOR LIVING WELL ON COUNTRY AFTER THE BULLDOZERS COME.

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INTRODUCTION

Indigenous community governance in Australia is currently undergoing a change through an emerging economically rationalist approach, as promoted by Australian Federal, State and Territory Governments. This approach characterises outstation life as a lifestyle choice at the taxpayer's expense (Martin & Owens, 2015). This change is manifested through increasing rhetoric about the withdrawal of funding for services to outstations and in some cases, the "closing" down of remote outstations (or homelands) due to their "unviability" (Altman, Kerins, Fogarty, & Webb, 2008; Kerins, 2009; Solonec, 2011). There are serious questions about the impacts of such closures on the residents themselves as well as the impacts on the larger communities and towns to which outstation people are re-settled. Such drastic measures have deep effects on Indigenous people, especially elders with a deep cultural need to maintain connection to country; yet this does not appear to be a consideration of policy under such an economically rationalist approach. This paper therefore reviews recent outstation policy at Federal, State and Territory levels and proposes some alternative ways to enable outstation people to live well on country.

The points of view expressed in this paper are based on my experience working with people in remote indigenous communities between 1995 and 2008, and observation of the direction in Indigenous policy from then to the present.

THE OUTSTATION MOVEMENT

After awarding Land Rights during the Whitlam Government (1972-1975), the question of how indigenous people could not only have access to country, but how indigenous people could "live on country" emerged (*Return to country: The Aboriginal Homelands movement in Australia*, 1987). While some land returned to Indigenous ownership included cattle stations with basic living infrastructure, others, being very remote, had no services or accommodation to support living on country. Regardless of the level of servicing, Indigenous people in remote areas expressed a strong desire to move from the larger settlements (often former missions) back to country (Young, Taylor, & Walker, 2010). In the case of the Western Desert communities of Mt Liebig, Haasts Bluff, Kintore and Kiwirrkurra, the driver to settlement in the early 1980s was to leave the former mission at Papunya where co-location of several distinct tribal groups was being coming problematic in both a cultural

sense and in the allocation of resources (Folds, 2001). This growing movement was acknowledged by an Australian Government Senate Committee review in 1987 (*Return to country: The Aboriginal Homelands movement in Australia*, 1987).

Outstations vary in size and population, but are generally based on smaller extended family groups, where the family, as the traditional owner, has responsibility to maintain the land. Maintenance of country can be practical: clearing waterholes and patchwork burning of grasslands; or it can be spiritual: conducting ceremonies, singing the country and upholding tribal law (Newman et al., 2008; Solonec, 2011).

As the outstation movement gained pace in the early 1980s, Indigenous organisations such as the Centre for Appropriate Technology (CAT) in Central Australia focused on delivering minimalist infrastructure to enable people to live on country. This included, hand-powered water pumps, Ventilated Improved Pit Latrines (VIPs), hot water chip heaters made from recycled LPG cylinders, and prefabricated shower/laundry blocks. In the mid 1990s, efficient wood-fired drum ovens and bush “microwaves” extended CAT’s offerings (Young et al., 2010). Such technologies transferred through many communities and outstations in Central Australia and beyond, until supplanted by programs delivering housing of varying designs and standards from the mid-to-late 1980s. As communities grew, the basic infrastructure described was still used to accommodate large groups of visitors arriving for cultural business or sports events and to enable outstations to be established.

In other parts of Australia, outstation development followed a more mainstream model with outstation establishment enabled by delivery of housing, centralized reticulated water, septic tanks, road grids and the like.

In other places where access to appropriate technology was not possible, indigenous people created settlements through use of scrap materials to create simple shelters, although sanitation and access to potable water was problematic. This is still a strategy in use whenever remote indigenous people have the need to escape the pressures of main settlements.

While non-mainstream low-cost models for enabling Indigenous people to live on country have existed in the recent past, until the current prospect of outstations closures emerged, a combination of remote community people’s housing equity expectations and governments being seen to provide “proper” public housing have meant that such models have not be considered as policy, let alone for funding. However, the question of people’s choices in the light of the closure agenda is now open for renewed discussion.

THE POLITICAL PUSH TO ‘CLOSE’ OUTSTATIONS

Determining whether there are funds to be allocated to outstations is one thing: cutting off services and closing them down is another. In framing outstations as a taxpayer-funded “lifestyle” choice (as if remote indigenous community dwellers had a fully transferable capability to go anywhere in Australia for economic purposes), it has become the main driver of Indigenous Policy. The current state of play for outstations can be summarized as:

No funding for new housing;

No funding for housing refurbishments;

Minimal or no funding for housing maintenance;

Progressive withdrawal of services (clinics, schools, stores, police etc.); and

De-facto “closure” of communities.

Viability is used as the justification for closures, and the term plays on the broader communities’ fears about how governments spend taxpayer’s money. It is easy to characterize remote communities as unviable, and make policy on that basis. But this raises the question: what does “unviable” mean, and

should it only apply to funding for Indigenous communities? For example, the unviability of Local Government throughout regional Australia has been well documented through studies over the last 10 years, showing that most regional Local Governments cannot sustain themselves without regular injections of State and Federal Government funding ("Local Government Finances in New South Wales: An assessment by Access Economics Pty Ltd for the Independent Review Panel January 2006.," 2006).

By extension, current policy drivers are based on assumptions that the cost of delivering services to Indigenous people are more effective once they move into larger centres. It is questionable whether the process of resettling people in larger towns, with pressures on their services and housing demands, is more economic. Research into the cost spent per capita on health services in remote communities and outstations shows that people serviced by remote outstation health services receive less than 50% of the funding on indigenous health services in the larger centres (Solonec, 2011). As people move to larger centres, the health bill may actually increase as indigenous people access mainstream services at cost rates commensurate with mainstream Australia, assuming they have services to actually access (Burgess et al., 2009).

THE IMPACT OF OUTSTATION CLOSURE

For Governments considering outstation closure, it is important to review the benefits of outstations in Indigenous wellbeing. Yet the considerable research into the value of outstations for promoting well being (Kerins, 2010) is mainly carried out by the non-government sector. The most recent study was carried out by Amnesty International (2011), extending studies carried out by Burgess et.al. (2009). The Amnesty International Study identifies the maintenance of better Indigenous health outcomes as the key benefit of outstations in addition to the support of cultural practice and caring-for-country.

THE BULLDOZING OF OOMBULGURRI

The change of Government policy towards closure reached denouement at Oombulgurri in 2014. Solonec (2014) reported that closure began with the progressive cessation of services: first the shop; then the clinic; then the school; then the Police station; and finally power and water services. This forced people out “voluntarily” to seek access to services in the regional centre of Wyndham. The clinic closure particularly impacted older people. In 2011 the remnant people were forced out with two days notice, leaving behind most personal belongings, furniture and whitegoods. The community lay unoccupied until October 2014 when the community was bulldozed and buried. Solonec (2014) identified following impacts of the closure:

Some residents were homeless three years after eviction;

Children did not go to school in Wyndham;

Some children have been removed by the Department of Child Protection;

Teenagers had increasing exposure to alcohol and drugs, and engaged in petty crime;

Alcoholism became common;

Many live in sorrow, disbelief and hopelessness: they cannot understand what happened; and

People yearn for their homeland.

However, to date, while services are still being withdrawn, no further communities have been bulldozed due to some backlash from the broader Australian community at the time. While Oombulgurri is an extreme example, the precedent has been set as a “do-able” solution, and it is still a current instrument of policy and has changed the nature of the relationship between outstation people and Government.

OPPORTUNITIES FROM THE WRECKAGE

In the recent past, it has been difficult for outsiders to propose options for different ways of living on country, because the equity of access to public housing is a major driver of policy for community development, housing design and delivery, and is a major aspiration for Indigenous people. The demand for public housing in remote areas similar to that in mainstream cities and towns is a reasonable demand, but one that has not always served Indigenous people well, especially in light of variable occupancy combined with large extended family structures and their related responsibilities (Morel & Ross, 1993; Ross, 1987). Given that the policy of closing off services, closing down communities and potentially bulldozing them has yet to run its course, perhaps the time for proposal of alternative solutions to living well on country without government assistance, and to a minimum standard, has come. Further, it may be that many people in remote homelands may be receptive to a range of options that enable them to access country.

WHAT IS THE MINIMUM TO LIVE ON COUNTRY?

Assuming the above situation is policy for the foreseeable future, what can outstation people do; what kind of funding would be needed; and how would people generate the funds to enable people to live on country.

Seemann (Seemann, Parnell, McFallan, & Tucker, 2008) proposed new ways of thinking about remote communities that may assist in developing new pathways. Keystone strategies were identified: of these, the strategy of *developing desert performance standards* applies to the outstation context. A socio-technical approach to settlement standards was proposed, reversing the normal funding model. The starting point was the minimum standard that could be maintained by local people within the available funding regimes and within existing skills and capacities and which would be accepted by outstation people? The minimum funding input needed for such a standard would depend on:

Nature of land tenure;

Level of existing development;

Proportion of existing legal ownership of housing and infrastructure;

Needs of local people;

Capacity of local people for self-management;

Level of income of the community as a whole;

Availability of alternative sources of income and funding; and

Skills base of people in the community

The extent of land tenure determines the rights of people to enter country. For example the people of Oombulgurri did not have Native Title over the land on which the settlement had been established (Solonec, 2014) and were threatened with trespass if they returned. This should not be an option for government in the event of Native Title being in force.

Given the range of development types, it is problematic for the more established outstations to source and manage the funding necessary to maintain themselves. Ironically, the less established outstations with simpler technologies have more scope for independent management because the maintenance demands are significantly less.

Assuming that all funding is cut-off, and communities still have some legal ownership over the infrastructure, what options do they have for upholding ownership of all or selected items of infrastructure? If such legal ownership exists, then they can continue to use the infrastructure, but will have to manage on-going maintenance and operational expenses from their own resources. This will be problematic for most communities.

Indigenous people have continually demonstrated their resilience when confronted with difficult living conditions. There are many examples where people have chosen to live in a simple camp arrangement rather than have the burden of housing management, dealing with government officials and the fall-out from excessive community “humbug”. When the general principle of public housing equity is removed from the options, and when given a choice to live simply on country, or to not be able to access country at all, the main option for Indigenous people are autonomous forms of development similar to the early days of outstation establishment. This is worth further discussion with Indigenous people. Options can be:

A basic camp set-up to enable short visits to country, using basic technology as VIPs, hand-operated water pumps, chip water heaters, and a combination of recycled materials and natural vegetation to form wind breaks and create semi-private outdoor zones.

An extended camp set-up to enable seasonal access – for example, during the dry season for settlements in the tropics; largely simple self-built structures, with portable solar systems for basic power.

Simple buildings, perhaps just open walled roofed structures with concrete slabs or raised platform floors; bush kitchens, shower and toilet blocks with composting toilets or VIPs, rainwater harvesting and small solar PV systems.

Maintaining existing housing and infrastructure, but perhaps with reduced servicing: rainwater harvesting versus diesel powered bore pumps; some small scale PV systems instead of central power reticulation.

MATCHING THE CHOSEN MINIMUM STANDARD WITH SOURCES OF FUNDING

Regardless of the standard chosen, there are issues of how to fund the chosen level of development at the level of capacity of the people concerned.

As far as skills and capacities are concerned, many people in outstations have a range of skills from bush carpentry to bush mechanics. While every place will have a different range of skills, the challenge will be to match skills with technology choice, and technology choice to a source of funds to procure, install, operate and maintain technology. Given that a range of skills exists in small communities, the principal question is, how to fund living on country in the absence of government input. The following options have some potential:

Pooling extended family income

For many remote indigenous families, this is part of life, especially with income quarantining instituted under the 2007 Intervention, and still in force today. However, using family funds for outstation maintenance will require a re-structure/re-allocation of spending that may be difficult under typical family pressures. And assuming that such a restructure is possible, any funds set aside in this way would only be able to maintain technology at a basic level, such as the basic camp types as described above. This would suit situations where no outstations have been established on land, or where infrastructure has been removed.

Philanthropic funding

Philanthropic funding is available for remote Indigenous people, but these are usually highly targeted programs that generally fund the areas that Government does not fund. The question is whether such funders will provide funding for limited outstation maintenance once government funding has stopped. It is more likely that such funding could be sought to fund individuals, often in education or

capability development that could indirectly contribute to outstation development. The Funding Network Australia is one such potential source.

Crowd funding

While crowd funding is generally targeted towards business start-ups, there is scope for “public good” and social enterprise funding. There could well be a global audience for small funds to install small-scale technology such hand-powered or solar water pumping or basic shelter systems.

If small outstations could connect their need for basic infrastructure to tourism or arts development, for example, there could be scope for crowd funding that supports outstation maintenance yet develops economic infrastructure that could provide an income stream into the future. Such offerings can potentially attract funding with minimal or no expectations for a “return on investment”, although return on investment could be opportunities for a tourist experience or an artwork or craft item. Social good crowd funding platforms, such as *Start Some Good* provide crowd funded solutions for Indigenous people. Typical projects funded so far are oriented to education, health and social support, and there are no examples of funding for remote outstation settlement development or maintenance.

NGO sponsorship

Some Non-Government Organisations (NGOs) that traditionally work in international development have been increasingly involved in Indigenous community development. Organisations such as World Vision and Caritas have many different types of programs, but these generally centre on educational, health and art programs in established, larger communities. World Vision has also created home-ownership-on-community-land programs that are potential models for outstation assistance through such programs.

Microfinance for development and business establishment

Microfinance has become an accepted way for assisting small communities to develop their places and to establish small businesses. Pioneered by the Grameen Bank in Bangladesh, microfinance has spread to low-income communities throughout the world, with high levels of success for borrowers and high levels of repayment. Microfinance typically enables borrowers to purchase equipment that enables people to create an income stream: such equipment has included sewing machines; portable timber mills; flour grinders; welding equipment and so on.

Organisations providing microfinance to the indigenous sector for business development include Community Sector Banking (50% owned by Bendigo Bank) and Many Rivers Microfinance. These organisations do not currently have pathways for funding of remote outstations.

A recent development has been the linking of microfinance systems with crowd funding platforms to enable low-income people to post proposals for small loans for personal and community development. Kiva has funded a limited number of small programs in the Pacific Region, but has not worked in Indigenous Australia as yet.

Partnership with mainstream Australian communities

Another potential approach is to connect people in mainstream Australia with remote communities to provide direct funding for projects and to connect people with skills to help on a pro-bono basis. Organisations such as Indigenous Community Volunteers link communities with skilled outsiders, but this model relies on Government funding with some additional funding through volunteers as part of project development and delivery. There could be scope to extend such an organization into

alternative funding methods or to design a platform where mainstream communities could connect with remote communities to fundraise and provide expertise.

CONCLUSIONS

In this paper, the change in the relationship between Government in Australia and people living in remote Indigenous outstations has been reviewed. The new reality described means the end of outstation life for many Indigenous people, unless other options are investigated. The options for development and for alternative funding proposed in this paper will be challenging for Indigenous people, because the proposal may appear to promote a lesser standard of living that does not meet conventional Australian values of equity. The proposals in this paper have been made in appreciation of the tangible and intangible benefits for Indigenous people in living on country and are offered as a basis for a realistic discussion with outstation people about their future living space under changed policy regimes.

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ECONOMIC AND TAXATION BENEFITS OF THE NATIONAL RENTAL AFFORDABILITY SCHEME

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INTRODUCTION

Australia is experiencing a housing affordability crisis, a problem primarily affecting families on low-to-moderate incomes. The median house price continues to increase and is currently more than five times the gross annual median household income.¹ To stimulate additional supply of affordable rental dwellings throughout Australia, the Australian Government, in partnership with state governments, implemented the National Rental Affordability Scheme (NRAS) in 2008. As at December 2015, 37,217 new rental dwellings had been approved under NRAS, of which 30,037 had been built and either tenanted or available for rent.

More than 622 million dollars of government funding was initially committed to the NRAS program². In light of this spending, this paper conducts a ‘value-for-money’ assessment of the NRAS initiative. Therefore, the objective of this paper is to quantify the gross benefits of NRAS to the Australian economy, the Australian Government as well as state and local government agencies. To do so, it quantifies total government revenue, in dollar value as at the 2013-2014 financial year, direct and indirect employment and income generated from various economic activities driven by NRAS.

This paper is divided into four sections. Firstly, an overview of housing affordability in Australia and the NRAS program is presented. Secondly, the paper describes the methodology and assumptions undertaken in this research. Thirdly, the paper outlines and discusses the findings of government revenue and employment generated by NRAS. Lastly, the paper concludes with key findings as well as potential areas for further study on economic and taxation benefits of NRAS.

BACKGROUND INFORMATION

Australia's Housing Affordability

The demand for housing in Australia has grown rapidly in recent years. A decline in average household size from approximately 3.5 persons per household to 2.6 persons per household could be observed between the 1960s and the 2000s. Although the household size has remained relatively steady since then, the smaller household sizes have nonetheless contributed to increasing demand for housing. Furthermore, overall population growth in Australia has accelerated since the mid-2000s due to significantly higher net immigration from overseas and slightly higher natural population increases compared to the preceding years. As a result, annual demand for new housing has increased by forty per cent since the mid-2000s, leading to the current demand for around 175,000 new dwellings per annum.³

On the supply side, there are time lags for the supply of new housing to respond to increases in demand due to several factors associated with various stages of dwelling constructions. There is often limited availability of appropriate sites in key locations. Once a site is secured for construction of dwellings, the length and complexity of the planning process required to obtain development approvals can be significant depending on local planning schemes. After a development approval is obtained, the process of preparing undeveloped land for construction frequently incurs substantial costs. The time taken to build new dwellings can also be extensive.⁴

Due to the supply and demand factors outlined above, housing prices in Australia have increased by 7.25 per cent annually on average over the past three decades.⁵ It has been recently estimated that house prices in Australia are between 37 and 46 per cent overvalued.⁶ In 2015, the price-to-income ratio, or the proportion of median housing prices to gross annual median household income, across Australia was 5.6 whereas the figure across major cities with at least one million population was 6.4. A housing market with a price-to-income ratio of at least 5.1 is considered “Severely Unaffordable.”⁷ Thus, these figures imply that the housing market across Australia, particularly in major cities, is currently experiencing a significant affordability crisis.

On the other hand, as at September 2015, the price-to-rent ratio, which compares median housing prices to median annual rent, was 28.87⁸, implying that renting for approximately 29 years could completely pay off an average dwelling price. Although opinions differ as to where the exact threshold of price-to-rent ratio for determining whether it is more financially feasible to rent or to purchase a dwelling, the threshold generally ranges between 15 and 20 years.⁹ The high price-to-rent ratio figure therefore implies the significant importance of the country’s rental market in terms of providing affordable housing to the public.

National Rental Affordability Scheme

To improve affordability in the rental market, the Australian Government initiated the National Rental Affordability Scheme (NRAS) in 2008 in conjunction with all state government authorities. The program aimed to stimulate large-scale investments in affordable rental housing with a ten-year tax incentive to all NRAS investors. NRAS dwellings are required to be rented to households on low to moderate incomes at a rate which is at least twenty per cent lower than the market value rent.

Under the original arrangement, the scheme aimed to provide a total of 50,000 dwellings across Australia by June 2016 by providing a tax incentive to the investor of each NRAS-approved dwelling. However, it was announced in the 2014 federal budget that Round 5 applications of NRAS would not proceed. Consequently, as at December 2015, a total of 37,217 NRAS incentives had been approved, of which 30,037 had been allocated to investors whose dwellings had been built and either tenanted or available for rent. Meanwhile, 7,180 incentives had been reserved for investors whose dwellings were on track for construction in the near future. While the majority of NRAS-approved dwellings (37.6 per cent) are apartments, the program has also delivered houses, studios, townhouses and boarding houses.¹⁰

Having provided an overview of Australia’s housing affordability and the NRAS program, the paper next describes the research methodology and assumptions undertaken in this study.

RESEARCH METHODOLOGY

Data and Assumption

This study is based on the data of NRAS incentives reserved and allocated as at September 2013, which are summarised in Table 1 below.

	Total (National Percentage)	Total (National Percentage)
Queensland	10,896 (28%)	27,631 (36%)
New South Wales	6,512 (17%)	11,155 (15%)
Victoria	6,767 (18%)	10,833 (14%)
Western Australia	5,470 (14%)	9,530 (13%)
South Australia	3,741 (10%)	9,007 (12%)
Australian Capital Territory	2,550 (7%)	3,689 (5%)
Tasmania	1,463 (4%)	2,341 (3%)
Northern Territory	1,060 (3%)	1,740 (2%)
National	38,459	75,926

Table 1. NRAS Incentives and Bedrooms by States as at September 2013

Based on the data in Table 1, the study incorporated assumptions outlined in Table 2 below.

Incentives	
Total number of incentives	A total of 50,000 NRAS dwellings will have been built by June 2016 as per the original NRAS arrangement.
Incentives as at June 2013	All 38,459 dwellings had been built as at June 2013.
Additional incentives per annum	The number of additional NRAS-approved dwellings built nationally between June 2013 and June 2016 are 3,847 per annum, an average of the additional 11,541 dwellings across the three-year period.
Proportion of dwelling sizes across all states	The proportion of dwelling sizes (number of bedrooms) across different states as at June 2013, which are displayed in Figure 1, will remain unchanged upon the completion of all 50,000 NRAS dwellings.
Proportion of incentives across all states	The proportion of NRAS incentives across all states shown previously in Table 1 will remain unchanged upon the completion of providing all 50,000 incentives.
Costs	
Land and construction costs	The land and construction costs of each sample NRAS dwelling are reflective of all NRAS dwellings in the state where the dwelling is located.
Property Transactions	
Sales and leases	All NRAS dwellings, upon the completion of their construction, are immediately sold to investors and immediately leased for ten years at below-market rates as required by the program;
Resales	After ten years of lease, each NRAS dwelling is immediately sold by its

	investor.
Additional dwellings	The additional 11,541 dwellings will have been built by 2016. Given the assumption of resales above, these dwellings will be sold in 2026. Therefore, the time period considered in this study is from 2013 to 2026.
Transaction by 2026	By 2026, all 50,000 NRAS dwellings will have been sold by their initial investors.
Regulations	
Tax and regulatory systems	The various tax and regulatory systems associated with income and property transactions at the federal, state and local government levels as at December 2013 will remain unchanged for the entire time period considered in this study (2013 to 2016).
Council's regulatory and fee systems	All council regulations and fees applicable to each sample NRAS dwelling are reflective of council regulations and fees across the state in which the dwelling is located.
Investors	
Type of investors	All investors are individual investors who are Australian permanent residents or citizens, thereby being eligible for the 50% discount on capital gains tax liability when selling their NRAS dwelling.
Income tax	All investors are subject to individual income tax rates for 2013-2014 for the entire time period considered in this study.
Annual income	All investors earn annual income equivalent to the 2011 median income figure within the state of their residence. Table 3 displays median personal income by state.
NRAS dwelling portfolio	All investors invest in only one NRAS dwelling in the state they principally reside in. This assumption was incorporated in order to apply the median income figures from different states to the calculation of capital gains tax.
Financial Variables	
Inflation rate	The inflation rate of 2.2 per cent as at December 2013 was assumed as the yearly inflation rate for the entire time period in this study.
Discount rate	The Reserve Bank of Australia's cash rate of 2.5 per cent as at December 2013 was used as the NPV discount rate of all future cash flows.
Dwelling price growth rates	The average annual growth rate of house price indices across the states' capital city between September 2003 and September 2013 ¹¹ was assumed as the yearly growth rate of dwelling prices across all states.
Income growth rates	The average annual growth rates of median household income across all states between 2006 and 2011 ¹² were assumed as the yearly growth rates of median income figures in Figure 2.
Concession for taxes and fees	No concession was applied in calculation of taxes and fees payable by investors.
Employment	
Length of employment	All direct and indirect employment created by NRAS will continue for one year.
Annual income	All NRAS-related employees earn annual income equivalent to the 2011 median income figure within the state of their residence.

Table 2. Assumptions Incorporated in this Study

Figure 1 displays the proportion of dwelling sizes across different states as at June 2013, which has been assumed to continue until all 50,000 incentives are built by June 2016.

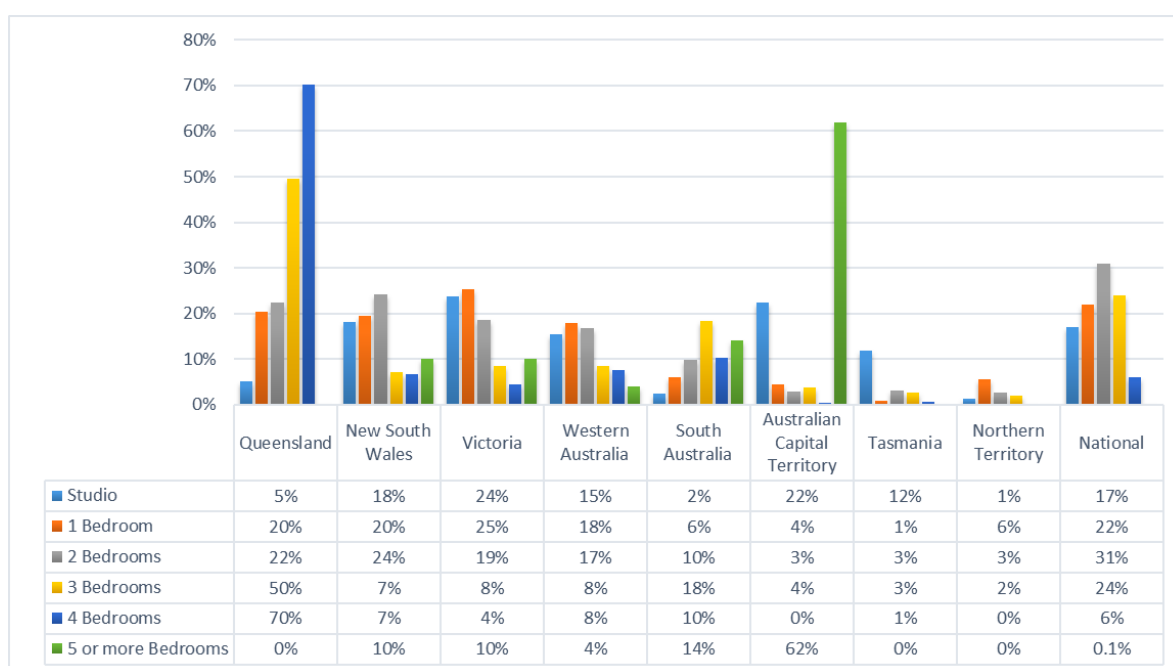


Figure 1. Proportion of Dwelling Sizes across States as at June 2013

Table 3 illustrates the assumed number of NRAS incentives and bedrooms across different states as at June 2016.

	Total Incentives	Total Bedrooms
Queensland	14,166	35,923
New South Wales	8,798	14,084
Victoria	8,466	14,502
Western Australia	7,111	12,390
South Australia	4,864	11,710
Australian Capital Territory	3,315	4,796
Tasmania	1,902	3,044
Northern Territory	1,378	2,262
National	50,000	98,710

Table 3. Assumed NRAS Incentives and Bedrooms by State as at June 2016

Median personal income figures by state as at 2011¹³, which have been assumed to be representative of NRAS investors' income in this study, were obtained by dividing the median income figures of all households in each state by the average numbers of employed person per household. The calculated median personal income figures are displayed in Figure 2.

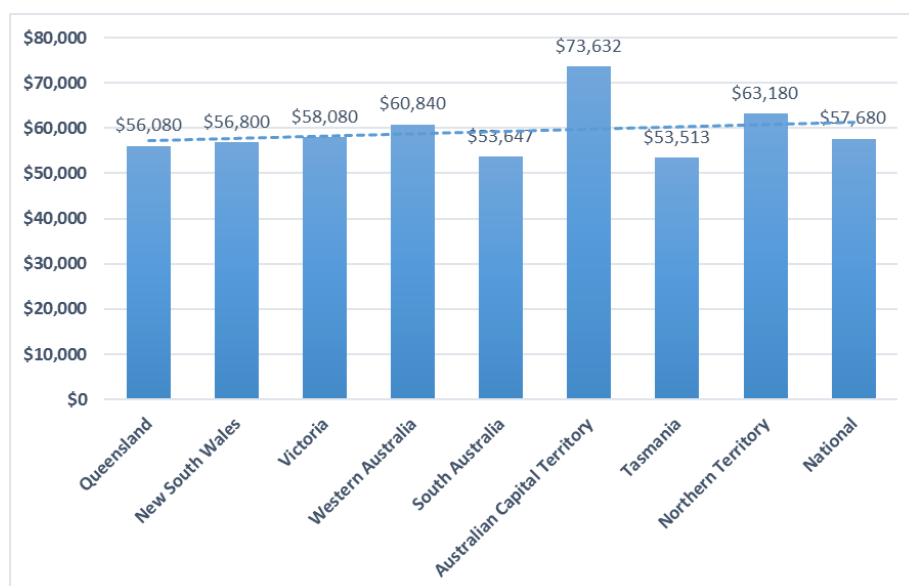


Figure 2. Assumed Median Income Figures by State

Methodology for Government Revenue Quantification

A single NRAS dwelling was chosen as a sample for the quantification of government revenue generated in each state. Where possible, the sample dwelling was chosen to reflect the predominant type of NRAS dwellings to ensure accuracy and relevance of quantified data. The study then calculated the total amount of government revenue generated from various activities driven by the delivery, investment and resale of the dwelling. Key sources of government revenue considered in this study are outlined in Table 4 below.

Government Level	Revenue Sources
Local	• Infrastructure charges • Development application fees • Building application fees • Council rates and charges
State	• Stamp duty for transaction of land purchase prior to NRAS property development • Stamp duty for transaction of NRAS properties • Land taxes • Payroll taxes
Federal	• Income taxes generated from direct and indirect jobs created by activities driven by NRAS • Goods and services taxes (GSTs) on construction costs associated with NRAS dwelling provisions • Capital gains taxes from the sale of NRAS dwellings at the end of their ten-year lease period

Table 4. Key Revenue Sources from NRAS for Local, State and Federal Governments

The different types of government revenues calculated for the sample dwelling were divided by the sample dwelling's number of bedrooms to obtain a revenue figure per bedroom. This figure was then

multiplied by the projected, applicable number of bedrooms among NRAS dwellings to obtain government annual revenue inflows. Inflation was applied to all cash inflows generated in 2014 and thereafter which were adjusted for inflation. All the different revenue inflows were converted into net present values (NPVs). Finally, the NPV revenue inflows were aggregated into total government revenue generated by NRAS for the state. This process was repeated for the other seven sample NRAS dwellings from the other states. The revenue figures at the state level were then accumulated to quantify total government revenue generated by NRAS at the national level.

Methodology for Employment Quantification

Key activities driven by NRAS that generate employment include:

Consultation for planning, designing and acquiring development approvals for NRAS dwellings;

Construction of NRAS dwellings; and

Sales and logistics of construction materials.

The activities above generate direct employment in the construction industry. Furthermore, indirect employment will be created in other industries through multiplier effects as a result of flow-on purchasing activities stimulated by the income associated with direct employment.

The study applied the Australian Bureau of Statistics' labour coefficient¹⁴ to the total construction value of sample NRAS dwellings. The coefficients are as follow:

10.0090 full-time equivalent jobs created in the construction industry for every one million dollars of construction activities (direct jobs); and

1.727 full-time equivalent jobs created in other industries for every direct job (indirect job).

The quantification methodology for government revenue was then applied to the total direct and indirect jobs created for each sample NRAS dwelling to obtain the number of jobs created at the state and national levels.

Methodology for Income Quantification

To quantify income generated by NRAS, job figures quantified for each state were multiplied by the respective median income figure of the state. The income figures of all states were then aggregated into a national income figure.

GOVERNMENT REVENUE

The total government revenue generated at the national level is approximately 9.26 billion dollars. The distribution of the revenue to different levels of government is illustrated in Figure 3.

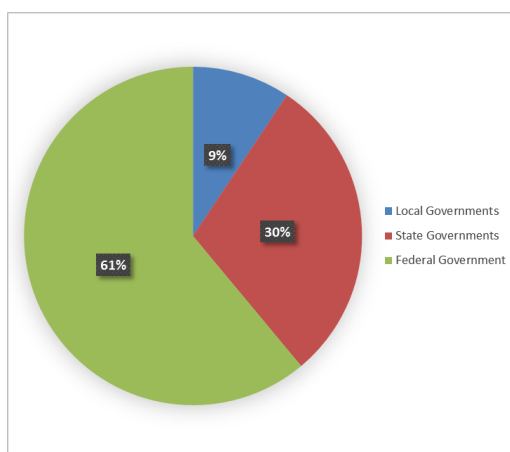


Figure 2. Distribution of Government Revenue Generated by NRAS

As shown in Figure 2, the majority of government revenue will be generated for the Federal Government. Figure 3 displays the relative amount of revenue generated across the different states.

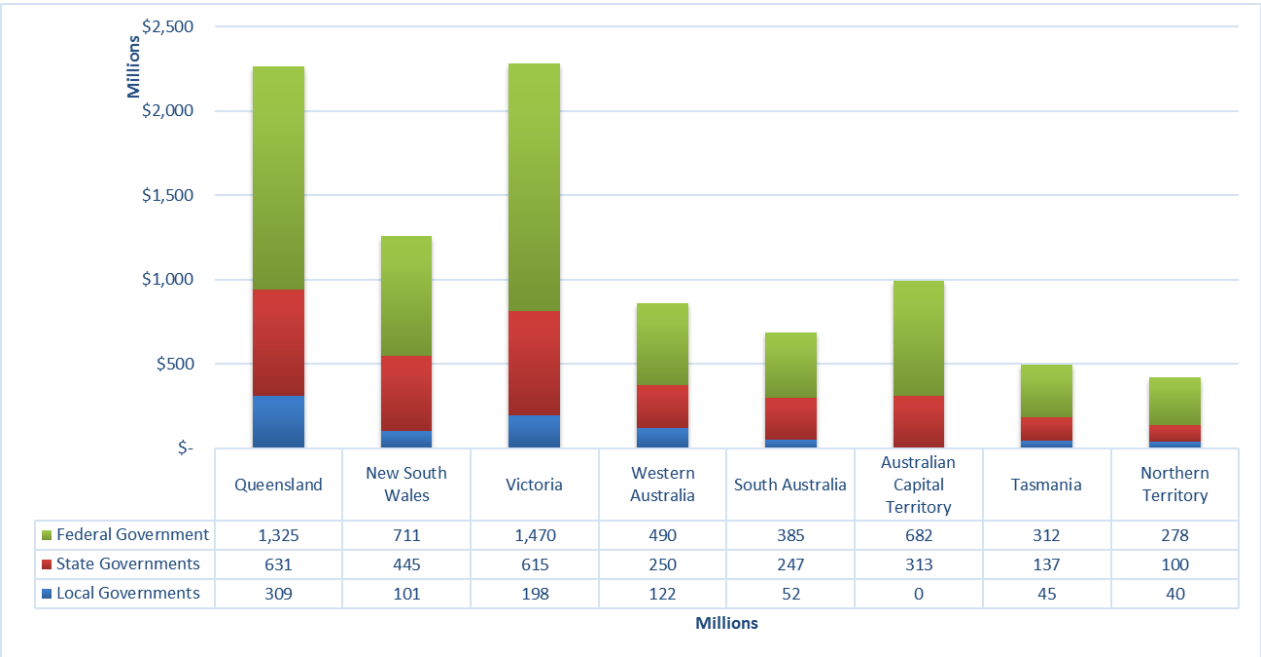


Figure 3. Government Revenue Generated by NRAS across all States

The majority of government revenue generated by NRAS will be in Queensland and Victoria where an accumulated revenue figure of 4.55 billion dollars is projected. Figure 4 illustrates the average amount of revenue generated per NRAS incentive and bedroom.

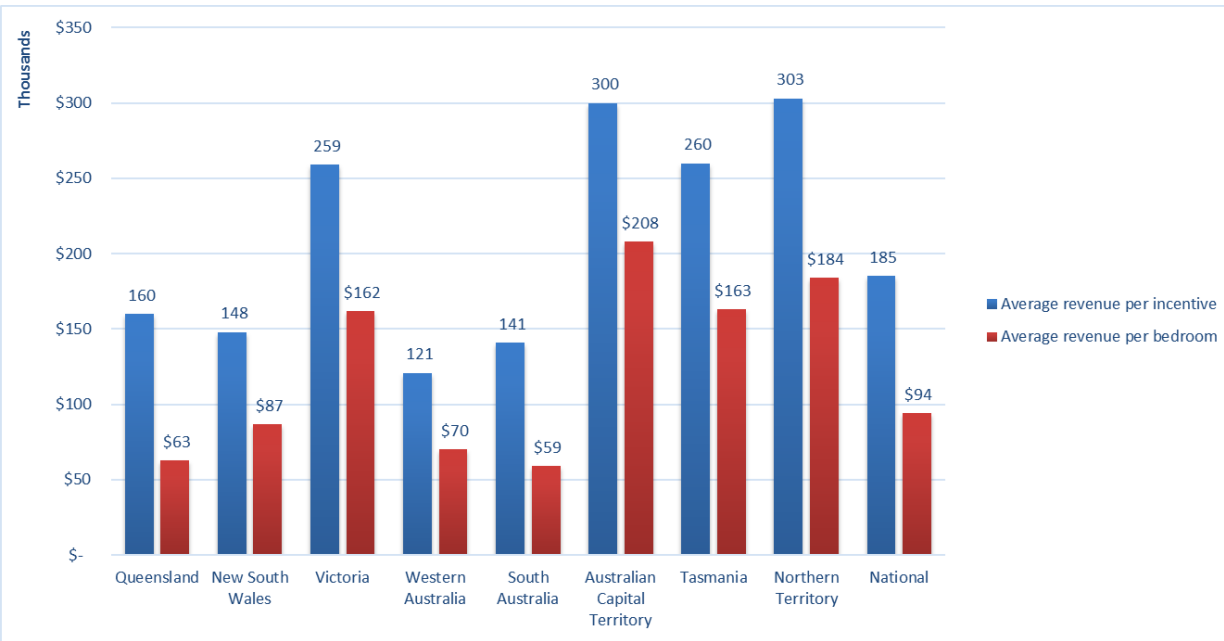


Figure 4. Average Revenue Generated per NRAS Incentive and Bedroom across all States

Among all states, Australian Capital Territory and Northern Territory will generate the highest amount of government revenue per incentive and bedroom. This is due to the fact that the states' median personal income figures are higher than other states, resulting in capital gains taxes as well as income taxes applicable to NRAS investors and employees involved in NRAS dwellings, respectively. Table 4 and Figure 5 display the distribution of government revenue generated by NRAS through various sources.

Revenue Source	Amount (millions dollars)
Local Government	
Development application fees	27
Infrastructure charges	150
Council rates and charges	691
Total	868
State Government	
Land stamp duty	132
Property stamp duty	1,506
Payroll taxes	1,001
Land taxes	44
Other charges	55
Total	2,738
Federal Government	
GSTs	1,174
Income taxes	3,397
Capital gains taxes	1,082
Total	5,653

Table 5. Revenue Generated by NRAS for Local, State and Federal Governments across Various Sources

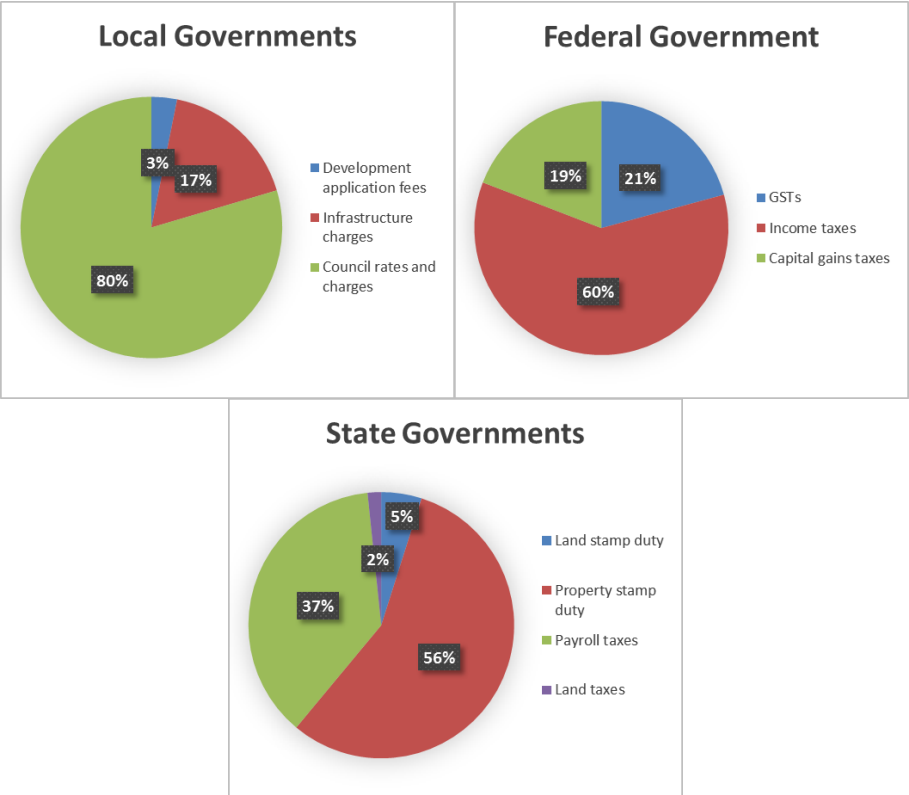


Figure 5. Sources of NRAS-generated Revenue for Local, State and Federal Governments

As shown in Table 5 above, the key sources of revenue which will create at least one billion dollars in government revenue are stamp duty and capital gains taxes applicable to transactions of NRAS dwellings, payroll and income taxes applicable to NRAS-driven jobs and GSTs applicable to the construction of NRAS dwellings. The majority of revenue for local, state and federal governments was generated by council rates and charges, property stamp duty and income taxes, respectively.

EMPLOYMENT

The total number of direct and indirect jobs created by NRAS are approximately 329,000. Around thirty-seven per cent of the jobs will be direct jobs whereas the majority of the jobs (sixty-three per cent) will be indirect jobs. Figure 6 below shows the distribution of jobs created by NRAS in each state.

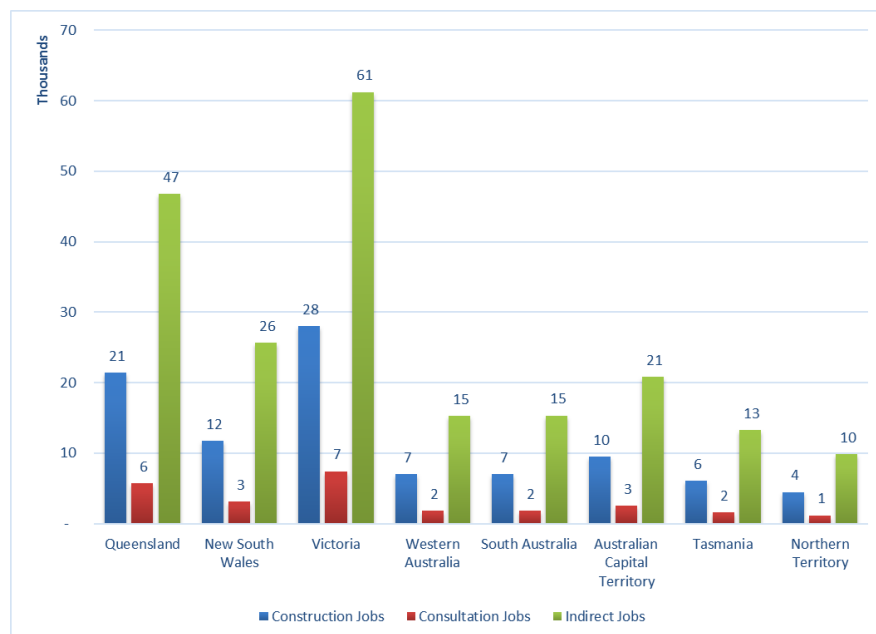


Figure 6. Jobs Created by NRAS across all States

The majority of jobs created by NRAS will be concentrated in Victoria due to the fact that one-bedroom dwellings were the most common among all NRAS dwellings in the state as at June 2013. As the quantification methodology relied on the number of bedrooms, the number of jobs created per NRAS incentive in Victoria are relatively high. The majority of jobs created by NRAS are indirect jobs in other industries.

Figure 7 displays the average number of jobs created per NRAS incentive and bedroom.

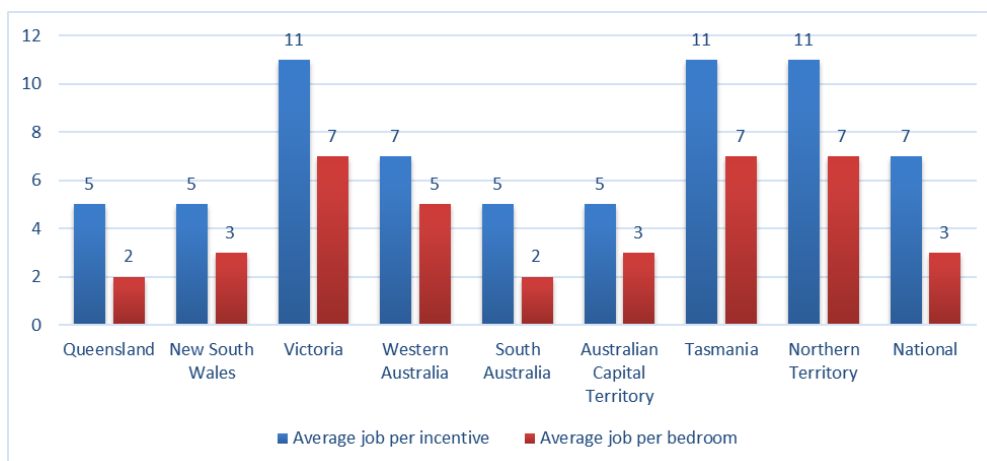


Figure 7. Jobs Created by NRAS across all States

As shown in Figure 7, the national average number of jobs created per NRAS incentive and bedroom are seven and three, respectively. Victoria, Tasmania and Northern Territory will generate the highest number of jobs per NRAS incentive and bedroom.

INCOME

The total amount of income generated by NRAS-driven employment across Australia is approximately 18.9 billion dollars. The breakdown of the income by state is displayed in Figure 8.

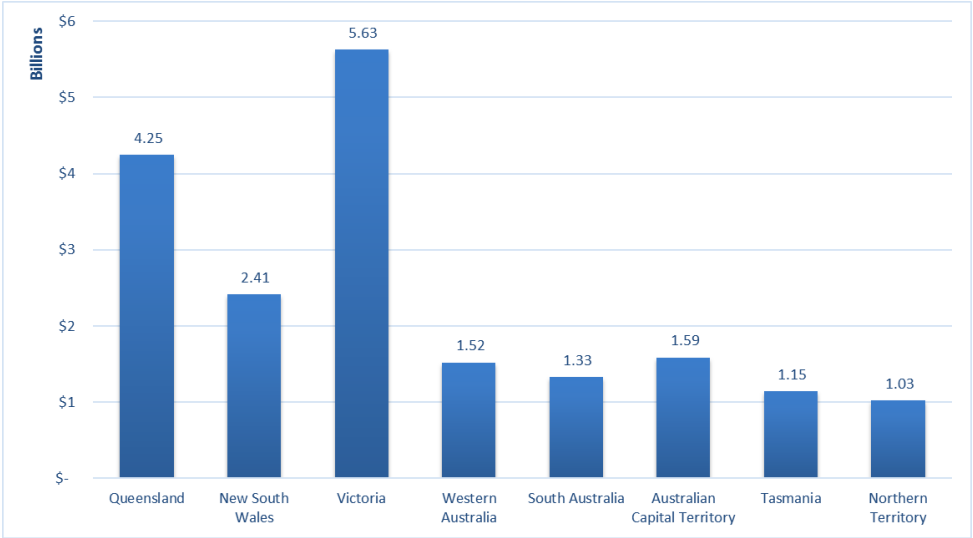


Figure 8. Total Income Generated by NRAS-driven Employment across all States

The majority of income will be generated in Victoria and Queensland where a combined total income figure of 9.88 billion dollars is projected. Figure 9 illustrates average income per NRAS incentive and bedroom across all states.

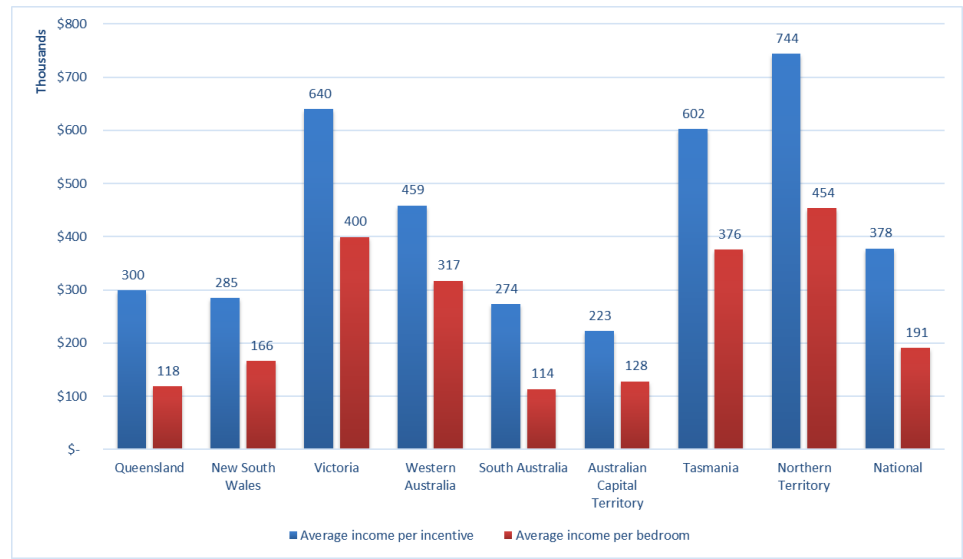


Figure 9. Average Income Generated by NRAS-driven Employment across all States

The highest average income figures per incentive and bedroom will be generated in Victoria, Tasmania and Northern Territory as shown in Figure 9. Having outlined findings of government revenue, employment and income generated by NRAS, the paper now concludes with key findings and potential areas for future research.

CONCLUSION

NRAS is one of the key government initiatives to address housing affordability crisis in Australia by stimulating additional affordable rental dwellings to be built and invested in. In addition to providing affordable rentals, NRAS, as highlighted in this paper, will generate significant economic and taxation benefits in terms of government revenue, employment and income throughout all states. In summary,

each NRAS incentive will generate seven jobs, 185,000 dollars in government revenue and 378,000 dollars of income. Meanwhile, each NRAS bedroom will create three jobs, 94,000 dollars in government revenue and 192,000 dollars of income. Some of the economic benefits quantified in this study, including government revenue from land taxes and council rates and charges are also on-going beyond the time period considered in this study. Therefore, the total government revenue generated by NRAS is higher than the figure quantified in this study.

An area for potential research in the future is to quantify economic and taxation benefits of NRAS with the latest status of incentives and the current financial variables, particularly median income figures and inflation and cash rates. Furthermore, not all NRAS dwellings may be sold to individual investors. Some parties such as non-profit organisations may retain NRAS dwellings longer than the ten-year period assumed in this research. Therefore, a future study could investigate holding periods of NRAS dwellings and apply the findings to the quantification of economic and taxation benefits of NRAS.

NOTES

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- ³ Marion Kohlet and Michelle v. d. Merwe, *Long-run Trends in Housing Price Growth* (Sydney: Reserve Bank of Australia, 2015), accessed June 1, 2016, <http://goo.gl/0sx1xA>, 24-25.
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- ⁷ Cox and Pavletich, *Demographia*, 2-3.
- ⁸ "6416.0 - Residential Property Price Indexes: Eight Capital Cities, Sep 2015," Australian Bureau of Statistics, accessed June 1, 2016, <http://goo.gl/kShPzW>.
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ACTIVE AGEING AND POSITIVE AGEING IN NEW ZEALAND HOUSING CONTEXT

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INTRODUCTION

The responses to the contemporary question of global ageing population are articulated in different initiatives, policies or frameworks in many nations across the world. Examples of these policies, among others, are Opportunity Age in the United Kingdom,¹ National Strategy for an Ageing Australia,² Positive Ageing Strategy in New Zealand,³ and the Active Ageing Policy Framework by the World Health Organisation.⁴ The emphases of these responses are essentially on health, participation, fiscal issues and security,⁵ all of which indicate collective core principles which are aimed at addressing and meeting the challenges of ageing. The validity of any approach to ensuring the delivery of appropriate services for the ageing population depends on the situations, diversities of influences or factors that surround individuals, families and nations;⁶ this is because the “ultimate experts on their own lives”⁶ are those for whom the policies are made.

Generally, it has been discovered that older people “draw meaning and security” from where they live, and this is substantiated by their strong connection or attachment to their homes and neighbourhoods,^{7 8} making them wanting to age in place⁹ (in other words, desiring to live in places that enrich their sense of self-realisation and preferred lifestyle at different life stages).¹⁰ What is important to older people is to derive satisfaction from where they are living and not feel out of place. If about 80% – 90% of time is spent indoors, and older people spend more than this fraction on account of decreasing alfresco activities,¹¹ this implies that housing is of the essence in making good all these policy frameworks. As they progress in age, older people’s housing requirements vary from other people in the society,¹² calling for policies which can address these needs. In the Active Ageing (AA) policy framework by the World Health Organization (WHO), housing is one of the indicators of the physical environment determinant, while in the New Zealand’s Positive Ageing Strategy (PAS), it is a key goal among nine others. This paper looks at the issues at play in these two policy frameworks within the context of housing, particularly because there seems to be a contrast of views as regards which of these appropriately addresses and meets the needs of older people in New Zealand.

THE ACTIVE AGEING POLICY FRAMEWORK AND THE POSITIVE AGEING STRATEGY

Late in the 1990s, the WHO embraced the concept of Active Ageing to articulate the process of realising the vision of making ageing a positive experience, which is described by optimising lasting opportunities for health, participation and security, so as to enrich people’s quality of life as they age.⁴ This vision of making ageing a positive experience through the AA resonates with New Zealand’s

Positive Ageing Strategy (PAS). The idea of active ageing is not limited to ensuring older people's physical ability, but also encompasses their civic affairs, cultural, economic, social, spiritual, and mental wellbeing during the course of life, to play a part in the society in keeping with their desires, needs, and capabilities. The strategy of AA is grounded on the acknowledgement of the rights of the ageing population and the United Nations Principles of care, dignity, independence, participation, and self-fulfilment; it focuses on rights-based approach as against needs-based approach.⁴ Similar to AA's life-course perspective of ageing, the PAS also recognises that positive ageing is a life time process which commences at birth.³

Both policy frameworks have shared principles involving factors determining how well the ageing process occurs (see Table 1). However, they also differ slightly in two aspects. First, the AA policy framework made specific mention of gender as a cross-cutting determinant for understanding and realising the concept of active ageing. Gender is affirmed to be a "lens" through which the pertinence of several policy alternatives and how they concern the well-being of men and women can be examined.⁴ While this is not specifically mentioned anywhere in the PAS, it can only be assumed that this would not go unnoticed during its implementation. This aspect is important because the ageing process of men and women differs and this is, among others, substantiated by the difference in their behavioural tendencies and life expectancies. Second, the determinants which are connected to individual or personal factors (such as biological and genetic/internal processes, psychological processes, and environmental and external processes) that are specified in the AA are not in the PAS. According to the AA policy framework, ageing is genetically determined, and longevity runs in families. Therefore, the importance of this factor cannot be ignored in ageing policies if positive ageing must be realised.

On account of its holistic agenda, the World Health Organisation's AA framework has generated more interest and attention^{13 14 15 16} in the literature than the New Zealand's Positive Ageing Strategy (PAS);^{17 18} this is on account of its promotion and acceptability as a holistic 'global' policy framework for demographic ageing. Although its practical meaning has been said to be somewhat uncertain,^{19 20} it can give a good groundwork for stakeholders and nations to respond to the questions raised by an ageing population.²⁰ The PAS, on the other hand, is a policy framework which was developed by the New Zealand Government in 2001 as a response to questions surrounding the ageing population of the country. As highlighted in Table 1, the AA framework has a broad-range of determinants [comprising economic, social, physical, health and social services, behavioural, physical environment, personal, gender and culture determinants], while the PAS centres on goals (income, health, housing, transport, ageing in the community, cultural diversity, rural services, positive attitudes, employment opportunities, opportunity for personal growth and participation) actions and objectives that should be met to realise positive ageing.

Active Ageing Policy Framework	Positive Ageing Strategy
Shared principles	
Economic determinants Income: emphasis is on poverty alleviation at all ages. Work: dignified work such as formal work, informal work, unpaid home activities and voluntary occupations. Social protection: social insurance programmes (for disability, sickness, unemployment, and	Income Goal 1: secure and adequate income Employment opportunities Goal 9: elimination of ageism promotion of flexible work options Opportunities for Personal Growth and Participation Goal 10: increasing opportunities for personal

long-term care) pensions (old age or occupational), savings incentives and funds, public-private partnership for old age security.	growth and community participation
Health and Social Service Systems Health promotion and disease prevention by primary (avoidance), secondary (screening) or tertiary (management) means. Curative services: comprehensive and coordinated variety of care. Long-term care through formal and informal support systems Mental health services: emphasis on depression	Health Goal 2: equitable, timely, affordable and accessible health services for older people
Behavioural determinants Healthy lifestyles such as physical activities, healthy eating, oral health, abstinence from smoking, alcohol and other good health-seeking behaviours.	Health Objective 2.4: Promote healthy nutrition and healthy active lifestyles
Personal Factors Biological and genetic/internal processes coupled with environmental and external processes.	Nil
Physical Environment Clean water and air, safe foods; Safe housing; Accessible and affordable public transportation especially for older people living in rural areas.	Housing (Goal 3: affordable and appropriate housing options for older people) Transport (Goal 4: affordable and accessible transport options for older people) Ageing in the Community (Goal 5: older people feel safe and secure and can age in the community; Objective 5.1 Promote and implement safety awareness programmes for older people) Rural Services (Goal 7: older people living in rural communities are not disadvantaged when accessing services)
Social Environment Social support and network intergenerational programmes; Opportunities for education and literacy; Guarding against abuse and violence	Opportunities for Personal Growth and Participation. Goal 10: increasing opportunities for personal growth and community participation.
Gender and Culture (referred to as cross-cutting determinants). According to the AA, traditions, norms and customs determine the ageing process and how older people are viewed. Gender and culture vary from place to place and are complex. They should be respected but not at the expense of ethics and human rights that transcend them.	Cultural Diversity Goal 6: a range of culturally appropriate services allows choices for older people Positive Attitudes Goal 8: societies of all ages have positive attitudes to ageing and older people.

Moreover, out-dated stereotypes should be debunked.	
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Table 1. The Highlight Of The Shared Principles Of Aa And Pas
(Similarities In Both Policy Frameworks)

THE AA AND THE PAS IN NEW ZEALAND HOUSING CONTEXT

As the population of New Zealand increases, so do the housing needs.²¹ The question of where older people want to live for the rest of their lives is pressing; and this involves the locality and the house. A report qualitatively explored the central question: “what is the ideal place to grow older?”²² It employed interviews, focus groups and workshops among 120 new Zealanders in Glenn Innes (Auckland) and Tokorua (South Waikato). From its findings, four important aspects were revealed to be important for ageing in place; they are: home, neighbourhood, community and life. This corroborates the views of several gerontologists about the housing preferences of older people.^{23 24 25}

²⁶ Another study examined the perception of ageing elders’ social spaces in Auckland and found that older people evolved, over time, a strong place attachment and sense of belonging to their houses and environment (homes and neighbourhood). Since older people want to stay in the house and neighbourhood they are familiar with, they tend to rummage through ways to achieve and maintain residential normalcy;^{27 28} this is on account of their changing housing needs.

In New Zealand, the appropriateness of existing housing stock built between 1970 and the first decade of the 21st century are bordered by key questions relating to deterioration and performance. According to a report about the maintenance and repairs of older people’s houses in New Zealand, the performance, conditions and location of ageing people’s houses are critical to their health and quality of life.²⁹ Pressures are mounting as housing markets change, and affordable housing is currently a concern. Even though many older people own houses, ownership rate is dwindling as they downsize (to meet their needs) and move to retirement homes.³⁰ Some of them are rich in asset and poor in cash, and may not have the money to procure necessary home modifications that meet their personal needs. Specific examples of housing for older people in New Zealand are mostly expressed in retirement villages, and highly subsidized social housing - for rent or purchase less than what is available in the open market - provided by Housing New Zealand and some Local Councils. For instance, there is an Auckland Council scheme that is dedicated to older people, for them to be able to purchase an “own-your-own” (OYO) unit. There are 1412 of these units owned by Auckland Council at the moment.³¹ The units are not offered to older people on the ground of “first-in-first-served,” but are basically offered to those in actual need.³¹ Therefore, the implementation of the housing aspect of the PAS is realised through helping low-income and vulnerable older people with housing costs. Housing New Zealand puts this category of people on priority list, and ensures that housing tenancy costs are subsidized for them. This is a commendable step at a time when the New Zealand housing market (particularly in Auckland) keeps surging.³² Though the PAS proposes to provide affordable and accessible housing for the ageing population who, for some reasons, may not be home owners, the practises of home ownership among the younger generations could pose affordability challenges in the future. In addition, while there are plans and effort to apply the PAS or AA in the housing sector, it is hard to see new housing that has been erected using these established principles. Most houses have been built before the introduction of these principles, and plans are underway to get new buildings in line with these policies. One of the ways this is done is the recent inclusion of Universal Design in the Auckland Design Manual.³³

Hence, how inclusive are the AA and PAS policy frameworks from the perspective of housing in New Zealand? Under the physical determinants of the AA, safe and adequate housing and neighbourhood are specified as important to the wellbeing of everyone (young and old), while in the PAS, affordable and appropriate housing is the third goal. This study discovers that the AA in itself is limited in its response to older people's housing questions; it largely dwells on safe housing as a theme. However, another document by WHO (the global age-friendly cities guide)⁶ comprehensively builds on the AA's framework and offers checklists that guide the assessment of a city as being an age-friendly city in areas of affordability, essential services, design, modifications, maintenance, ageing in place, access to services, community integration and family connections, housing options, and living environment. Others, which are found in the outdoor spaces and buildings' checklists, are environment, green spaces and walkways, outdoor seating, pavements, roads, safety, and accessible buildings. At the moment, Auckland and other cities in New Zealand are working towards meeting the criteria in this guide in order to be certified as age-friendly. This is strongly supported by the Auckland District Council of Social Services (ADCSS) in its annual Age-friendly Cities Forum. Therefore, the fundamental questions of population ageing to policy makers about how to help people stay autonomous and active as they age, how to support health advancement and prevention policies for older people, and how to improve the quality of life as people live longer can be answered partly through the provision of appropriate housing options, and exclusively through the practical realisation of the roles of each determinant, goal/objectives of AA and PAS policies, and the interactions between and among them.

CONCLUDING REMARKS

The two ageing policy frameworks examined in this paper have been introduced based on the need to improve the circumstance of the ageing population both locally and globally. The emphasis is on health, participation and security through a life-course approach to the ageing process. This paper supports that these can be achieved through appropriate housing. The dichotomies in the two frameworks notwithstanding, both have implications that are potentially useful for addressing the housing needs of older people in New Zealand. What is essential is an inclusion of the necessary missing aspects that have been identified. Hence, questions relating to gender and personal factors should be considered in the goals and objectives of the PAS. Furthermore, an essential approach to support the inclusion of older persons is making the cities more age-friendly. Also, it is important to note that there are some who are permanently reliant on others because of their health, and they may be side-lined in these policies as it seems that they are expected to "age actively", even when the realities of later life may be inevitable for them. This should not be understated. Thus, since the state of independence within spaces varies among older people, its determination is essential in making decisions about appropriate housing for older people.

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DESIGN CUSTOMISATION VS STANDARDISATION: DIGITAL SUPPLY CHAINS AND THE FUTURE OF AFFORDABLE HOUSING

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INTRODUCTION

The Tesla is a car that can be easily configured online and delivered to your door. The car can be ordered and configured with features online. Tesla does not have a network of dealers. Tesla argue that this is their way of ensuring that their customers understand what it is they are actually getting. A Tesla car can be easily configured online with various capabilities and features. A deposit placed online will secure you the chance of being in line to get the new mass market car Tesla are hoping to bring to market in 2017 can be ordered via a deposit system. A week after Tesla took deposits for the car they claimed it had 325,000 reservations.¹

The comparison between prefabricated and modular housing and Tesla is all too alluring. The Australian prefabricated housing market is currently not anything like the Tesla car; and yet this kind of comparison, a comparison between advanced manufacturing and the design and construction industry appears all too common. Inherent to this comparison is the idea that the modular housing sector can easily align itself with advanced manufacturing and digital customisation.

The above comparison raises a number of rhetorical questions about this idea of a seamless meeting of advanced manufacturing with housing design. Will the promise of off-site manufacturing aligned with digital design, robotic fabrication and virtual supply chains mean that modular housing can be more affordable? In order to achieve affordability will housing design be achieved through digital and off-site supply chains and does this come with an aesthetic price? Moreover, to what degree is prefabricated and mass housing able to be customised for consumers? How is the balance between a standardised economics and customisation balanced out and what are the allowable choices and do these differ between different product offerings?

This paper will explore these questions broadly with reference to the Australian modular housing market. The paper will explore this market by describing, analyzing and evaluating a number of current modular housing products. In analyzing the products a number of factors will be described and evaluated. These are branding, construction systems, logistics, modular flexibility and sustainability features. Following this the analysis will consider innovation issues within the market and commercialisation pathways. In conclusion how innovation policies would potentially foster this market will be briefly discussed.

The term 'off-site' construction refers to prefabricated and/or modular building components and units manufactured off-site for assembly on-site. In the construction context Off Site Manufacturing or

OSM can be defined as the making of modular or prefabricated elements off-site, perhaps in a factory, these elements can then be transported to a site for assembly. Whilst it is clear that much of the housing construction markets already relies on prefabrication, standardisation and off the shelf manufactured products. What is innovative about OSM is that, in theory at least, it has more of a labour component that takes place in a controlled factory environment. Moreover, this labour component can itself be automated through the use of digital technologies and robotic manufacturing.

PREVIOUS RESEARCH

Proponents of OSM in the construction industry, as with any new technology, make a number of optimistic claims about it. For example, Arashpour et al (2015) notes how off-site production has a number of advantages over traditional on-site construction. Which, as they argue, is because OSM employs a more ordered and better managed manufacturing environment.² The claims of off-site production include superior quality, swift delivery, improved health and safety and the ability to customise construction to suit particular requirements are widespread. Brandon and Hampson road mapped the future of Australian Construction as a national innovation system and somewhat optimistically suggested that OSM would become a predominant feature of Australian Construction markets.³

Blismas and Wakefield's 2009 survey of OSM manufacturers in the Australian construction sector concluded that OSM adoption was hampered by the low take up of digital technology and a lack of specialist skills.⁴ However, this survey was done at the peak of the pre GFC construction boom and at a time when there was a general skills shortage and this may have influenced their findings. Nonetheless, they hint at the problems of integrated digital supply and delivery chains, by concluding "the greatest constraint to OSM is likewise a lack of skill, knowledge and understanding of OSM among the entire construction supply-chain, from client, through professionals, suppliers to constructors." Alongside identifying process and programming complaints in this segment of the construction sector these authors made the general conclusion that adoption of OSM techniques "requires fundamental structural changes to the industry."⁵

In 2013 Stenhardt, Manley and Miller in a landmark report found "a small but growing market for prefabricated housing in Australia, often building on expertise developed through non-residential building applications."⁶ But went on to argue that that adoption of the market is constrained by "a relatively flat housing market, a historically low investment in R&D, a relatively unskilled and transient workforce, and a highly speculative housing market. These issues constrain adoption and pose significant policy challenges."

By comparison in Japan, as Noguchi's research (2013) points out, modular housing constituted 5.4% of the housing market.⁷ Noguchi's research is an effort to adapt Japanese lessons to the Australian market and indeed Noguchi argues that the Japanese market is more akin to the Tesla model particularly in respect to mass customisation. As Noguchi points out an essential way to guide customisation over and above standard products is to have an effective communication system between manufacturer and user or consumer. As Noguchi notes: "standardisation of building components seems to be a limited hindrance to design customisation if communication platforms are well systematised." Likewise, Nadim and Gouding completed an extensive survey of OSM in Europe in 2011.⁸ In particular, they reported on the EU's Manu Build project. Manu Build's success was because it was an integrated system intended to holistically incorporate building concepts, business processes, production technologies, and ICT support in order to enable future construction to be, "flexible, agile, value driven, knowledge-based, highly customer-centric, efficient and comparative"

HOUSING AFFORDABILITY IN AUSTRALIA

Alongside this research into OSM and modular housing in Australia there is claimed to be a housing affordability crisis. This is important background for considering the claims in favour of modular housing. This crisis has two dimensions to it. Firstly, there is the sense that as a result of failure in social housing policy there is no housing options, or indeed housing stock, for Australians in lower and vulnerable socio-economic strata. Secondly, as a result of a particular set of real estate market drivers first home ownership for many young Australian's is increasingly out of reach.

A recent Australian Senate Committee published a report on affordable housing in May 2015. The report containing over 200 submissions from different stakeholders in Australia's housing sector.⁹

One of the notable submissions was from the Reserve Bank of Australia. The RBA's submission to that report argued that one of the key factors driving the so called crisis in affordability is on in terms of supply not meeting demand. The RBA also noted that one of the structural issues in relation to new housing supply is because the Australian population is concentrated in two major cities and these have a relatively low urban population density compared to other countries. This puts a constraint on the number of locations in which one could build new housing. The RBA points to previous research that suggested cities with higher populations have more expensive housing. An interesting conundrum for those who advocate for densification in our cities. The RBA also notes that this situation is combined with high construction costs and less impacted by regulatory issues, mortgage stress, taxation settings or the availability of finance.

The Senate report concluded that concluded that housing affordability was also exacerbated by policy fragmentation. The report concluded that Australia's housing system needed to be considered as an interlinked system that had both public private and the numerous local, state and federal jurisdictions. Policy was needed to give "coherence to the numerous local, state and national incentives and schemes intended to contribute to the provision of affordable housing." The independent senator Nick Xenophon proclaimed that: "Sadly for many Australians, home ownership is a dream that is becoming increasingly out of reach. Soaring property prices in our capitals have seen many low and middle income earners excluded from the property ownership market despite increasing average wages."

One recommendation of the report focused on the prefabricated housing industry. The recommendation argued that there was a need to, "Kick-start an Australian-made prefabricated housing industry to quickly, sustainably and cheaply build affordable homes – and boost local jobs and innovation at the same time." In addition Greens Senators posited that \$50M should be injected into the modular housing sector. This plan over 5 years would support "Research and Development, Innovation, Excellence in Design, skills and training, assistance establishing new production and manufacturing facilities, and demonstration projects."

THE AUSTRALIAN MODULAR HOUSING PRODUCT MARKET

There are a number of players in the Australian modular housing product market. This paper discusses and reports on 9 of these. Whilst all the firms use OSM methods as the common factor in making their products each of these players differ in terms of construction systems and the basis of their modularisation. These differences are then aligned with different marketing regimes, designs and design services added to the product offering. This results in market with a plethora of different products.

Branding

Each of the product manufacturers had a different approach to differentiating their service in the market and branding. For many of the product manufacturers aligning their brand with architects and architecture was an essential. A number of the companies researched included architects as founders, directors or on their boards. Clearly the branding signal or message in this approach is to differentiate themselves from the broader project home industry market. Whilst the broader project home industry also aligns itself with architects and architecture in some way; these larger companies which deliver volume housing in the market are more likely to use sales consultants and specialist interior decor experts to resolve the issues of potential product buyers.

Customisation and design was a key feature of each of the modular product manufacturers marketing, branding and product offering. Again, this was slightly different to the broader project home industry where the emphasis was less on customised designs and more on the different features that could be added into an individual housing package.

All of the different logos of the manufacturers seemed to evoke that the sector is efficient and sustainable. At least 3 of the manufacturers logos evoke so called green credentials via coloring or naming. One of the product manufacturers include evoke architecture through the use of the name arch.

The Unitised Building System

In many respects the Unitised Building (UB) system is the benchmark in offsite manufacturing and modular construction.¹⁰ More importantly UB is a patented pending system that claims to be “*a unique, globally applicable pre-fabricated building solution which is suitable for a wide variety of low, medium and high-rise residential, hotel, hospital and remote housing construction projects.*” UB system serves as an example of an innovation to commercialization pathway that is rare within the Australian design and construction industry. Initiated and developed by an architect, as a result of strategic R&D investment, the manufacturing line machinery and user license was sold to a contractor and building group in 2015.

The UB system has no set room size or height, although these are more correctly set by what can be transported. Its proponents claim that the system “is readily adaptable” to the “specific design features of any project.” And works by breaking down, or “unitising” construction projects into transportable modules, which are manufactured. Each unit utilises a proprietary steel frame and column design that forms a box-like structure onto which internal linings, external façades, fixtures, fittings and services are attached.

The factory which manufactures the UB system uses a fully automated Twin head bridge spot welding machine to construct the UB sheet steel panels. The Machine receives CAD data in .csv files which indicate where the spot welding should take place. This is connected to a pallet magazine system which supplies the machine with all of the components needed to make a panel. A conveyor system linked to a number of assembly jigs are then used to lift and configure the steel wall panels with structure, frames as well as to install penetrations. Welding robots are also employed in this process.

With no set room size or module height or width, the system adapts to the specific design features of any given project, allowing it to follow, not dictate the architectural design. This flexibility is a key point of differentiation in the global marketplace and this appears to differentiate UB from all other competing modular or pre-fabrication technologies.”

Modularity

Modularity, defined as the size and range of the basic modules, differed between different modular housing product manufacturers. Like the UB systems a number of manufacturers offer flexible modules another manufacture offered flexible modules providing they did not exceed what could transported from the factory to the site (2-5 wide and 2 -15 long). One manufacturer offered much smaller square modules. 3.6m. x 3.6m. and a 4.8m x 4.8m module. Clearly these were based on and align with available timber and steel cladding panel sizes.

All of the systems are limited by what can be transported. The maximum sizes of models are generally 5 meters wide by 15 meters long. Height is also an issue for transportation. Consequently some of the product manufacturers limit their module sizes to having ceiling heights that are only either 2400 mm or 2700 mm high. Typically a module can range from 2m to 5m in width and from 2m to 15m in length. Thus a number of the module manufacturers designs used a combination of module sizes to create flexible designs, with modules either stacked on top of each other, placed side by side or end to end.

If site access is limited modules then need to be lifted in using cranes. Obviously the further the modules need to be transported then the higher the costs and costs will also be higher if the modules need to be placed into place on top of another structure.

All of the product manufacturers claim significant time to delivery savings over normal project home builders. From time of ordering the delivery seems to be around 12 to 15 weeks. This does not necessarily include allowances for either design time, which presumably takes place prior to delivery and building permits, which would happen in parallel with the 12 to 15 week delivery time.

Plan typologies

There is a high degree of plan customisation available in the market. All of the manufacturers offered different plans and different design services and processes aligned with these plans. Some of the products were already designed by an architect whereas other manufacturers offered a design service. In some instances standard plans could also be easily customised. For example, one product manufacturer (A) had number of standard plans that can be configured to different plan configurations. There were seven different types of modular home that can be configured using this system. Manufacturer (I) produces 1 bedroom, 2 bedroom and three bedroom and for bedroom homes. The homes range in size from 88m² to 113m² to 131 and 151m² and this allows for 45 to 50 different configurations and this includes three different types of “facade options.”

Construction Technologies

Different modular housing products were underpinned by different construction systems. Most of the systems rely on steel framing with some kind of cladding attached. The type of framing differs from modular product to product. In some instances the manufacturers utilised recycled material for instance Manufacturer (C) appeared to have the most innovative construction system employing recycled and structural insulated panels that form the basis of the floor, wall and ceiling components. Each module is crafted using recycled expanded polystyrene sandwiched between 2 sheets of recycled Colorbond steel. This manufacturer also utilized screw piles described as a “non evasive” footing system presumably designed to allow for irregular sites.

Sustainability

All of the manufacturers claimed to produce sustainable products. Manufacturer (E) utilized high performance insulation, double windows, natural cross ventilation, large roof eaves and rainwater recycling. Manufacturer C used pacific teak timber sourced from sustainable forests, Many of the manufacturers used low VOC paints.

Costs

Costs between different product manufacturers vary but a brief analysis of these reveals that they are not any cheaper than the design of project home products. By way of comparison the following table indicates these differences.

Manufacturer	Product	Area m2	\$ per m2
A			
	1	102	\$2566
	2	109	\$2404
	3	143	\$2505
C			
	1	129	\$3505
H			
	1	68	\$3235

Table 1. Coat Comparison and Analysis 2015 \$AUD

One of the product manufacturers claimed that the basic cost for modular housing is around \$1900m2, however it is more likely to be a round \$2500 a square meter. This is significantly more expensive than a house produced for the volume home building market which is \$1400 a square meter. By comparison architecturally designed homes cost around \$3500 m2. This indicates that modular housing is positioned in the middle of the housing product market both in terms of cost and design. This calls into question how modular housing might be suitable, or adapted as either affordable or social housing or as an alternative to middle strata housing.

Innovation Policy

In a recent discussion paper the Victorian Government¹¹ identified the importance of construction materials and technologies as an important sector of the state. The paper, perhaps predictably, argued for the importance of BIM, sustainability measures and off-site construction to the construction industry. The central mantra of the paper seemed to be smart, green projects. It was argued that productivity in the construction sector is problematic and that one element where productivity could be improved is in the area of off-site construction. The authors recommended that Victoria could be come a centre of excellence for off-site construction technologies and businesses. The report, obviously supported by the prefab industry argues that Victoria should take a lead from Japan and Northern Europe where prefabricated housing is much more prevalent. In Sweden 84% of Buildings are prefabricated.

The Victorian report cites barriers to the local prefabricated industry being the high capital costs and investment needed to in the early stages of projects to set up off-site construction facilities. It also cites the lack of training across the construction industry in modular and prefabricated techniques. Despite the success of the UB system a number of challenges remain for the modular housing sector. The lack of investment in R&D in the sector and the lack of effective policy responses to encourage

this indicates that prefabricated modular housing may never achieve the same market as it has in other countries such as Japan. Its current costs structure suggests it is better suited for a middle market of home buyers. Advocating its use as social housing is also problematic. This is because it is not inherently cheaper than project home housing. Moreover, the image of housing and the stigma attached to prefabrication and standardization still remain an issue. Not all of the product manufacturers reported on here prioritized design aesthetics.

Mass customisation via the Tesla model still seems to be a distant dream because most design input into current modular housing is face to face and features come as standard on most with little or no choice. More interestingly, a number of disruptive technologies are already emerging that may change and transform the prefabricated modular housing market. In particular advances in robotics and 3D printing may well make the current processes of off-site construction redundant. Like Tesla it may take a product manufacturer with significant funds to invest, radical new technologies alongside sophisticated marketing to transform Australia's modular home industry.

Despite its promise and the claims of its proponents only integrated and interlinked policy settings that encourage R&D and venture capital will the sector grow to global dimensions. Without an effective innovation system in the country, clear policy responses and a culture of entrepreneurship aligned with venture capital the growth of this industry will be difficult. In other words, the prefabricated sector requires investment aligned with both innovation and housing policies that alleviate Australia's affordability crisis for both social housing and the middle strata.

NOTES

- ¹ "Tesla Model 3", Tesla accessed June 9, 2016, https://www.teslamotors.com/en_AU/model3
- ² Arashpour, Mehrdad, Ron Wakefield, Nick Blismas, and James Minas. "Optimization of process integration and multi-skilled resource utilization in off-site construction." *Automation in Construction* 50 (2015): 72-80.
- ³ Hampson, Keith D., and Peter Brandon. *Construction 2020-A vision for Australia's property and construction industry*. CRC Construction Innovation, 2004.
- ⁴ Blismas, Nick, and Ron Wakefield. "Drivers, constraints and the future of offsite manufacture in Australia." *Construction innovation* 9, no. 1 (2009): 72-83.
- ⁵ Ibid
- ⁶ Steinhardt, Dale A., Karen Manley, and Wendy Miller. "Profiling the nature and context of the Australian prefabricated housing industry." (2013).
- ⁷ Masa Noguchi Commercialization Principles for the Low-Carbon Mass Customized Housing Delivery in Japan. in Piroozfar, Poorang AE, and Frank T. Piller. *Mass customisation and personalisation in architecture and construction*. Routledge, 2013.
- ⁸ Nadim, Wafaa, and Jack S. Goulding. "Offsite production: a model for building down barriers: A European construction industry perspective." *Engineering, Construction and Architectural Management* 18, no. 1 (2011): 82-101.
- ⁹ "Australian Senate Report Affordable Housing 8 May 2015" Commonwealth of Australia 2015 available at accessed June 9
http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Economics/Affordable_housing_2013/Report
- ¹⁰ "Unitised Building" United Building, accessed June 9 2016 <http://www.unitisedbuilding.com/>
- ¹¹ "Construction Technologies Victoria's Future Industries" Victorian Government accessed June 9, 2016, available at
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DIRECTIONS FOR DIVERSE HOUSING AND HYBRID-USE DEVELOPMENT IN VICTORIA: RE-DEVELOPMENT OF HOUSING IN PRAHRAN AS A CASE STUDY

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HISTORICAL DEVELOPMENT OF SOCIAL HOUSING IN VICTORIA

In the early twentieth century, local councils in Victoria were responsible for demolishing insanitary buildings in slum areas without having a clear housing policy led by the Commonwealth or state government. In the 1930s, Frederick Oswald Barnett and his study group advocated slum demolition with proposed social housing provision for affected residents by a state-wide organisation.¹ This idea was realised under the *Housing Act 1937* for establishing the Housing Commission under the Victorian State Government to improve existing housing conditions and provide “adequate and suitable housing accommodation for persons of limited means.”² To cope with the escalating demand for housing, a prefabrication factory producing light-weight concrete components was set up at Holmesglen in 1945, producing load-bearing concrete panels for low-rise residential flats at the outset.³ Applying the precast concrete technology to high-rise residential towers was later explored after Henry Bolte began his long premiership in 1955. Bolte launched an extensive post-war slum clearance program together with the Minister of Housing, Horace Petty. A study trip was organised in 1958 by sending Jack Gaskin, the Deputy Director of Housing, and Ray Burkitt, the Chief Technical Officer, to Europe for learning from overseas examples. After the trip, the Housing Commission adopted the Gaskin-Burkitt study and light-weight load-bearing concrete panels were applied to the erection of high-rise residential towers, beginning with the fifteen-storey block of the Emerald Hill Estate, South Melbourne (1960-1962).⁴ From the 1960s to the early 1970s, a total of forty-five high-rise blocks with twelve storeys or above (to a maximum of thirty storeys at Park Street, South Melbourne) were erected.⁵

As a leading player in precast concrete industry, the Housing Commission earned a renowned reputation, which attracted international attention. It also shared a common interest with its European counterparts for pursuing social and environmental betterment through a modernist approach.⁶ Apparently, Le Corbusier’s *A City of Towers* (1923) was influential for projecting a vision of widely-spaced, high-rise residential towers.⁷ Principles of rationalisation, functionalism, new materiality and construction technology were engaged in the building design. The influence of the Modern Movement was further extended by the work of the Congrès International d’Architecture Moderne (CIAM).⁸ The modernist approach was once regarded as “a panacea for social problems”.⁹ Such optimism towards social housing was actively promoted by the Housing Commission at that time.

The building boom of erecting high-rise social housing only lasted for 15 years, from 1960 to 1975.¹⁰ Up to mid 1973, a total of \$31.7 million was spent on land acquisition and slum clearance, with over \$107.6 million spent on redevelopment cost.¹¹ Due to the high redevelopment cost and growing, widespread protests and criticism, the construction of high-rise social housing was halted by the mid-1970s.

Among all the developments by the Housing Commission, the housing estates in Prahran, including the Horace Petty Estate and the King Street Estate are representative examples of the building typologies used. Besides walk-up flats, there are two “Y-blocks” between Malvern Road and Simmons Street completed in 1967/ 1968 (*Figure 1*); one “Z-block” at the corner of Malvern Road and Surrey Road completed in 1966, and two “T-blocks” along the King Street completed in 1975, the last year of this high-rise pre-cast social housing building boom period. This paper will focus on housing estates in Prahran as a case study, consider shortcomings, and provide recommendations for future direction of diverse housing and hybrid-use development.



Figure 1. Y-Blocks, Horace Petty Estate, Prahran (Late 1960s)
(Source: Stonnington History Centre [no registration number])

SHORTCOMINGS

In hindsight, review of the housing estates reveal shortcomings of the building typologies. First, to reduce the weight of each precast concrete component, the wall thickness was tightly controlled. For the early two-storey residential blocks, all load-bearing concrete walls were 100 millimetres in thickness.¹² For subsequent high-rise towers, all internal non-load bearing walls are 100 millimetres thick; whereas the structural walls for the lowest five floors and upper levels below twelve floors are

175 and 150 millimetres in thickness respectively.¹³ The bare minimum of concrete cover for protecting the embedded reinforcement and the early use of calcium carbonate in the aggregate have also induced significant long-term maintenance issues. Due to the nature of load-bearing structures, spatial flexibility is very restricted by this component building system. This has caused difficulties for accommodating the needs of changes of family structures of residents, including the increased ageing population. The non-compliance with the Disability Discrimination Act (DDA) is also a significant issue to be address.

Following the design ideas of Le Corbusier, housing blocks are elevated on *pilotis*. The original intention was to release more open space on the ground for residents to use. However, those areas are inefficiently used. In Prahran, ground floors of Y-blocks, Z-block, T-blocks and other walk-up flats are mostly vacant. Although landscape spaces are provided around these blocks, they are overshadowed by adjacent blocks (*Figure 2*), poorly connected, and under-utilised, leading to the lack of integration into the surrounding neighbourhood.

Since the housing estates predominately provide residential accommodation for low-income and disadvantaged groups, the spatial isolation of the estates contributes to its social stigmatisation. Their detachment from the surrounding urban fabric and the lack of active building frontages also significantly affect the street vitality.



Figure 2.

PRAHRAN MASTERPLAN

In order to address the identified shortcomings and explore the development potential of the site, the Department of Health and Human Services (DHHS) of the Victorian Government has prepared a masterplan as the basis for the development plan for the Prahran housing estates, covering the Horace Petty Estate and smaller sites in Essex Streets, King Streets, and Bangs Street. A series of consultations were carried out by DHHS together with external consultants from 2011 to 2015, including workshops, community information sessions, surveys and interviews with the local community. A total of 206 people participated in the Phase One consultation in September 2011 and

346 in Phase Two consultation in mid-2014 respectively. A further Phase Three consultation was held in August/ September 2015.¹⁴ Five key objectives were developed as key themes of the masterplan to become principles for the Prahran estate renewal: (1) a well-connected community (*Figure 3*), (2) a mix of building types, (3) a sustainable and vibrant community, (4) linked, active open spaces, and (5) environmentally sustainable design.



Figure 3. A well-connected community as an objective of the Prahran Masterplan
(Source: DHHS, 2016)

Creating a well-connected community is vital to sustain and reintegrate the housing estates into the urban fabric of the surrounding neighbourhoods by blurring the site boundaries with the provision of pedestrian friendly environment (walkable neighbourhoods). To assist removing the social stigma associated with the existing estates, a range of building types and residential units of various sizes can be offered to more diverse mix of current and future needs. It is rightly an aim of the DHHS that social housing should not be differentiated from other forms of ownership. Apart from affordable rental housing, a mix of affordable private housing can also be provided with a gain of social housing units across the precinct. Community and commercial uses and facilities are indicated to contribute to local amenity, ground plane activities, creating a stronger identity for a sustainable, vibrant community. Addressing the current under-utilised green, public open spaces, the quality and range of public realm can be enhanced to facilitate social interaction and maximise opportunity for a desirable place to live. Environmental consideration for designing highly accessible building and connected public open spaces are also priorities for promoting health and well-being of residents and users.

Although these five main masterplan objectives highlight the crucial areas for consideration, the released masterplan received criticisms mainly due to the decision of keeping the existing high-rise large footprint residential “Y” and “T” blocks and proposed development of new apartment buildings around those high-rise apartment blocks.¹⁵ The Australian Institute of Landscape Architects criticises such decision as a compromise reducing the “potential for physical integration of built form and public realm into the neighbourhood.”¹⁶ As we also studied and received structural advice for the

Postgraduate Design Studio at the Melbourne School of Design, this approach would likely prove to be difficult, extremely costly, with little yield benefit.

POSTGRADUATE DESIGN STUDIO AT THE UNIVERSITY OF MELBOURNE

To explore opportunities put forward in Prahran estate renewal with other design possibilities for the redevelopment of housing estates in Prahran, a Postgraduate Design Studio, titled “Living Proof: Liveability Award for Social Prahran” was organised at the Melbourne School of Design, the University of Melbourne in the first semester of 2016. A cohort of both local and international students enrolled in this studio. The studio examined site opportunities, open space and building typologies with planning (including Chapel reVision, Activity Centres Strategy, Amendment C172 - Permanent Planning Controls) for creating socially engaged, mixed communities with site responsive neighbourhood design. With close consideration of the DHHS Prahran Masterplan objectives, the aim of the studio was to focus on urban living quality for re-thinking planning and design of various housing models at both precinct and architectural scale. Residential and hybrid land-use precincts, connected public realm, walkable neighbourhoods, typologies and design of sustainable social, affordable and mixed market housing were the major themes of the studio brief to leverage off what they can offer each other.

In the first week, students were required to carry out site visits and analysis in groups for understanding the current site context in terms of the following six aspects: (1) environment and ecology, (2) access and transport, (3) public realm and open space networks, (4) planning, culture and heritage, (5) community needs infrastructure, with commercial, retail, other hybrid mixed use, as well as (6) development economics, local market trends, land and development value. Based on site findings, students were further grouped together for designing masterplans which were later refined for their neighbourhood design. Based on the current estate structure, the whole DHHS site in Prahran was divided into six neighbourhood zones. The students formed three groups, two groups of six students and one of five students (*Figure 4*). Each student was required to design her or his neighbourhood area linked to the surrounding context and adjacent neighbourhood areas, with reference to those within the same masterplan group (the combinations providing three overall site masterplans).

The Postgraduate Design Studio can be regarded as a laboratory for testing ideas and producing alternative outcomes through the cultivation of students’ critical thinking.¹⁷ Under a research-driven approach, studio teaching no longer acts to simply to transfer information and techniques to students, but rather for collaboration for knowledge co-creation. Intense site observation, analysis and enquiry, design practice and studio teaching were linked together for the studio. Instead of being an isolated, self-referential exercise for individual stylistic expression, students were required to address a complex range of social issues through the engagement with various interdisciplinary practitioners and site stakeholders. This interaction included Government Officers, Industry Leaders, and Academic Researchers.



*Figure 4. Division of plots for postgraduate design studio teaching
(Source: Rob Polqlase & Hing-wah Chau)*

DIRECTIONS FOR DIVERSE HOUSING AND HYBRID-USE DEVELOPMENT IN

As an outcome of the semester's site and context research and design for the redevelopment of housing estates in Prahran, some design consensus became shared among the studio members. First of all, the perimeter block, as utilised throughout Europe, is an effective urban form for defining streets and public spaces. The potential breaking up of part of the perimeter block with access to inner courtyards can create transitional community spaces free of vehicles shared among residents (*Figure 5*). Design from ground level up with a diversity of socially interactive functions, can intuitively define active street edges and public and semi-private space at grade. Although perimeter blocks are commonly built in many European cities, this typology is not prevalent in Victoria. The application of perimeter block is worthy of further examination as it can achieve higher density, and at the same time, reduce the height impact, minimise overshadowing, improve safety and security, and enhance the sense of neighbourhood.



Figure 5. Use of the perimeter block typology with courtyards to replace existing Y-Blocks in a student's final design (Source: Kwan Ng, Terry)

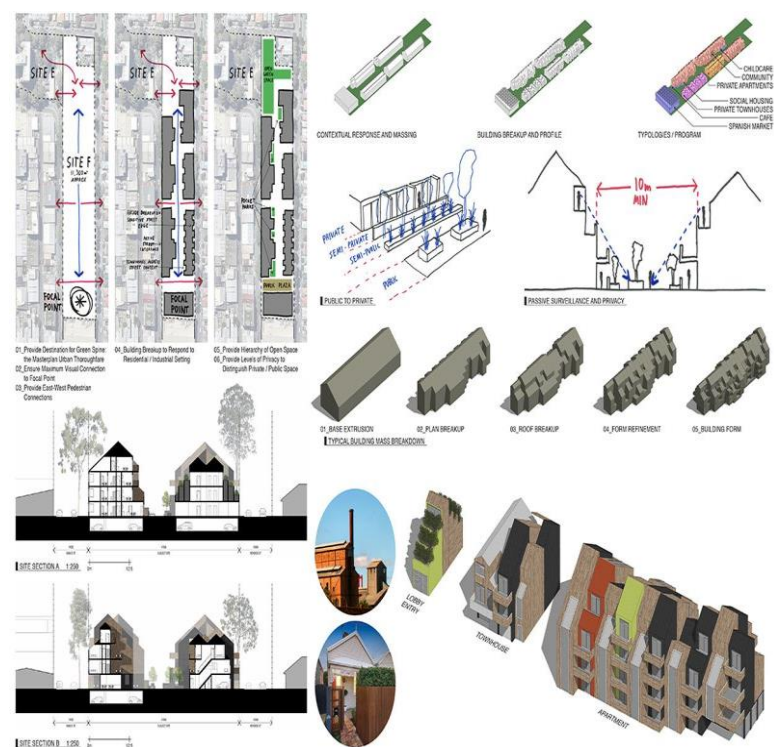


Figure 6.



Figure 7.



Figure 8.

Apart from some limited options for high-rise renovations for the current housing stock, no high-rise apartments were designed as an outcome of the studio's design investigations. By prototyping a series of diverse building designs, the studio as a whole recognised medium density housing, as a means to increase liveability and numbers of residences for both mixed affordable social and private housing (within the same buildings). This is an often overlooked typology in the Australian urban context is the mid-level building (four to eight storeys) or walkup units (three to four storey), or with town houses below and apartments above, which can offer much in terms of facilitating the objectives of the Prahran Masterplan. This typology works well with perimeter blocks and can produce highly identifiable, diverse building design with human scale street frontages containing opportunities for commercial or community activities at ground and up to two levels above ground.

Themes and design approaches resulted in consensus from the studio's analysis and site design. This testing reinforced the Prahran Masterplan's need for engaging strongly linked ground level activities along the internal green spine for the public open space together with a stronger sense of place identity. The quality of street edges and their activities linked with active transport for this “green spine” was recognised as the single most “binding” opportunity for the precinct to become a place where people of all ages are attracted to for social interaction. This included a range of facilities for education, training, early years, leisure, recreation, meeting, working gardens, including edible gardens, with supporting retail opportunities together with plans the City of Stonnington is creating around existing available facilities on its connecting lands.

More broadly, as indicated as an objective in the DHHS Prahran Masterplan, mixed-use development is essential for creating a liveable urban environment. New precinct mixes of communal, commercial and other functional uses can support neighbourhood diversity with activities providing optimal land use to meet current and future needs. Hybrid mixed use building function at ground and often to some levels above ground was found to make the most of the opportunity of social integration. Mixed programs on street level can effectively activate building frontages, contributing to local amenity with pedestrian friendly environment that brings life to urban spaces (*Figure 6*). As supported by the City of Stonnington's 2015 Chapel ReVision strategic plan, these programs are not only limited to ground level, but can be extended to some levels above ground to provide appropriate scale.¹⁸ Linked community and commercial function at ground level, planned for meeting local needs, activating the surrounding public open space, designed for specific use, as put forward in the student's designs offers strong neighbourhood cohesion, meeting broader social and economic needs.

For the essential integration of social housing within its context, a mix of housing models were given priority for the studio. This included affordable subsidised rental and private housing with no net loss of social housing units across the precinct. In agreement with the Prahran Masterplan, these models were designed to be indistinguishable for social housing from other forms of ownership, to provide legible dwellings where residents can be proud to live. All of these needs are critical to the overall site design quality, modelled at appropriate site scale, within each neighbourhood for design that can attract investment and build community consensus. The studio became an enjoyable, intense focus for all involved, ultimately developing design which can strengthen the sense of Neighbourhood connection, complimenting the opportunities DHHS masterplan objectives for a brighter future.

CONCLUSION

Through a brief historical review of the housing development in Victoria, especially the extensive use of pre-fabrication technology and the development of large footprint residential typologies by the Housing Commission after the Second World War, major shortcomings have been identified. The Prahran Masterplan for the Prahran estate renewal was released by DHHS in 2015 demonstrating that

the housing estates in Prahran have enormous development potential. It was therefore timely to organise a Postgraduate Design Studio as an opportunity to examine and develop a range of models, theoretically testing opportunities for future site design. Ideas generated from the design studio facilitate the exploration for future directions for modelling diverse housing with hybrid-use development, which is now an unprecedented need not just in Victoria but for Australia's major and most global cities. Although this paper is focused on housing in Prahran as a case study, it is recognised that further research is imperative with site analysis including site design modelling to define opportunities for urban transition and other DHHS housing sites.

NOTES

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- ² Section 4, *Housing Act 1937*.
- ³ Jill Barnard, "Holmesglen," *eMelbourne: the city past & present*, accessed June 2, 2016, <http://www.emelbourne.net.au/biogs/EM00719b.htm>.
- ⁴ George Tibbits, "'The Enemy Within Our Gates': Slum Clearance and High-Rise Flats," in *New Houses for Old: Fifty Years of Public Housing in Victoria 1938-1988*, ed. Renata Howe (Melbourne: Ministry of Housing and Construction, 1988), 144.
- ⁵ Karen Vella, *The High Rise: A paper profiling Ministry of Housing and Construction high rise accommodation* (Melbourne: Ministry of Housing and Construction, 1990), 26.
- ⁶ Peter G. Rowe, *Modernity and Housing* (Cambridge MA: MIT Press, 1993), 158.
- ⁷ Le Corbusier, *Towards a New Architecture* (1931) (New York: Dover Publications, 1986), 57.
- ⁸ Bernard Leupen and Herald Mooij, *Housing Design: A Manual* (Rotterdam: NAI Publishers, 2011), 27.
- ⁹ George Tibbits, "'The Enemy Within Our Gates': Slum Clearance and High-Rise Flats," in *New Houses for Old: Fifty Years of Public Housing in Victoria 1938-1988*, ed. Renata Howe (Melbourne: Ministry of Housing and Construction, 1988), 150.
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- ¹¹ Leslie Kilmartin, "The Land Deals," in *New Houses for Old: Fifty Years of Public Housing in Victoria 1938-1988*, ed. Renata Howe (Melbourne: Ministry of Housing and Construction, 1988), 164.
- ¹² George Tibbits, "'The Enemy Within Our Gates': Slum Clearance and High-Rise Flats," in *New Houses for Old: Fifty Years of Public Housing in Victoria 1938-1988*, ed. Renata Howe (Melbourne: Ministry of Housing and Construction, 1988), 133.
- ¹³ Karen Vella, *The High Rise: A paper profiling Ministry of Housing and Construction high rise accommodation* (Melbourne: Ministry of Housing and Construction, 1990), 20.
- ¹⁴ "Pahran Masterplan Phase 3 Community Engagement Activities: Consultation Report," Victorian Government, accessed June 2, 2016, <http://www.dhs.vic.gov.au/about-the-department/plans,-programs-and-projects/projects-and-initiatives/housing-and-accommodation/pahran-estate-renewal>.
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- ¹⁷ Donald Bates, "Past Futures and Future Pasts: The Architecture Studio," in *Studio Futures: Changing Trajectories in Architectural Education*, ed. Donald Bates, Vivian Mitsogianni, and Diego Ramirez-Lovering (Melbourne: Uro, 2015), 72.
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BUILDING COMMUNITIES THROUGH INCLUSIVE DESIGN PLATFORM

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INTRODUCTION

‘A neighbour living nearby is better than a relative far away.’ This Chinese idiom encourages neighbours to look out for each other. It would seem that we are able to apply this thinking to contemporary life. As the cities intensify and people start living in high-rise apartments, the interaction between neighbours seems to reduce. This, however, contradicts the earlier idiom, as we now all have many neighbours, and often both beside, above and below. Many urban-sociological studies have been undertaken and shown that social interaction is important towards better qualities of life ¹ and interaction with neighbours enhances this even more so.

Housing is a key issue to consider in delivering healthy and attractive communities. But communities are also important to create a conducive housing environment. The current housing developments mainly focus on housing issues and leaves the community building to resident councils or volunteer groups. Extra effort is therefore required to bring the neighbours together on the part of the architect or designer.

This research aims to stimulate bringing neighbours together by designing and testing a digital design platform. The initial intention was to allow every individual to participate in the design of his or her apartment within a high-rise apartment context. However, this inclusive design process requires a great deal of interaction between neighbours to make it successful. Frei Otto’s ‘Ökohaus’ was a successful attempt to bring a group of neighbours together to build their desired living space ¹⁷. Although the design process itself took two years for just a few households, the outcome was extraordinary with neighbours enjoying the company of each other. Similar tactics are therefore attempted in a high-rise context but with the help of digital platform to coordinate the huge number of household and allow neighbours to interact with the digital model. This platform, therefore, acts as a communication and visual medium to connect the neighbours.

This paper will present the research development, and the challenges faced. A focused group experimental workshop will also be presented to show how the challenges are attempted to be resolved while trying out the design platform.

BUILDING COMMUNITIES FOR HOUSING

There are multiples benefits in building communities, from the health and well-being of the neighbours to the resilience and securities of the neighbourhood ². In the UK, Redditch Co-operative Homes created 400 homes through a series of five neighbourhood co-operatives that are self-managed

by the residents. The outcome is that residents within the vicinity have high levels of civic engagement where the residents work more closely together towards the development of the surroundings. They are more satisfied with their homes and feel a strong sense of community spirit. In Singapore where there are a variety of ethnic groups, the government Housing Development Board (HDB) relies greatly on community building to bring about harmony and understanding among neighbours.

For high-rise apartments, they do not have backyards or open areas for neighbours to interact, only corridors (**Figure 1**) exist for the neighbours to access to their units. This reduces communications within neighbours. The high density of these high-rise apartments also means that every neighbour is usually unfamiliar with one another, resulting them being increasingly inconsiderate and intolerant³. With the increase of population moving into the cities, high-rise apartments are also increasing in demand. Comparing with Frei Otto's model, this paper feels there is a compelling need for high-rise apartments to adopt communities building during the architecture design phase.

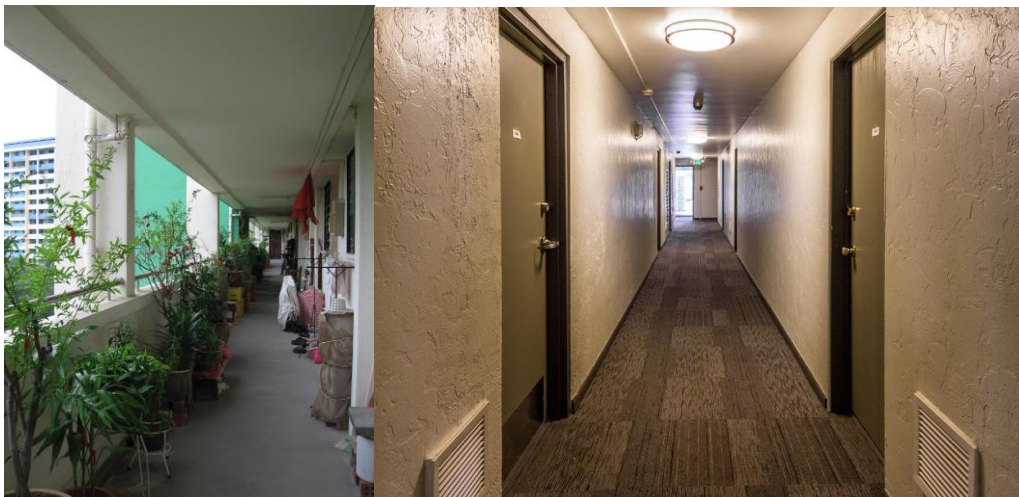


Figure 1. Photos of apartment corridor in Singapore (left) and Denver (right)

There are many social challenges in building communities especially in contemporary housing policy and practice⁴. It is very different from neighbours where communities imply commonalities such as culture or ethnic identity. “By contrast, the initially unknown neighbour is potentially a destabilising and ambiguous figure, which encompasses difference and allows for radical otherness, albeit in indeterminate ways. Neighbours, after all, can be hostile as well as friendly, indifferent as well as interested, passive as well as active⁵.” The idea this paper is proposing here is that through a digital platform, communication will bring about connections among neighbours and communities of its own unique form can be created.

The adoption of technologies into the living environment is often linked to smart paradigm^{6,7,8} such as passive technology to enhance the sustainability of the living space. It has significantly changed living spaces and lifestyles making research in enabling technologies within residential spaces increasingly important⁹. There is still a gap between developing technologies for the communities and the willingness of the communities to interact with the technologies. Technologies support are also being extended based on data to provide customised service to meet residents' needs^{10,11}. This paper will examine the gap and propose an inclusive design platform that would encourage the engagements of the communities in anticipation towards reducing the gap.

REFERENCING WOOD'S MODEL

In this paper, we take close reference to John Wood's five steps towards micro-utopia: i) breaking through participants' psychological barrier, ii) providing a means for co-sharing, iii) determining the participants' needs versus desires, iv) generate the outcome for visual observation and exchange, v) engaging the participants towards a practical outcome.

Since housing is one of human's basic needs as shelter, it is usually associated with utopia as the ultimate goal towards happiness. However, utopia is on the contrary usually associated with unattainable¹². Simply acquiring a house or an apartment does not grant anyone total happiness. There are many other factors to consider such as the surrounding environments and the living qualities. Since utopia is too perfect to be attained, this paper decides to take references towards Wood's model in designing for micro-utopia because we believe that communities building could help improve the living standards thus moving closer towards utopia.

Community building requires an immersive amount of time and patience. Instead of taking that ambitious approach, it would be more practical to take a progressive or in John's words, 'a tentative, temporary, pluralised or truncated version'¹² of utopia. Using digital means and working small experimental steps, the results are clearer, and any lapse could be easily taken a step back for re-examination and retry. The steps described are also what is necessary to promote a place where people comes together living harmoniously together.

Gamified Participation

The first step towards 'micro-utopia' is neither technological nor political but psychological¹². The first psychological challenge is how to engage end users and for them to engage each other?

Gamification is a strategy, which functions both to promote participation and simplify the process of communication between various parties. Through the involvement of end users, the complexity of the design process is likely to increase especially in the context of mass housing. Recognition of a layperson's interest in the conceptual design stage necessitates immediate communication with the architects and opens up the problem of dovetailing layperson demand, and maintenance of the professional architects' quality control.

SimCity and *MineCraft* are two games frequently utilised in relation to architectural tasks¹³. Although they are open world games where the players are required to design everything from tabula rasa, the players are confined and limited by rules and logics such as working in a grid environment and using building elements provided by the system. Furthermore, role-playing games (RPG) such as *Mass Effect* and *Until Dawn*, which follow a particular storyline, require players to make decisions that change the course of the story resulting in individual and unique endings for each participant. The players simply need to make choices. They are not required to keep score or follow complex rules. The story, however, will be adjusted according to the choices made by the players resulting in different story endings. These tasks in the game are stored automatically in a 'black box' in the background freeing the player to focus on the game story.

Expanding further, games such as *Clash of Clans* and *Mobile Strike* are famous mobile application games that call for strategies among players. Players need to understand the capabilities of each teammate and communicate well to execute the best performance against common enemies. New friends and communities were formed from these games; internet forums were created to allow discussion of battle strategies, etc. The key point here is that through a process that requires strategies, people tend to communicate with each other to pick up the best strategy that suits them and through this communication, builds up communities. In this case, housing design process provides the exact elements to initiate this development.

By integrating these elements into a digital housing design platform, end users can be attracted to engage the design process and encouraged to interact with each other. Communities and bonding could also be established through this process of digitally collaborated building. Similarly, it is possible to simplify the digital design platform interface by shifting the complex computational processing into a black box so that end users participate in the design process with ease while architects export the required information from the black box to guide their production of the models. In doing so, the system could adjust the design outcomes according to the choices made by the end users resulting in design variation for each of them.

Sharing, Exchanging and Understanding

In Wood's model, the step following gamification is to 'co-imagine the dream in a more shareable form.' To achieve this, a communication platform that facilitates the complex and multi-channel interactions is necessary.

ModRule is a platform designed to facilitate collaboration between architects and future end users during the preliminary stage of mass housing design¹⁴. Individuals set their desired parameters for the design by completing a built-in questionnaire, which elicits problems with their current living space and provides for the design of an improved version of their living space 'dream' that might not be achievable. A personal or family profile will also be generated through the questionnaire. This platform allows the users to co-design their desired living space with each other. It is also possible for users to interact, viewing each other's profiles on the site, thus gaining insight into tolerances within the housing system. The technical aspects and functions of *ModRule* are explained in details by Lo et al.¹⁸. The gamification in *ModRule* is intended to make full use of game logics to encourage end users to share information resources and design their living space together. Contributions and returns are dependants of the end users and architects respectively. For example, end user 'A' offers to maintain the cleanliness of the community will 'worth' more than end user 'B' who is just rich and not willing to share any resources. In return, end user 'A' could receive some form of remuneration that the architects have set. The effort is to drive the end users to interact such that the outcome is co-imagined together as a community.

The third step is to check that "we really want what we have dreamed of"¹². This stage of engagement enables end users, who will be living in the same building, to communicate their vision of 'micro-utopia' to each other.

Keeping *ModRule* as the digital design structure of design participation, the architects set the range of system parameters, within which the end users set their space requirements, budget, orientation, daylight preference, etc., thus defining their desired way of living. Architects layout the building form accordingly with necessary elements such as building core, access, and utilities. The design layout will be grid accordingly so that every grid space can be input with parameters and variables. This information will be kept in the system's black box. A goal system will then be set based on their profile and end users will be engaged to design their desired living space. This goal system is like a checklist of targets that end users should follow. This is taken in reference to 'objectives' in games where players try to achieve while playing the game. A 'goal bar' is introduced into *ModRule* interface that is interacting with the parameters and variables input in each grid. The goal bars fill up accordingly while choices are being made by the end users, indicating whether they are achieving what they declared they wanted.

The role of the goal bar is for every individual to manage their desires. This is to ensure that users are not taking more than what they need, to further establish "we really want what we have dreamed of." It is also opened for every other participant to look at to encourage sharing and understanding as well

as social interaction. Ideally, this transparency will encourage every participant to help others to achieve both, their personal and their common micro-utopias since the participants will be living together in their future building.

As it is almost impossible to fulfill all goals, especially with the need to negotiate with the other end users, the aim is just to achieve as high as possible. There might even be possibilities where some goals will have to be compromised to achieve others, and these will all be decided by the end users themselves offering the participants a better understanding of the overall process and a possible higher acceptance of the outcome.

Co-producing

In Wood's fourth step, 'to see how much of the dream is attainable,' interaction with the architects increase exponentially. At this stage, a certain level of practicality is necessary to ensure that the end users understand what they are designing. This means that the users will be exposed to complex architecture components such as walls, windows, doors, furniture, etc. and elements such as sun-shadow, lighting, and views. Yet, to maintain the participation level, this interaction between the architects and end users has to be kept simplified.

Referring back to gaming, the current trend to get players engage deeper into the game environment is using Virtual Reality (VR). As implied by the name, virtual reality is to use digital technology to bring a near-to-reality experience through our senses and perception.¹⁹ At the moment, ModRule uses an online web platform to perform its collaborative design task which limits the visualisation capability. Although VR is an exemplary option, the current stage of ModRule development is unable to integrate VR. An external software is therefore adopted. *Fuzor* is a software that allows building information to be input for various purposes. VR solution is one of its capability and ModRule sync its model information into Fuzor to allow end users to interact with the model as if they are in the space they designed. The end users can move the architecture components and adjust the dimensions till they feel the space fits their desire. The benefits of this VR process is to give the end users a close-to-real sense of their designed space so they could have a better judgment whether their design is attainable.

Once everyone's goals are achieved to a certain extent, to the point everyone is satisfied with the outcome, this brings us to the final stage and the most important stage as this is where the individual micro-utopias will be synthesised to form a common overall architectural design. At this stage, the architects take a leading role. Although the aim is to achieve an overall design through a bottom-up, 'democratic' process, this top-down is not negligible especially in this context of mass housing and at this stage of the design process. There are too many building and architectural issues that need the knowledge of professionals to be practical.

SYSTEM AND WOOD'S MODEL TESTING

A two-day workshop was carried out to provide a clearer understanding and observation of the application of Wood's model and to what extent ModRule could change the design interaction within a digital platform based on this model. This workshop (**Figure 2**) was part of the "Complexity & Simplicity: 34th Education and research in Computer Aided Architectural Design in Europe" (eCAADe) annual conference. The workshop was open to all conference participants and the public. There were 6 participants, coming from different part of the world with different cultural background and status. They are professors from Italy, Ph.D. students from Poland, media editor from China and they have varied level of design background.

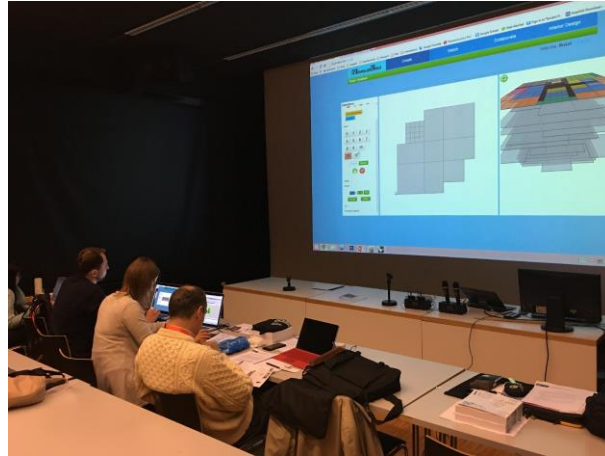


Figure 2. Photo taken at the eCAADe workshop

Since they were strangers to one another, this provided an exemplary setting to examine as a focus group if a digital platform would indeed break the psychological barrier between them to engage in the design process cooperatively. As stated previously, this testing takes that experimental step to determine if community could be established through a digital design platform within a high-rise vicinity among this group of makeshift participants. Using this focus group provides groundings for future developments toward more general users who are planning to live in high-rise apartments.

The site context was situated at the city centre of Wellington, New Zealand. The local housing situation is very similar to UK and America where houses are more common than high-rise apartments. However, there are still a handful of apartments that are necessary for people from other parts of New Zealand and other countries coming to work and study in Wellington¹⁵.

The participants were introduced to the context through images and a virtual site model. For the group of participants, the common element was they were all with a design background. They were also a group of people who has a certain degree of desire to design their living space and are responsible for their decision making. This provided the characteristics close to the targeted end users that this research is ultimately looking for. After an introduction to the context, a personal profile was generated through a series of questionnaires. They were then introduced to ModRule platform and played the role of users who were going to New Zealand to work or study. The building was set to be a rental apartment. The model was developed based on Lucien Kroll's MéMé¹⁶, a student quarter for Faculty of Medicine of the Catholic University of Louvain, designed in close collaboration with the students. The outcome was a tremendous flexible design where changes could occur in any manners depending on the occupants. The purpose of using MéMé was to take close reference to its architecture structure and components that allow this flexibility. The participants then tried out the system: shared their ideas among themselves, collaborated with each other to achieve their desired outcomes, negotiated to reduce conflicts and developed the design outcomes with the acting architect. After a round of trying out ModRule as a user, they were then presented into the role of the architect. They were brought to light how the model was being prepared and how the parameters were being inserted at the background. Access to the creation mode was then given to these participants to let them try to create their version of the building.

FINDINGS

The feedbacks from the participants were overall very positive. Firstly, their preferences towards this method of inclusive design process were clear. A digital system allowing them to design their living space was a common desire. For a typical workshop, ample time is usually taken to get every participant familiarise with each other. This workshop went straight into the design introduction, and the participants interact among themselves when necessary during the process. It started with them engaging the acting architect (the author) to understand the interface and how the ModRule works. After that, they started to engage with each other to negotiate spaces. It was a brief exercise, but ModRule became a medium for the participants to engage deeply with the cultures and living standards of each other. As most of the participants had a design background, the discussion went further into topics such as housing typologies and government policies in their respective countries. Most of them saw a potential in ModRule and provided suggestions to improve the interface and modeling process and requested for more functions and capabilities that could enable the system to adapt to difference housing policies.

With respect to Wood's model, this experimental workshop proved that ModRule did succeed in achieving its first step to breaking the psychological barrier. The participants can easily manipulate the design, but gamification was not incorporated enough to reach the 'enjoyable' level. Some parameters were missing to encourage further anticipation to co-design. Participants were questioning what benefits they were entitled to for contributing to the overall design and work closely with their neighbours. They were defining strategies to cooperate. By understanding one another's living standard, they tried to explore how ModRule could be improved to provide the capabilities to include different design decisions. If we examine the discussion content, the participants were engaged in a gamified manner. They were already co-imagining and determining what can be attained with their differences. ModRule did help to initiate the process, but its immaturity limits the extent of their dream. There are still a lot of room for ModRule to improve to provide all five steps of Wood's model fully, but the potential and demand for such a system is definite.

With regards to the issue of community building, although this was just a small focus group, there was still some observation towards the behaviour of the participants during the use of the system and what were the difficulties they faced while designing their living space together. One key influence was that they were designers with strong design intentions and they were also experimenting if ModRule allowed them to design their desired space. There was bonding process, and the participants did engage with each other to try and work things out. Participants used hand sketches and images of their countries to show their desired living spaces. However, there were still many limitations which ModRule was unable to fulfill. The design outcome was not totally achieved, but the tool did act as a great medium for the participants to know each other and design collaboratively.

DISCUSSION

At the current stage, it can be observed that there are three key elements that are necessary for a community building, user-oriented collaboration to be initiated; communication, transparency, and understanding.

Communication is the first key. As housing design involved many complex elements, even if game mechanics are used, there are numerous details that users have to pick up during the design process. Constant communication between the architects and the users will help prevent doubts and confusions that will slow down the design process. With a communication channel set up in ModRule, the users can either communicate in real-time with any other users or the architects. They could also annotate

any problems they faced during the design process which will be archived in the system for later references by the architects.

Transparency is the next key. Even with advanced technologies, this communication occurs only when the users know who is on the other side of the conversation. Going back to the game mechanics, personal profiles or avatars are usually used for players to identify each other. ModRule utilizes the same mechanics and creates an individual profile for every participant before the start of design. In addition, the architects will also have to inform the users clearly of all the design parameters so that the users can plan well before designing.

The third key elements are also the most important and challenging – understanding. The first two key elements can be prepared and establish to a great extent, but the understanding of the participants is hard to control. The personalities of the participants could great affect the design process and outcome. These elements would take a certain amount of time and effort to develop. The architects play an influential role to affirm the participants that their actions will affect the communities and that some compromises are sometimes necessary to allow a better whole.

This brings us to Wood's metadesign in achieving micro-utopias. Wood proposed a model for the macro society and using this model for inclusive housing participation is not exaggerating. The complexity of housing can be very similar to building a society, especially when governments like Singapore use housing as a tool to win the hearts of the people. And if we look at the details further, they actually coincide with the three elements drawn from this experimental workshop.

Wood's metadesign comes with the following aims: to incorporate a unification of social, cultural, managerial and design practices; to orchestra simultaneous ideas and processes in a sharable form, accessible to all; be perceived as a primary source of wellbeing and fun to attract support and engagement; to create conditions that would encourage incentive returns, promoting resilient communities. Through the experimental workshop, it can be observed that ModRule did try to achieve the aims of the metadesign and with the three established elements, the aims could be achieved more readily.

LIMITATIONS

As ModRule was and is still a prototype, there were quite a few glitches that slow down the process which frustrated the participants. However, technical issues aside, there were also questions raised regarding the complexities to mix rental and purchased units. In Asian countries, buying and owning an apartment is a necessity, but in most European countries, rental is a more preferred over ownership. This is one condition that a digital system is yet to be able to resolve. At present, this system only works for groups that are either all looking for permanent living space or all looking for temporary living space. In other words, the building occupants are either constantly changing, or not changing much. Further research is necessary to examine the possibilities of integrating these two groups of users.

THE NEXT STEP

An immediate response to the experimental workshop would be to improve ModRule system to incorporate more functions and capabilities to enable the user further engagement with the design. Although this experimental workshop determined that ModRule is capable of engaging its users and is a desirable tool for architects to establish a collaborative design workflow, it does not provide an understanding whether the design outcome is preferred over the existing apartment designs. Another test could help establish this solution.

Firstly, an architect will develop a ModRule model and a fully designed (FD) model. A sample group of participants will be assigned to design a unit in a medium density housing project using the developed ModRule model. The sample group will be kept constant to be university students. The reason for choosing this sample group is that they can be regarded as a layperson with different level of architecture knowledge. They are also a group of people who has a certain degree of desire to design their living space. Since this research is looking into future housing, this group provides the characteristics closest to the targeted end users that this research is ultimately looking for. The design process would be similar to the workshop where the participants would engage ModRule and try to co-design the living space with the architect.

With the ModRule model developed, these similar participants will then be asked to compare their design outcome with the architects' FD model. Two questionnaires will be given to each participant and the architect, one for them to compare between the two models and the other to understand if the system provides them with the capabilities and satisfaction to generate the outcome.

To reduce biases, the two models will then be opened up for the general public to examine and vote. The bias in this case mainly refers to the participant's samples. There is a possibility that the time and effort taken to develop the ModRule model is simply the factor that they prefer it to the FD model. By engaging the general public, this allows to counter the bias and to receive feedback which design appears to be more accepted, the ModRule or the FD model. This could simply be achieved by a voting for the preferred design.

Since our here proposed research is held within the campus, this 'general public' can be the rest of the students and teachers within the campus. The models can also undergo an evaluation via an expert panel allowing the general public to have a clearer understanding of the design intentions and processes. The 'Professionals' in this case are professors from the departments of Building Sciences, Urban- and Landscape Design, who can critic the design outcome. The 'Officials' are professors e.g. from the Department of Real Estate, who can evaluate not only the economic aspects but also the acceptance of the design outcome of participants.

CONCLUSION

This paper proposed a new way of building communities with the help of an inclusive digital design platform. The aim was to initiate the bonding at the building design stage instead of waiting till the users moved in as occupants. This proposal was as bold as John Wood's idea of creating micro-utopia. Therefore, his methodology was referenced to help achieve the aim of this research. An experimental workshop established through a focus group proved that a digital platform does provide the means to help bring people together. Although bringing neighbours together and building communities is not an immediate outcome, this research did prove that a digital platform such as ModRule could enhance the exchange between groups of people to design collaboratively. With the help of gamification as the key strategy to provide attractive and intuitive collaboration for community building, the use of digital platform manage to accomplish Wood's model to a great extent. The three key elements identified during the process, and the additional test case proposed could further push Wood's idea further, making his micro-utopia more achievable in the housing context and subsequently build the desired community in the future.

NOTES

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WE'RE BUILDING SECURE, PERMANENT AND AFFORDABLE HOUSING FOR WOMEN AND CHILDREN

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SCHORED PROJECTS AND WOMEN'S PROPERTY INITIATIVES (WPI)

INTRODUCTION

The Reynard Street Townhouses are a social housing development that provides women and their children access to safe, secure, permanent and affordable housing. This paper presents the case study of the Reynard Street Townhouses from when the potential of the site was identified more than five years ago, through the processes of understanding the site yield and obtaining authority consent and on to project design. This paper details the unwavering commitment required from all parties involved — clients as well as consultants — to deliver social housing in the current planning and funding environment. It highlights the specific, tangible benefits that quality custom design can bring to individuals and a community.

BACKGROUND

Over the past two decades, supplies of social housing (public housing and community housing) in Victoria have remained static and by the close of 2013/14 had actually reduced. Eight housing associations and 34 housing providers deliver community housing, and between them they own 7,603 long-term housing units — stand-alone houses, townhouses and apartments.

The majority of social housing, around 65,000 properties, are owned and managed by the Government's Department of Health & Human Services, and more than 37,000 Victorians are on the public housing waiting list. The number of homeless Australian women increased between 2006 and 2011, and 66% of Victorian specialist homeless services' clients are women¹.

Domestic violence is the main reason women and children require homeless services,² and the leading contributor to mental health issues in women and children³ and death and disability in Victorian women aged 15–44.⁴

As women continue to be primary carers in our society, they typically have less money to spend on housing. The shortage of affordable, long-term and secure housing drives women and children back into unsafe and violent relationships or into transient and unsafe housing.⁵ Significantly more rental housing is needed to meet the demand and address this urgent need.

Women's Property Initiatives (WPI)

The Women's Property Initiative's mission is to build a future for women and children in need. WPI's board and staff believe a home is fundamental to women and children having a future and, guided by the needs of women experiencing disadvantage, create appropriate housing options for female-headed

families to live with dignity as contributing members of local communities.

WPI partners with support services and accesses resources from the private, public, philanthropic and community sectors to ensure the women and children are adequately and efficiently supported in long term tenancies. Tenants are charged 30% of their income and never more than 75% of market rent.

Currently, WPI owns and manages 68 properties, housing 180 disadvantaged women and children in apartments in new buildings and houses in new housing estates. These properties are not identifiable and are mixed throughout the community. Apartments typically comprise 10–15% of a development, and houses are scattered throughout a housing estate. This provides a good social mix and ensures the women and children feel safe.

This is the first time WPI have engaged an architect rather than buying built properties. WPI have had more control over the result and the inclusions that are important for the housing we build.

Residents

1. Janet left a domestic violence situation with nothing but her children. In one year, they moved five times. Before the WPI house, four of them lived in one room. When they were transient, custody of her children was in doubt, but the WPI house has provided Janet and her family with a new life, a new start and a new home. They love the community and have made good friends. She has undertaken courses at TAFE, and is now a confident woman contributing significantly to the lives of her children and the general community. She is independent for the first time in her whole life.

2. Annette is an older woman who, through life circumstances, had little savings or superannuation. She now has quality, affordable, stable housing into her old age

3. Carrie is a 25-year-old woman. At sixteen she was left homeless when her mother was imprisoned. Carrie went through various transitional houses and became involved in drugs. Now a WPI tenant, Carrie has come off drugs, rebuilt her life and left her past behind. She put herself through studies and now has her own conveyancing business. She believes her stable home saved her life.

These real life case studies demonstrate that safe and affordable housing can be the catalyst for significant, positive social and economic change. To properly quantify the positive effects suggested by anecdotal evidence, WPI commissioned an independent study to measure the social and economic returns of housing projects, it found for every \$1 invested, the return was \$3.14. Importantly, the study demonstrated that WPI's housing helped break the cycle of poverty for our tenants and their children.

PROCESS

Construction of the Reynard Street townhouses will be completed in December this year and that date will mark a process of more than five years. The process began in May 2011 when WPI was approached by Moreland City Council with a piece of surplus land. Schored Projects joined in August 2012 to conduct a yield study to assess the viability of purchasing the land.

Team

The project has a collaborative team of more than 14 representatives. This includes the client, WPI and the architects/landscape architects, Schored Projects. Sophie Dyring, director of Schored Projects and Jeanette Large, CEO of WPI were introduced five years ago by a mutual colleague and friend who recognised the two women's shared values of social justice and fairness, and both organisations' aim to provide all people with the best possible housing money can afford.

Half of the consultant team worked pro-bono for part or all of their expertise. This generosity can make a social housing project viable, particularly as these services are necessary to getting a project off the ground.

Feasibility

Given the site and budget constraints, the feasibility study investigated using modular, factory constructed dwellings. Schores Projects were using a particular modular system at the time, and transport limitations of this system constrained dwelling widths to 3.5 metres. This determined the maximum dwelling width, and the first project yielded seven townhouses — five 1 bedrooms and two 2 bedrooms. The dwellings changed substantially during the design process, and modular construction was discarded during the concept design stage but the yield stayed consistent.

Land Sale and Section 173

Moreland Council determined the conditions under which the land would be sold and engaged a local Real Estate Agent to undertake this process. The Invitation for Expression of Interest (EOI) outlined the Council's aim to encourage social housing for economically disadvantaged City of Moreland residents. WPI submitted their EOI and was successful. WPI was also instrumental in having some adjoining Victrack land declared surplus. Purchasing this strip gave the project a slightly more workable parcel of land. The contract of sale included a Section 173 stipulating several design objectives, including visual connection with the bike path running along the Upfield train line and the western boundary, to be achieved by locating front doors along this boundary behind a 1.2 metre high fence. We felt this would reduce the safe and secure feeling of future residents, so during the land sale we negotiated the removal of this requirement, and agreed to achieve visual connectivity between the properties and bike path with a different design solution.

Town Planning

With the land purchased, we began concept design and drawings for submission of a town planning application. Concept design began in October 2014, and the results were presented at a pre-application meeting with Moreland City Council that November. The proposal was well received at Council with strong support from the Community Planning officer. With minor alterations, the team, headed by planning consultant GHD, submitted the town planning application in December 2014. The application was advertised and we received over ten objections from people living in the vicinity. A mediation meeting was scheduled where objectors could speak freely and the project team had an opportunity to respond. It was a difficult meeting with several objectors taking issue with the social housing nature of the project and the type and number of properties. Other concerns included car parking (we had applied for a car parking waiver), traffic congestion and the colour palette. As a result of the mediation meeting, we revisited the colour palette for the project and considered lighter colours, more sympathetic to the context. At the subsequent Urban Planning Committee meeting in November 2015 we were issued a planning permit.



Figure 1. East Elevation

Tender

An invited tender for the construction of the project was run in February 2016. A preferred contractor was selected and a process of negotiation was entered into to identify potential cost savings. While not required by WPI, Schored Projects was conscious of financial unknowns in the construction process, including latent ground conditions, and thought it prudent to have a little extra in the contingency budget for unforeseen costs. Costs savings were chosen that wouldn't affect the livability or aesthetic of the project. Construction is underway and the project will be completed in seven months.

DESIGN

WPI and Schored Projects' objective for this project was to design and build safe, secure, permanent and affordable housing for women and their children, and have achieved this through these guiding principles:

- site masterplanning responding to context
- best practice architecture and landscape architecture
- inclusive livable housing guidelines
- passive environmentally sustainable design principles

Site Masterplanning

The site is in the eclectic neighbourhood in Coburg, Melbourne, Australia. It is in a medium density location, surrounded by a diverse range of housing. We were keen to maximise the use of the land for affordable housing as it is such a fantastic location for access to excellent amenity and infrastructure. The site has been planned to increase residents' safety and security. The building abuts the western site boundary with a wall 1½ storey high to prevent people accessing properties. The wall is masonry with minimal openings, which contributes to acoustic separation from the passing trains. All townhouses have an independent entry from the shared access way along the east section of the site, which is accessed through a secure front gate on Reynard Street.



Figure 2. Location Plan

Architecture

There are seven townhouses comprising five 1 bedrooms and two 2 bedrooms. It is a small development and WPI will select a mixture of tenants including older women, younger women and women with one child for the two bedroom townhouses.

The townhouses are 10% larger than average Melbourne apartments (with the same number of bedrooms). Properties with 1 bedroom are 56m² and 2 bedroom properties are 75m² (excluding external space). The needs of residents are central to all decisions. Storage, both general and specific, is included on the ground floor, first floor and the courtyard. Internally, there is a linen press, built-in robes, a separate laundry and room under the stair for cleaning supplies. Externally there are operable windows-seats and cupboards.⁶

To address the objectives of the contract of sale Section 173, visual connection with the bike path has been realised from the west facing service terraces at the first floor level and from the kitchen windows at ground level. The sliding kitchen windows are installed behind fixed perforated metal screening, allowing cross ventilation and delivers a secure environment for residents.

Visual permeability through the northwest corner of the site was a consideration for cyclists. The fence in this location (the intersection of the bike path and Reynard Street) is 1.4 metres high, giving cyclists a clear view when approaching the intersection. A taller fence would have provided greater security to the residents, but the final design balances the needs of the residents and the wider community.

The material palette was selected with careful consideration of planning requirements, initial cost to build and ongoing maintenance. The ground level is constructed of face brickwork and the first floor façade uses a lightweight panel not needing ongoing painting.

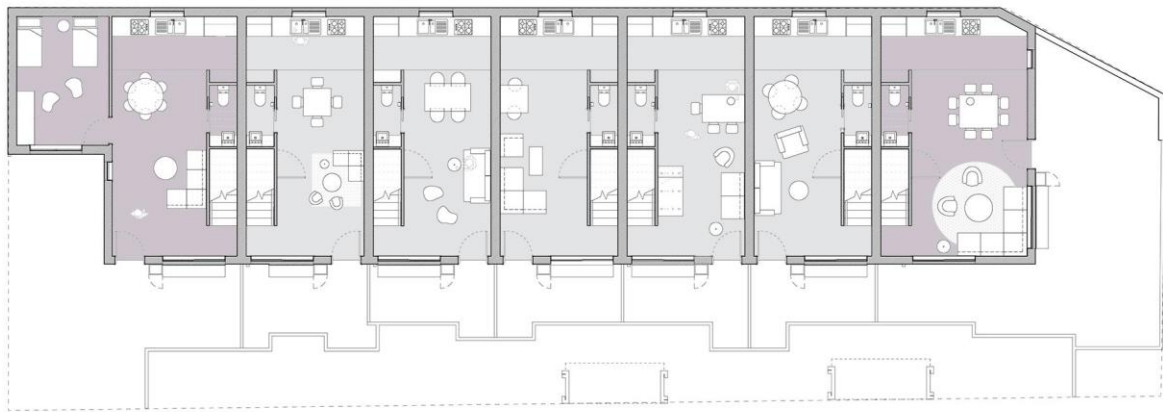


Figure 3. Site Plan

Landscape Architecture

The architecture and landscape architecture have been fully integrated in consideration of the quantity and quality of the open spaces for residents. Each property has a private courtyard and service terrace, and the two bedroom properties have larger, child friendly courtyards. The service terrace on the first floor is located on the same level as the laundry and frees up space from clothes drying.

The shared landscape area is an important design feature of the project. It is a communal space to gather, to relax, to garden and to enjoy and it fosters a community on site. Schoored Projects designed this space beyond the function of access, aiming to facilitate connection and occupation. The space is generous in width, with bench seats, individually and clustered in groups and under-cover bike storage (to free congestion in private spaces). Lighting is designed to guide the resident's home safely but be unobtrusive once they're indoors. In the common space, productive planting (complemented with native selections) grows food to share including olives, lemons and rosemary, in planter beds that are raised for greater accessibility and irrigated to ensure healthy production.



Figure 4. Landscape Plan

Livable Housing

Livability is at the forefront of the design of these townhouses. Livable Housing Australia wrote the Livable Housing Design Guidelines, a set of practical, common sense guidelines to livability. Each guideline can achieve a silver, gold or platinum rating depending on effectiveness. During the early

design stages, WPI established that elderly women could represent a portion of the future residents, so the design achieves most of the seven core livable housing design elements to a Silver Level. The townhouses deliver.⁷

- a safe continuous and step-free path from the street to property entrance at the same level
- comfortable and unimpeded movement between spaces
- a toilet on ground level for easy access
- a bathroom with a hobless shower recess
- reinforced walls around the toilet and shower for safe installation of grab rails
- a continuous handrail on one side of the staircase

In addition to achieving these core principles we have also:

- provided Gold Level circulation in the kitchens
- achieved Gold Level installation heights for switches, power points and door handles
- ensured stair lifts can be easily installed

These simple initiatives ensure future-proof livability.

Environmentally Sustainable Design

Passive design principles have been integrated into the townhouses to reduce ongoing costs for residents. As the site orientation runs north–south, all townhouses are orientated east–west. On the first floor, east and north facing glazing is shaded by screening and at ground level by the cantilevering first floor above. West facing glazing is set well behind a deep eave to regulate sunlight in winter and summer. Operable windows on both the east and west façades ensures cross ventilation and passive cooling, and operable clerestory louvre windows above the stair allows summer night purging. Ceiling fans in the living areas and bedrooms negate the need for mechanical air conditioning.

The efficient townhouse footprint also address sustainability by using — and wasting — less construction materials.

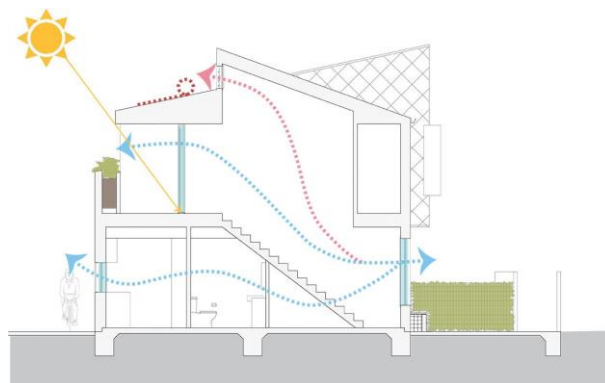


Figure 5. Section

BUDGET

Funding

Funding came from a variety of sources including a significant philanthropic grant from the Edward Wilson Trust to purchase the land, a 10% reduction in the cost of the land from Moreland Council, grants for construction from the Victorian Property Fund, and another philanthropic grant from the Percy Baxter Charitable Trust and Women's Information, Support and Housing in the North.

Affordability

Affordability was considered comprehensively; the cost to deliver the project, the costs to residents to run their homes and the costs for WPI to maintain the properties. The construction cost is \$2,600 per sq/m (March 2016) including all architecture, interior fit-out and landscape, excluding only loose furniture (to be provided by residents). This has been achieved through thoughtful decision making. Firstly we adopted typical domestic construction, brick veneer to the ground level and light weight construction on the first floor, for contractor familiarity and easy of construction. Interior finishes and fixtures were selected for longevity and aesthetic but also price, ongoing running costs and future maintenance. WPI had a specification to reference but also consulted their tenancy managers to avoid products that cause issues in other properties.

Heating is provided from efficient, fan-less wall heaters, drawing less power and costing less to run. LED lights and solar hot water supplemented with a gas booster both reduce electricity demand. These choices do not preclude moments of luxury, from the internal solid timber features, dining room pendant lighting, plush carpet and generous bathroom storage. Careful and clever selection of off-the-shelf systems over bespoke products brought the project in on budget.



Figure 6. Axonometric

CONCLUSION

The tenacity of Women's Property Initiatives and Schored Projects has never faltered over the five years the Reynard Street Townhouses have been in production and now construction. We have designed permanent, safe, secure and affordable homes for five single women and two mothers and their children in the seven townhouses. The quality design of the townhouses delivers the best accommodation through best practice design principles. The case study of the Reynard Street Townhouses illustrates that no obstacle can prevent a dedicated team with a responsible social agenda from providing in-need women and children with permanent, safe, secure and affordable housing.

NOTES

- ¹ Australian Institute of Health and Welfare Canberra (AIHW), "Government-funded specialist homelessness services," *SAAP National Data Collection annual report (2010-2011)*, accessed April 14, 2016, Cat. no. HOU 250.
- ² Australian Institute of Health and Welfare Canberra (AIHW), *Specialist Homelessness Services (2011-2012)*, accessed April 14, 2016, Cat. no. HOU 267.
- ³ "Preventing Violence against women" VicHealth, accessed April 14, 2016, <https://www.vichealth.vic.gov.au/our-work/preventing-violence-against-women>.
- ⁴ "Preventing Violence against women" VicHealth, accessed April 14, 2016, <https://www.vichealth.vic.gov.au/our-work/preventing-violence-against-women>.
- ⁵ Australian Bureau of Statistics Canberra (ABS). "Information Paper", *Census of Population and Housing – products and services (2011)*, accessed April 14, 2016.
- ⁶ The state of Victoria Department of Environment, Land, Water and Planning, *Better Apartments Discussion paper* (Melbourne: Kiwi Kopy, 2015), 11.
- ⁷ Livable housing Australia, *Livable housing design Guideline: Second Edition* (Sydney: Livable Housing Australia, 2012), 13.

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HOUSING INFRASTRUCTURE CITIES: HONG KONG / SYDNEY HOW WE'RE BLINDED TO THE LIMITATIONS OF TRANSIT ORIENTED DEVELOPMENT

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INTRODUCTION

Transit Oriented Development (TOD) is understood to be a solution to a broad range of issues in contemporary city building. From housing density and the focus of urban renewal back toward the center of cities and in response to the desire to intensify suburban centers in the provision of more housing, more amenity, more walkable neighborhoods, it is understood to be a success. It is argued as part of responses to questions of both social and environmental sustainability in terms of the reduction of resource use through the concentration of activity around existing and newly developed transport hubs. Equally it is also presented as a solution to governmental risk amelioration and the exposure of tax payer resources to new development through innovations in funding models for example away from public sector only provision of infrastructure and toward the transfer of construction and demand risk, in addition to strategies such as value capture as part of sophisticated new models of public private partnerships or private delivery of projects. Together, these clusters of arguments for TOD make it a powerful and compelling concept. However, what these blind us to is the strategic socio-political failures of TOD if it is situated on a trajectory of urban spatial reasoning through the twentieth century and particularly with reference to a history that includes the Neighborhood Unit. Building housing in cities has through the twentieth century been a more complex problem than simply building density over infrastructure. This paper will examine some of that history, its practice in both north America, UK and Australian cities, but also in Asian cities, and argue that neighborhood has been a critical spatial mechanism for constituting cities and ourselves as urban and domestic subjects. The absence of that reasoning in TOD has profound consequences for city functioning and social and political resilience

TOD is generally agreed to be a strategy linking land use and transport systems to create medium and high density areas of mixed use concentrated within an 800metre walking distance of transport. TOD emerged as a concept with force in the early 1980's in response to the oil shocks and resultant energy crises of the 1970's and an emerging environmental consciousness. Increasingly by the first decade of the twenty first century, TOD has become part of a more general argument for the recentralization of the city. The idea of the 'Great Inversion' has become shorthand for a reference to a centralizing flux not seen in the city since the decentralization of urban centers that began in the 1920's leading to an the urban crises of the 1970's, as witnessed in parts of North America in particular with the emptying out of city centers and attendant social problems that went with that.

In some senses then the TOD is the inheritor of the 1929 Neighborhood Unit (NU) plan. The NU is a strategic exemplar diagram that was generalized within urban spatial reasoning with its release as part of the 1929 Regional Plan of New York and its Environs. The NU is both a spatial and a socio-political argument for the scale-based organization of populations of people. It is understood as a unit of ‘balanced’ neighborhood communities and involves the diagrammatic negotiation of elements of work, home, transport and leisure . At its core was what was understood to be the fundamentals of community life: school, faith based meeting place, community hall, public open space, with housing and retail within a 400m walking radius.

However, what is of course different about these two models of city building, the NU and TOD, is that one, the NU, is about the de-centralization of the city, while the other, TOD, belongs to a contemporary arsenal of centralizing strategies. In the case of TOD, this is in response to a shift in perceptions of what the city is. There has been a contemporary and fundamental move away from understandings of the city as the dirty industrial and manufacturing center of the late nineteenth century, where arguments privileged the sanitation, health and hygiene benefits of suburban life over the apparent poverty of the inner city, toward something quite different in the first decades of the twentieth century. Now instead the city is understood to be the site of dynamic urban life, of walkable, convivial cultural and social engagement, a life that the new service and knowledge economy worker wants over anything else.¹ –Problematic however in the TOD, this bastard offspring and inversion of the NU, is the fact that despite the arguments driving it and enveloping it for urban culture and dynamism, economies of procurement and production and environmental sustainability, it typically contains none of the sophisticated spatial provision for real social and community life that has been at the core of city building since the 1920’s. As a consequence, what we have emerging in city transformation driven by the logic of TOD, and with reference to housing in particular, is that for all of its admirable environmental and political credentials, this is density done very badly. We are after all, more than just consumers.²

THE NEIGHBORHOOD UNIT, A HISTORY

As a diagram the NU contains at its core a school, child care, a park, a place of worship, meeting spaces, flanked by retail and commercial space held in place by high streets, and its residential component made up of quiet cul-de-sac streets. It is contained within a walking radius of around 400m and is designed for 3,000 to 4,000 people. Attributed to Clarence Perry, the NU was first generalized with its publication as part of the 1929 Regional Plan of New York and its Environs. Of course aspects of the NU had been appearing as a concept in various ways for some decades before this, but we will argue here that it is only in the 1920’s that it solidifies in its full form.³ The core of its instrumentality is to be found in the organizational and formal scale based spatial frame it sets for a continual critique of, and experimentation with, the relationship between home, work, leisure and transport. As a diagram it can be seen to be deployed most clearly into suburban expansion in developments such as Radburn, New Jersey, as equally as it can be seen at work in the reasoning behind large housing projects deployed later to reorganize cities such as New York in the middle of the twentieth century – projects such as Stuyvesant Town (1943), Brownsville Houses in Brooklyn (1948) and the earlier unbuilt Braun and Muschenheim slum clearance proposal for fifty blocks of the Upper East Side of New York of 1935. It can also continue to be seen at work in for example, Kuringai council’s reasoning about the placement of amenity for clusters of population within its local council jurisdiction in Sydney. The Neighborhood Unit has been in one sense then key to our ability to argue, on the occasion of housing, for benefit and shared amenity, for a better possible future for populations of people in cities that sit inside its boundaries, but also importantly, for those within its

influence and beyond its boundaries in the existing urban fabric around the intervention. As a strategic exemplar diagram, the NU is an incitement to thought, it demands that we ask the question: what size is the scale of neighborhood, what and where is its influence.

The first public presentation of what would later become the diagram of the NU published as part of the 1929 Regional Plan of New York and its Environs, was given by Clarence Perry to the National Community Centre Association and the American Sociological Society in Washington on December 26, 1923.. Titled “A Community unit in city planning and development,” the presentation reflected a long association Perry had had with both the Playground and Recreational Association of America where he was a field officer with the responsibility to investigate how public schools might be used after hours for social and civic purposes.. As a member of the community center movement some time later, Perry is quoted as saying “Every Schoolhouse a community capital and every community a little democracy.” Perry’s experience with this group provided the ground for experiments with the socially planned neighborhood. During the late nineteenth century and at the same time that urban theorists such as Ebenezer Howard were developing novel spatial links between economy, the social and the natural world through planning, there also was emerging ideas via the social sciences that provided new theoretical links between social relations and interaction and the physical environment of cities and towns. The Chicago School sociologists such as Robert Park and Ernest Burgess produced a significant body of literature bringing together the idea of constituting culture through the relationship of community and geography in a move that was fundamentally spatial.

Françoise Choay reminds us, in the face of the complexity of traditional pre-nineteenth-century urban and architectural spaces, it is easy to forget that ‘the creation of an autonomous discourse on space is a recent western development,’ and that this has been a hugely transgressive and disruptive force. As is evident in the development of the Neighbourhood Unit through Perry’s involvement in local politics and social science, it can be seen that the NU belongs to the catalogue of social spatial machines that constitute architectural urbanism’s tools for building the city. These instruments are what through the twentieth century would form a key part of liberal governmentality’s reasoning.⁴ These are social spatial instruments that don’t act to crush populations in self governing, or that act in spite of populations, rather we can understand that, through the linking of social space, the family, education and neighborhood through something like the Neighbourhood unit, in fact we self govern through them. Isen Osborne and Rose have argued that this instrumentality is according to a knowledge of the ‘truth’ of the city – the truth of community and neighborhood produced through the new discipline of the social sciences.

Its possible to see then, contained within the NU and at its core, is ‘the ideal of an immanent political sociability.’⁵ The Neighborhood unit’s value then is not in its existence as an actual built object but rather in its usefulness as a measure. It “can be thrown up against any existing urban actuality as a principle for its critical rectification” and this is how we continue to use it today in planning. Here politics is not government and its acts and laws and functions, the economy or morality for example, but rather government and liberal governance is understood as the art of governing or what has been referred to as the ‘conduct of conduct.’ It is a way of doing things, or acting on the action of individuals “taken either singly or collectively, so as to shape, guide, correct and modify the ways in which they conduct themselves.” It “consists of various instruments and rationalities assembled to link the power of the state, the regulation of populations, and a ‘pastoral’ power which addressed itself to the conduct of those who recognized themselves as subjects.”

URBAN SPATIAL REASONING VERSUS CULTURAL DIFFERENCE

Interestingly, the NU was not only deployed in the Anglo-speaking world. Lu reports that it was taken up broadly in Asia during the first half of the twentieth century. She reports that it was implemented in Republican China prior to 1949 by Japanese colonial planners in the organization of cities such as Changchun and Datong in the 1930s. Following this in the late 1940s Chinese planners initiated proposals for several major cities based on the neighborhood unit. These were finally completed after the 1949 Revolution. Socialist planners also experimented with several competing residential planning ideas during the 1950s: The micro district known as the *xiaoqu* in Chinese and *mikrorayon* in Russian. Equally and outside of China, it is worth noting some of the more influential evolutions that the concept has gone through.— Lucio Costa's late 1950's Superquadras for example, developed and implemented as part of the Brasilia master-plan. Here, Costa's innovation is in challenging the size of the scale of neighborhood with four superquadras making the equivalent of a NU, arranged in an overlapping pattern where retail concentrations are situated. The superquadra is connected to the city via the positioning of public services on the margins, rather than at the core. This connects the services to a reservoir of user via primary and secondary road networks rather than simply remaining internal to each NU. Costa's innovation was to challenge and question the size of the scale of neighborhood with the superquadra which is much denser than the original model, up to 12,000 people.

Lu acknowledges the taking up of the NU concept in China as involving “multiple associations, mediated practices, successive discursive conversations and ad hoc pragmatic decisions” adding that its ‘domestication’ by China “was a continual process of translating, taking, selecting, combining and reinventing” rather than a direct borrowing of ideas from ‘The West’ as is often argued in accounts of the NU as a kind of cultural imperialism or colonialism. What is interesting to this paper is simply the idea that urban spatial reasoning as a key part of liberal democratic techniques of governance was as active in these cities, as it was in the cities of North America, the UK and Australia. While cultural difference matters, modernity's unique use of space as a discursive practice is operational regardless.

TOD: HONG KONG, AUSTRALIA AND MTR

In 2015 the Hong Kong metro operator, the Mass Transit Railway Corporation (MTR) announced its interest in looking at the opportunities in Australia for running value capture transport operations. MTR already runs the Melbourne Metro and will run the Sydney metro Northwest when it opens. The Melbourne operation is the most globally profitable for MTR, who operates through a ‘rail plus’ property model. This allows it to value capture capital uplift while paying for the construction and maintenance of rail lines via residential and commercial developments above its transport nodes. This strategy fits well into an Australian political context where over decades all levels of government have been limiting their own involvement in the provision of infrastructure, both in terms of transport but also institutional healthcare, education and housing infrastructure, as part of an amelioration of risk. Of course, MTR spokesman Lincoln Leong has been quick to say that any development in Australia would not be like what has been described as fortress like developments in Hong Kong such as the new Tung Chung station and the housing project above and around it. As part of the expansion of the MTR out toward the new HK airport, Tung Chun is made up of 12,000 flats, 97 houses, a hotel and a shopping center. Other projects like this might be the Tseung Kwan O new town, which Chow argues is a more sophisticated model of integrated transport and urban development undertaken simultaneously. (see Image X).

TOD in Australia has typically been limited to either a strategic re-zoning along existing rail corridors where small parcels of land are taken up by individual developers as land is up zoned to accommodate

a greater residential density. For example, this can be seen along the 1920's rail corridor that runs up the spine of the North Shore in Sydney. Since re-zoning for density a decade ago, the rail corridor has seen a considerable number of new apartment buildings undertaken by developers. Because of the challenges of land acquisition and the difficulty of the amalgamation of lots, this has primarily been done in a piecemeal way of small blocks, the consequence being through time, considerable density, with none of the collective amenity that one would expect of a project of this scale undertaken by a single developer or government agency in a single development. This is density done on the occasion of transport, argued in terms of health, transport and sustainability considerations with none of the socio spatial intelligence at work in it that one would expect given the inheritance of reasoning via the NU.

CONCLUSION

The scale of neighborhood reasoned through the twentieth century has cultivated and defined our collective lives in an imperfect set of relationships held in a kind of tension of constant rectification. As this paper has shown, there is a rich bed of socio spatial political reasoning at work in urbanism through the twentieth century regarding the relationship of work, home, transport and leisure through twentieth urbanism which rely on diagrams that incite disagreement and cultivate arguments over who and what we are collectively. Blinding us to the failures of the TOD model to contribute to this in the production of housing density and city building, are all of the clearly beneficial aspects of TOD: in terms of health, environmental and social sustainability, novel models and techniques of funding and the cultivation of walkable, convivial urban environments. This paper is not an argument against TOD as much as it is an argument for more socio-spatial content in the TOD model, content that perhaps can't be provided without government subsidy and involvement.

NOTES

¹This is a change in understanding of cities that is starting to transform mortgage consumption patterns and housing demands in Alpha cities around the world. See J.F Kelly, B. Weidmann, and M. Walsh, "The Housing We'd Choose," (Grattan Institute Melbourne, 2011).

² One notable exception to this is literature around the relationship of Social Capital and TOD, see particularly Md Kamruzzman et al., "Patterns of Social Capital Associated with Transit Oriented Development," *Journal of Transport Geography* 35, no. February (2014).

³ During the late nineteenth century and at the same time that urban theorists such as Ebenezer Howard were developing novel spatial links between economy, the social and the natural world through planning, Sir Ebenezer Howard, *To-Morrow, a Peaceful Path to Real Reform* (London: Swan, Sonnenschein and Co., 1898); *Garden Cities of to-Morrow*, ed. F.J Osborne (Cambridge, Mass: MIT Press, 1962 (1902)). there also was emerging ideas via the social sciences that provided new theoretical links between social relations and interaction and the physical environment of cities and towns. The Chicago School sociologists such as Robert Park and Ernest Burgess produced a significant body of literature bringing together the idea of constituting culture through the relationship of community and geography. Ernest Burgess, "Can Neighbourhood Work Have a Scientific Basis?," in *The City*, ed. Robert Park and Ernest Burgess (Chicago: Chicago University Press, 1925).

⁴ See for example Minson for a discussion on the family and the socio-spatial role of domesticity and the single family dwelling. Also Borsi on the emergence of the scale of the domestic in Berlin in the first decades of the twentieth century. For more on notions of the discursive instrumentality of scale see Barth in Lawrence Barth, "Diagram, Dispersal, Region," in *Landscape Urbanism: A Manual for the Machinic Landscape*, ed. Mohsen Mostafavi and Ciro Najle (London: AA Publications, 2003). And in more detail in Borsi and Basar Shumon Basar and Katharina Borsi, eds., *A Document of Scales and/or Engagement* (London: AUSA Cluster Architectural Association, 2006). Katharina Borsi, "Drawing and Dispute: The Strategies of the Berlin Block," in *The Intimate Metropolis*, ed. Marina Lathouri, Diana Periton, and Vittoria Di Palma (London: Routledge, 2009). J Minson, "Familiar Terms: Politics, the Family and History of the Present," in *Genealogies of Morals: Nietzsche, Foucault, Donzelot and the Eccentricity of Ethics* (London: Macmillan, 1985).

⁵ Engin F Isin, Thomas Osborne, and Nikolas Rose, "Governing Cities: Liberalism, Neoliberalism and Advanced Liberalism," in *Urban Studies Programme, Working Paper No. 19* (Toronto: York University, 1998). pp. 2

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APPROACHES, DESIGNS AND SOCIO-CULTURAL IMPLICATIONS OF POST-DISASTER HOUSING: LESSONS FROM ACEH TSUNAMI RECONSTRUCTION.

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INTRODUCTION

The 2004 tsunami disaster in Aceh destroyed man-made environments massively in addition to unimaginable human misery. It was one of the largest natural disasters in Aceh's history. Housing and settlement sector were tremendously affected. Some Acehnese lost their land and even Aceh's coastline was changed. Others found it hard to locate their lots in the ruined land. Many of them had no proof that the lost land was theirs.¹ Up to 139,195 homes were destroyed or severely damaged, along with 73,869 ha of land with varying degrees of productivity.² While natural disaster transformed much of Aceh's morphology of urban space, the rehabilitation and reconstruction process that followed continued transforming the typology of domestic space in Acehnese towns and villages, profoundly affecting Acehnese socio-cultural life and society at large. In particular, a fundamentally new type of housing physically and practically changed social and cultural ways of living in Aceh. This paper examines how domestic homes and living space were formed and deformed by large scale post-tsunami housing reconstruction projects in Aceh and how post-tsunami new living spaces for private families influenced family cultures, lifestyles, do's and don'ts, habits, customs and everyday life. The overall study proposes a new type of action for post-disaster housing reconstruction based upon the real housing needs of stricken communities which takes into account non-physical aspects of family practices such as cultural living needs and desires, lifestyles and habits as well as physical aspects of location, typology, size and lay-out design of housing concepts. In addition to short-term 'supplying roofs over heads', such an optimised approach respects the longer term well-being and cultural survival of individual post-disaster survivors as well as of communities at large. It is also shown how this additional socio-cultural approach can be made successfully workable worldwide.

LITERATURE REVIEW

Natural disasters often have severe consequences and changes to the built environments. It may transform the morphology of urban environment and domestic space of each and every person hit. This transformation has short and long term effects. Socio-cultural individual life as well as community and societal life at large will be involved. Individual socio-cultural life, community life, as well as societal life will be involved. Short-term impacts of disasters and of rehabilitation and

reconstruction are getting most of the attention while the long-term effects get far less. As Chang³ explicitly states that is because policymakers and ‘recovery actors’ do not adequately understand long-term consequences of short-term post-disaster help and reconstruction.

Many case studies studying natural disasters are approaching post-disaster rehabilitation and reconstruction in a top-down or bottom-up way. In top-down approach, public authorities, financial and technical donors, and building contractors are the ones that set the scene and decide what to do and how to do it. In the bottom-up approach, the owners of the homes to be built, the community in which the houses will be located, they are engaged in the process. Top-down approaches are believed to be simpler and less time consuming. Davidson, Johnson, et al⁴ argue that in this approach prompt decisions, quick processes and little delays are possible. With the absence of owner/tenant participation, new houses can be made available to survivors within a few months. However this approach threatened natural habitat as well as socio-cultural life of the people. Natural habitat was degraded.⁵ Furthermore, future developments will suffer since there is ‘*no active role for beneficiaries to play in the development of their own future*’.⁶ Too often reconstruction authorities and actors do not include traditional contexts and local values in their top-down approach. In bottom-up approaches, communities are involved in different roles and in several of the building process. The community build their new houses themselves and some external help may be then needed from financial and technical actors.⁷ It gives greatest possible success to communities since their participation is part of the general political process which influence decision that shape the community.⁸ In Aceh’s post-tsunami housing projects, the community-based development approach made its mark in housing reconstruction. Acehnese communities were the ones that determined housing needs and wants and decided upon priorities themselves.⁹ In their bottom-up approach Acehnese beneficiaries played active roles and were quite important to help set project results. They turned the ‘victim’ who passively received humanitarian aid into an active actor.¹⁰ This approach has shown to be less costly due to lower labour costs and it will enable people to occupy their new home before building their new home is finalised and before it is furnished.¹¹ It also builds community resilience and strengthens communal social bonds. Barenstein¹² also finds that bottom-up approaches help and re-establish confidence and pride of traumatic survivors, by encouraging them to be actively involved and able to participate in the building of their own new homes. It makes people stronger and self-confident as they see their needs and wants materialised, Barenstein observes additionally. By satisfying individual beneficiaries and communities more this way, future sustainability is also supported more. With adequate financial and technical help, self-built houses will not only be more sustainable, but people will also be interested to make necessary future additions and make sure that necessary repairs will be done. And it is quite beneficial intangibly that local culture and identity will be also being preserved better.¹³ Continuity of traditions and ways of life are also more secured. However, this approach may take more time and mostly cannot do without extensive facilitation.¹⁴ And it may also not at all be easy to include qualified actors play roles of facilitation. In Aceh’s recovery, professionalism has been a problem too often due to lacking of professional people, religious and community leaders, social workers, teachers and civil society representatives.¹⁵ Community structures were out of order as they were spread all over the place in emergency barracks and tented camps.¹⁶ This made facilitation processes for the bottom-up rebuilding communities more difficult. In this approach, the technical quality of the building is not always secured. In a number of cases, traditionally built buildings have collapsed.¹⁷ Various actors play a role in post-disaster housing reconstruction programs, such as government agencies, international donors, non-governmental organizations (local, national, international), local institutions and administrative bodies, architects and builders, and last but not least, ‘the locals’, local communities and individual survivors. Actors have different capacities,

functions and roles. Actor actions also depend upon the type of building approach used. In different countries and regions, conditions and situations, roles may be different. In a top-down approach governmental authorities and agencies play a bigger role than in a bottom-up approach. In bottom-up approaches survivors and their communities have important roles to play. In Aceh's post-tsunami housing reconstruction, BRR (Agency for Rehabilitation and Reconstruction of Aceh and Nias) was the main reconstruction authority. It coordinated planning and building actions and executed much of it itself in close cooperation with professional consultants.¹⁸ BRR's role was strongly driven by 'emergency aid drivers' such as international and national NGOs.¹⁹ In addition to international aid agencies and non-governmental organizations, consultants and contractors, architects and builders, play essential roles in reconstruction activities.

METHODOLOGY

A comparative case study method was employed as the main methodology for this study. A number of houses in main concentrated areas of post-disaster housing reconstruction projects in Aceh's capital city of Banda Aceh and Aceh Besar outer district were selected for the analysis. Three categories were used, one based upon the level of physical transformation compared to pre-tsunami times. Secondly, the immediate post-tsunami reconstructed (donated house). And thirdly, what home changes were made following the initially reconstructed situation during follow-up years. The analysis focused on pre-tsunami times (before 2004), immediate/follow-up after the tsunami of 26 December 2004, and the post-tsunami years until the end of Aceh's rehabilitation and reconstruction process (2005-2010).

The primary data were collected through field observations and interviews. The observation focused on the physical transformation of urban settlements in post-disaster housing reconstruction project areas at domestic level (the layout, typology and morphology), the changes of family culture, lifestyles and habits of the affected community. The processes and approaches of housing reconstruction project were also analysed. The analysis on transformation of typology and morphology was focused at micro level (dwelling unit) and its context within neighbourhoods. The main object for analysis concentrated on individual houses. Other elements of urban settlements such as public buildings, schools, offices, markets, open spaces, worship buildings, and so on were also examined to enrich and support the analysis. The in-depth interviews were carried out to get a detailed overview on social-cultural changes of the community related to domestic activities and values. Secondary data relied on desk reviews based upon related theories and historical data on the domestic space and post-disaster housing reconstruction found in books, journals, articles, reports, images, maps, photographs and related materials. The main target group of the survey was the group of tsunami survivors who received donated houses. Secondary target groups were authorities, policy makers, local leaders, funding agencies, NGOs and research centres.

FINDINGS AND DISCUSSION

In Aceh's post-tsunami housing reconstruction particularly in the selected houses used, this study shows that 80% of the houses had been transformed into modified houses during 5 to 7 years after they were newly built. Modifications realised were of a major, moderate or minor nature. 55% of the houses had major modifications. 22% had moderate modifications and 5% only had minor modifications. 18% of the rebuilt houses had no modifications at all. In terms of the approach, most of the houses built in a top-down approach were considered to need and got major improvements or had rooms/spaces added by the owner. Houses built in a bottom-up approach only required minor additions or improvements. The space mostly modified was the kitchen. All of the modified houses did modify their kitchen. The family room, living room, bedrooms and the veranda also had a high

priority on the wish lists. As to basic human needs, toilets ranked high. Gender space segregation was an important consideration as well. Most of case studies also showed that the added living room in the back of the house was an area specially earmarked for women following Acehnese housing traditions. Apart from daily family contacts and activities, the living room was also used for celebrations and for cultural and religious ceremonies. As the kitchen was a typical women's place, without a kitchen or with an inadequate kitchen only, that affected gender segregation directly. Without a special space for women, the living room had to become a mixed space for men and women, another breakdown of tradition. The absence of a kitchen in the design of donated houses affected the family's daily food preparing and dining and the occasional cultural and religious events at home. It also impacted daily family cooking and dining practices. For example, joint family dining was gone following a kitchen split into two and old time preparing and cooking at home changed, into buying and eating fast food bought at restaurants and food stalls. Inadequate verandas also impacted social contact with neighbours, visitors and guests. Religious activities, Islamic prayers especially, were another family practice that was affected by inadequate domestic space changes after the tsunami. Insufficient spaces to conduct joint prayer made this old practice disappear. In the donated post-tsunami house the living room was too small and could not accommodate joint family praying.

Many types of donated houses had no family room. That directly impacted the function of the living room, after the tsunami family room activities had to move to the living room. Living room contacts with guests and visitors had to be moved to the veranda. When a living room was too small it could not accommodate the functions of the family room. Consequently some practices suffered. When donor agencies provided inadequate or too little space multifunctional rooms had to help the family out sometimes. This mostly applied to the living room. The living room was not only used for receiving guests, but also used as a family room got together and as a dining room where the family had diner jointly. Sometimes the living room also was a study room for the children, when the bedrooms were too small to accommodate children's studying or doing their homework. Mixed use not only applied to living rooms, kitchens also suffered when they had to use as a service area, a laundry and a dining room. When too many functions were done in the kitchen, there was not enough space left for having family meals there jointly. Then again, joint dining moved to the living room. Old time practices were kept up, but had to be practised in a different area.



Figure 1. Transformation of construction typology

Social practices not only changed because of changed house sizes and lay-outs, but also when a stilted typology house became a ground level type of house or vice versa. When house changed from a stilted construction into a ground floor house, daily social practices and cultural religious activities that were formerly carried out in the space underneath the stilted house, such as contacts with neighbours, Qur'an teaching and reciting and Islamic Holiday Celebrations, moved to the living room of the donated ground level house, making the living room into a multifunctional room. And the other way round, when the typology of the house was transformed from a landed ground level typology into a stilted one, the family got new extra space underneath the house that they did not have before the tsunami. This extra space was now used for some of their practices that could not be properly

accommodated on the second floor. Such as some family practices and contacts with neighbours, relatives and friends. The space underneath the house became sort of a veranda, a living room, a family room, a kitchen and a dining room.

Housing reconstruction probably accomplished one thing at least. And that is fairly quickly supplying enough roofs over tens of thousands of Acehnese heads. That sure is an accomplishment. To a large extent it is an accomplishment of a quantitative nature. However, this study concludes that the facilitating public authorities and the major donor agencies involved in Aceh's post-tsunami housing reconstruction have not unfortunately accomplished a totally successful mission. Important total needs and wants of tsunami survivors, including important socio-cultural needs and wants have not been fully accommodated or not adequately. The diversity of beneficiaries and their families had not been really considered in the housing concepts of donated houses. They did not really reflect the socio-cultural characteristics either and the differing needs and wants of the respective inhabitants. This does not help people and the communities they live in to preserve their true identity. In fact, local distinctiveness embodied in socio-cultural everyday life for hundreds of years was greatly endangered.

CONCLUSION

Communities everywhere in the world and local communities especially have characteristics that reflect and represent the identity of the very community. These characteristics are strongly related to local contexts and values and norms that mostly differ from characteristics elsewhere. These characteristics amongst others include people features in that community, the geographical location, socio-economic conditions, political and religious situation and development levels at large. Following a natural disaster quite a few of these characteristics run the risk of being threatened by rehabilitation and reconstruction interventions in post-disaster times, particularly when these interventions do not appropriately tie in with norms and values and contexts of the victimised people. This was proven in post-tsunami Aceh after 2004. This study proposes a new concept of post-disaster housing reconstruction attitudes and a new type of action practices based upon more complete real local down-to-earth contexts and concerns. Those should become part of the active resource of architects, planners, builders, agencies and special facilitators that matter in post-disaster problem solving situation. A concept that takes housing needs and wants of badly hit communities and of traumatised individual survivors really serious, by adding socio-cultural facts of life to physical (mostly technical) aspects such as location, typology, size and lay-out of housing concepts. The most satisfying building results prove to be the ones that regard and integrate culturally sensitive involvement of all parties involved in the process, a building processes which help and bring survivors back to as happy a normal life as before.

NOTES

- ¹ DTE, "Community-centred reconstruction needed", *Down to Earth*, No. 64. (2005): 5-10.
- ² BRR, *Housing, Roofing The Pillars of Hope*, Jakarta, The Executing Agency of Rehabilitation and Reconstruction for Aceh and Nias, 2009.
- ³ Chang, Yan, Wilkinson, Suzanne, et al, 'Resourcing challenges for post-disaster housing reconstruction: a comparative analysis', *Building Research & Information*, Vol. 38.3 (2010): 247-264.
- ⁴ Davidson, Colin H, Johnson, Cassidy, et al, "Truth and myths about community participation in post-disaster housing projects", *Habitat International*, Vol. 31 (2007): 100-115.
- ⁵ Barenstein, Jennifer Duyne and Iyengar, Sushma, "Towards owner-driven housing reconstruction in India", *Paper presented at the Conference on Development from Disaster Scaling up Owner-Driven Reconstruction*, IFRC, Practical Action and London South Bank University, London, 2009.
- ⁶ Lyons, Michal, 'Building Back Better: The Large-Scale Impact of Small-Scale Approaches to Reconstruction', *World Development*, Vol. 37, No. 2 (2009): 385-398.
- ⁷ Barenstein, Jennifer E. Duyne, *A home is more than a house, What architects involved in post-disaster reconstruction need to know about the links between housing, culture and livelihoods*, Unpublished paper, 1st Draft, 13 December 2009.
- ⁸ Davidson, Colin H, Johnson, Cassidy, et al, "Truth and myths about community participation in post-disaster housing projects", *Habitat International*, Vol. 31 (2007): 100-115.
- ⁹ Steinberg, Florian, "Housing reconstruction and rehabilitation in Aceh and Nias, Indonesia-Rebuilding Lives", *Habitat International*, Vol. 31 (2007): 150-166.
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- ¹¹ Barenstein, Jennifer Duyne, *A Comparative Analysis of Six Housing Reconstruction Approaches in Post-Earthquake Gujarat*, SUPSI, 2005.
- ¹² Ibid.
- ¹³ Ibid..
- ¹⁴ Steinberg, Florian, "Housing reconstruction and rehabilitation in Aceh and Nias, Indonesia-Rebuilding Lives", *Habitat International*, Vol. 31 (2007): 150-166.
- ¹⁵ Ibid.
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- ¹⁷ Barenstein, Jennifer Duyne, *A Comparative Analysis of Six Housing Reconstruction Approaches in Post-Earthquake Gujarat*, SUPSI, 2005.
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INDUSTRIALIZED BUILDING SYSTEM (IBS) IN THE CONTEXT OF ADAPTABLE ARCHITECTURE AND ITS CURRENT POTENTIAL

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INTRODUCTION

Industrialised Building System (IBS) is the term coined by the industry and government in Malaysia to represent the adoption of construction industrialisation and the use of prefabrication of components in building construction. Adaptability in general is the ability of individual modifications to suit new conditions. Adaptability is broadly interpreted with definitions referring to “change of use”, maximum “retention” of original structure and fabric, and extending “useful life”. Frequently terms like renovation, refurbishment, remodelling, reinstatement, retrofitting, rehabilitation, and recycling of buildings are incorporated. Adaptability can occur within use and across use; for example, an office can undergo adaptation and remain an office or it may change use to residential and be classed as across use adaptation. This paper examines analogies and dissimilarities between IBS and Adaptable Architecture looking at both their modular form and flexible function. The research stems from a multifaceted need of users in housing using IBS to transform, improve and adapt to their habitats.

ADAPTABILITY AND INDUSTRIALIZED BUILDING SYSTEM IN MALAYSIA

The adaptability of buildings is inextricably linked with the coordinating and preferred size of the component for residential buildings. The adaptable house must distinguish between two different decision-making levels i.e. support and infill to ensure that buildings can be optimally modified to meet changing for future use.¹ While IBS is a construction process that utilizes techniques, products, components or building systems which involved prefabricated components and on-site installation. The Construction Industry Development Board (CIDB) of Malaysia has defined IBS as “a construction technique in which components are manufactured in a controlled environment (on or off site), transported, positioned and assembled into a structure with minimal additional site works”.² The idea of using IBS in Malaysia was first mooted during the early sixties when the Minister of Housing and Local Government of Malaysia visited several European countries and evaluated their building systems performance. From the structural classification, there are five IBS main groups identified that have been used in Malaysia as follows:

- Pre-cast Concrete Framing, Panel and Box Systems
- Steel Formwork Systems
- Steel Framing Systems

- Prefabricated Timber Framing System
- Block Work System

Today, the use of IBS as a method of construction in Malaysia is evolving. Many private companies in Malaysia have teamed up with foreign expert from Australia, Netherlands, United State and Japan to offer pre-cast solution to their project.³ In addition, many local manufacturers have established themselves in the market. Precast, steel frame and other IBS were used as hybrid construction to build national landmark such as Bukit Jalil Sport Complex, Lightweight Railway Train (LRT) and Petronas Twin Tower. It was reported that at least 21 of various manufacturers and suppliers of IBS are actively promoting their system in Malaysia.⁴

Evidently that most of locally developed products are based on traditional materials such as reinforced concrete and the most innovative materials are based on imported technology. There is no mandatory requirement on any certification or accreditation of components, companies or installers in place. Whilst, there is no empirical data, there is some anecdotal evidence suggests that there has been sporadic dumping of sub-standard foreign products in Malaysia.⁵ A mechanism to ensure IBS products marked to an acceptable standard must be introduced in the manufacturing process. Testing of components, verify and certify them will limit only safe and acceptable IBS panels are erected and thus CIDB will lead this roles.

When design demands in artistic and technical aspects are increasing towards industrialization,⁶ the combination of building standards together with functional and aesthetic designs could utilize the full advantage of IBS without creating lifeless buildings and environment.⁷ Aesthetic considerations became an inseparable part of building components without putting its primary function aside.⁸ On the other hand, the MS 1064 Part 10 as the standard of reinforcement concrete components for Modular Coordination (MC) played an important role for architectural design by utilizing precast concrete. In addition, the feasibility of joints and connections can be improved with the Concept VII of Joints and Tolerance in Modular Design Guide.⁹ Therefore, the possibility of the application concept of adaptability for home design could be realized.¹⁰

A basic interpretation of adaptability is the refitting of a physical environment as the result of a new circumstance. Adaptability for homes is defined as “providing occupants with forms and means that facilitate a fit between their space needs and the constraints of their homes either before or after occupancy”.¹¹ However, homes in Malaysia have followed another path. It has always been conceived as something necessarily static and safe. What happened to the “machine à habiter” that Le Corbusier proposed at the beginning of the 20th century? However, the problems arose from ‘social engineering’ resulting in ill-matched homes and users. Therefore, the organized and accessible standard such as MS 1064 as a design guideline to MC is crucial in promoting IBS as well as adaptability towards Open Building System in Malaysia. Thus, the adaptability should be reconfigured in a relatively straightforward manner at the designing stage as occupant living requirements change over time.

The potential for change in a house during its use is an important factor in the design of housing environment. A critical mistake was ill-adapted or mismatches to change during use and become outdated, because they cannot meet either new standards or new expectations of the users. Adaptable housing appears to be a vital response to rapid change, especially in terms of user demand for more space, as a result of family growth. As a building that can easily adapt to change, the creation of a more sustainable environment can be augmented by adaptable design strategies that produce a level of building flexibility, and which allow for a variety of changes to be accommodated. However, developing a better understanding of how buildings change over time is another issue argued by architects concerned with extending the life of buildings. The lengthening of the life of a house is

believed to be useful to reduce the consumption of natural resources and the economic burden of housing expenses for families. Therefore, adaptability is inevitable to the future housing of Malaysia.

ARCHITECTURAL TRANSFORMATION

There are many ways to classify such architectural transformations. Most typically found classifications are segregated based on function. Another way of classifying adaptive buildings is by the technical processes in which their transformation is achieved. In order to formulate classification more adequate for the scope of research to follow, examples of adaptive architecture have been categorised based on the performance of the process of their adaptation. In this way, three (3) distinguishable categories of adaptation for housing using IBS have been defined, namely; space to human needs, anticipated changes and flexibility/adjustable. These groups are not mutually exclusive and approaches they represent can be in many ways combined.

Adaptation of Space to Human Needs

Human needs differ among individuals and change over time. Human needs are specially used as an indicator of change in an installation or environment that a person can enforce.¹² These changes can be cyclical, following daily, weekly, monthly, yearly, and lifetime cycles, but are also highly dependent on individual's non-recurring biological conditions.

Dynamic architecture adapt to the varying needs of the users, to changing environmental circumstances or to the designers desires and imaginations.¹³ Interpretation of human needs is also strongly affected by individual's "beliefs" which can be defined as comprising of cultural influences and revising knowledge based on past experiences. Because of this, beliefs are highly subjective and can greatly vary not only among cultural groups, but even among closely related individuals. There is a mutual interdependence between human needs and beliefs. Strong beliefs may lead to suppression or stimulation of specific needs. Together, needs and beliefs are the main drivers of human behaviour and govern ways of human's responses to external factors.

However, in which the ultimate flexible interior may be one that is completely amorphous and transitional, there are several technicalities involved when defining aspects of adaptation.¹⁴ Thus adaptation and flexibility have played an important role in housing using IBS. A high Structural Flexibility will increase the building's performance by allowing for possible future adoptions of the building layers, for example caused by changing user requirements.¹⁵

Adaptation to Anticipated Changes

Taking into account the possibility of patterns of inhabitant activities becoming altered in effect of a spatial intervention, those adaptations can also be performed pro-actively in response to an anticipated demand. Although certain functionalities may not be directly needed by their potential users, a provision of those functionalities can change generate new needs and patterns of behaviour and activity. Architecture can operate similarly as the definition of adaptability which are of relevance to architectural system is the capability of exchange with their environment.^{16 17}

Many IBS housings are created by developer firms in anticipation of a demand for specific functions. Dekker stated that interactivity is specially used as an indicator of change in an installation or environment that a person can enforce, taking into account the form and function implications.¹⁸ Similarly, affordable suburban housing may entice a family used to an urban lifestyle to move to a suburban area and change their entire activity pattern accordingly. This is referring to Friedman who defined adaptability for homes as "providing occupants with forms and means that facilitate a fit between their space needs and the constraints of their homes either before or after occupancy".¹⁹

However, Douglas defined adaptation as: “any work to a building over and above maintenance to change its capacity, function or performance” in other words, “any intervention to adjust, reuse, or upgrade a building to suit new conditions or requirements” as anticipated changes.²⁰

Adaptation by Flexibility/Adjustable

Whenever ‘flexible architecture’ is mentioned, to most it will conjure images of moveable partitions and fold-out furniture. These examples symbolize what Jeremy Till defines as hard and soft flexibility, respectively.²¹ The distinction between these two terms is simple, but crucial. Hard flexibility describes a building with physically moving parts, designed to be changed at will by the occupant to suit their needs. Soft flexibility, on the other hand, is achieved by creating a versatile space with the ability to house many diverse activities over its lifetime. Hard flexibility is the more popular of the two – ‘there is a direct, almost simplistic, conviction that flexibility in architecture is best delivered through actual physical change’ – but arguably soft flexibility provides opportunity for much greater longevity.

The best example residential building allow flexibility not only for user-customized dwelling interiors, but also selection of customizable cladding and infill panels is the NEXT21 (see Figure 1) building in Osaka, Japan. Each apartment is showing a different layout, governed by the specific needs of its occupants. Many layouts have been changed completely since the initial construction was completed, while maintaining 90% of the original components. A sophisticated series of grids for structural components (3,600 mm) were used in NEXT21.²² The exterior façade components are composed of different glazing units completed by colourful stainless steel interchangeable horizontal laths which allow adaptation to the interior layout of the units; the panels can be dismantled from the inside without exterior scaffolding.²³

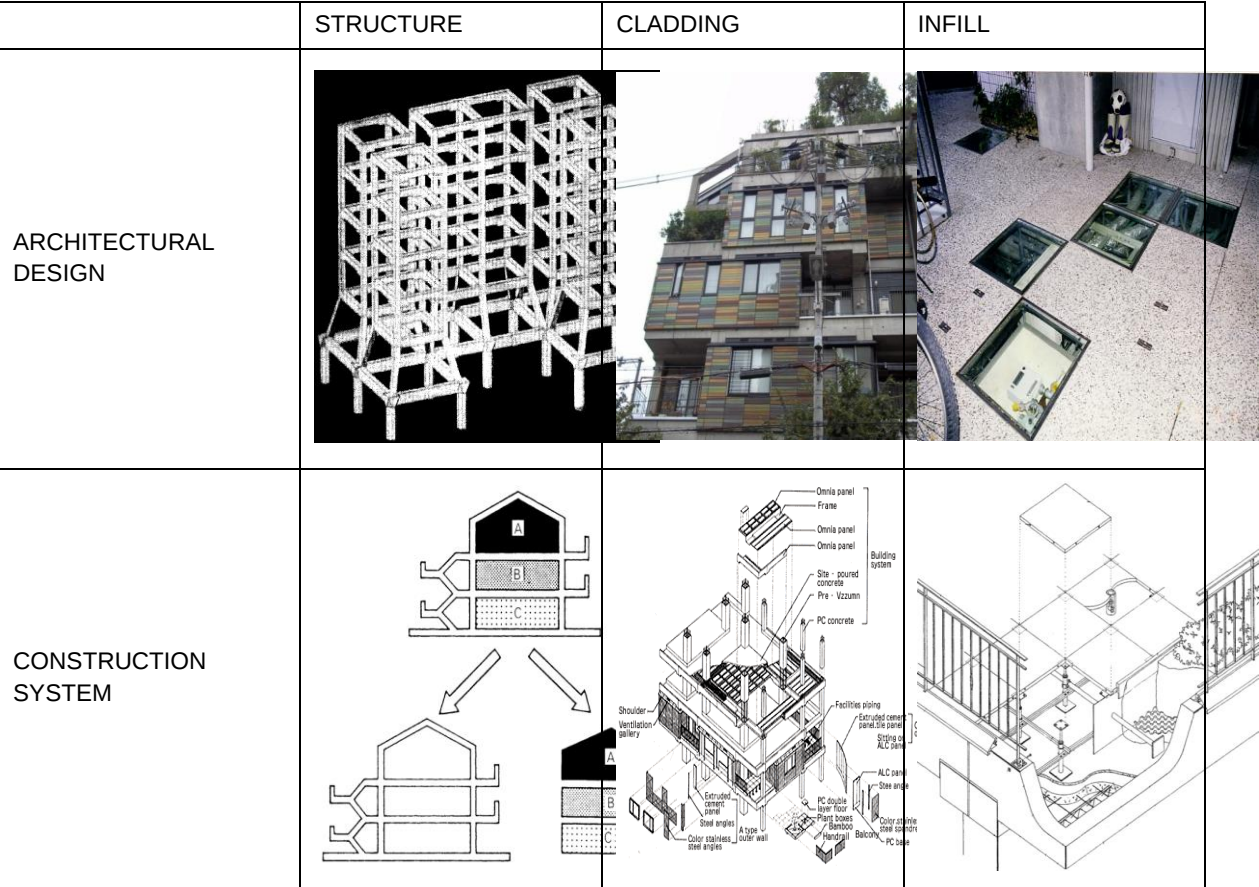


Figure 1. Structural Design and Construction System at NEXT21, Osaka, Japan.

DISCUSSION.

This section will discuss further the explicit formulation in terms of design and users’ satisfaction for better process of adaptable design for housing using IBS in Malaysia. In order to provide strategies for such adaptable design and further advance the state-of-the-art in techniques and methods for IBS housing, form and function was identified as technological difficulties in the concept of adaptability and flexibility. These difficulties may be classified as the design of the structural method, and the design of the functional requirements of the space.

Flexibility of Floor Plan

Considering the factor of the structure, the more the structure avoids any obstacle to the space, the more it allows for freedom and flexibility. It is obvious that the long span skeleton structure provides for maximum interior freedom. The desirable method, as for adaptable housing of NEXT21 which gives a great amount of freedom, is the skeleton structure. Since the building must be divided into different sized housing units, the combination of skeleton structure with cross bearing walls may achieve the same advantages as the skeleton structure, with high quality of acoustic insulation between the units. As a two-stage housing, the design of the units began after the design of the building frame and continued while the building frame was being constructed. Dwellings and their mechanical systems were designed prior to design of the base building’s mechanical system. Subsequently, mechanical services at all levels were installed by a single contractor. The participation of the occupants was instrumental throughout all design decision-making processes.

Functional Requirements of the Panel

The main difference between traditional architectural and adaptable architecture was attribution of flexibility to designed spaces. Where traditionally the functional spatial organisation would be fixed, here the spaces was flexible, both in terms of size of space, its relations to other spaces, as well the type of functional programme attached to it. Spaces would consequently have simple behaviours attached to users, allowing adaptation depending on changing local conditions. Aggregation of adaptability between them requires better structuring in order to deliver IBS housing. Thus, the adaptability is related to transparency, closed or open, and stratification of design system.

Open Building System

In order to permit Open Building System, developers needed to first arrive at the open concept of the IBS housing. Such concept would include identifications of architectural panel, relations between them, and their overall purpose of adaptability. Different manufacturer of panel clearly saw different systems and they did not share the same concept. The common discrepancy between building system lying at attribution of stakeholders. Users would typically stakeholder to the entire housing, architects to its conceptually identified building components, and engineers to specific technical apparatuses. Predefining adaptability in a top-down fashion at the outset of architectural design proved beneficial only in a limited way. It faced resistance from designers seeing it as a constraint or hindrance to their creativity, from engineers as not corresponding to technical solutions, and was difficult to convey to persons not directly involved in the design process. Consequently, the aim of the panel is to provide a structure in such a way that culturally and professionally valid programming of different users could be integrated. A key for implementing such Open Building System lies in the understanding of attributed party, tied to definition of adaptability.

Stratification of Design System

The complexity of housing using IBS means that it is impossible to represent those systems with a single design. Any initial design concepts' simplistic representation became gradually "stratified" into multiple representations showing different aspects of the concept. Such design would be complementary to each-other and only together form a comprehensive description of a designed system. Similarly, deployed systems would consist of a number of supplementary and/or overlapping sub-systems corresponding to some of the complementary design. Consequently, the Architectural Panel is required to support coexistence of heterogeneous design and systems and their integration.

Modularity for Adaptable Architecture

The various types of IBS that can be customized, can dynamically transform and can be assembled into larger architectural structures. Eventually, also various methods and design techniques discussed in respect to development of adaptability, can be treated as modules, that can be combined in different ways to structure a process of housing using IBS. The process of the housing to a high extent involves transformation of such generic modules to fit the highly specific conditions of the project, defined by its context and constraints. Modules are thus primarily various sorts of system such as panel, that share some of their characteristics with other components. At the same time, modules employed in housing using IBS can also be located outside of the systems, as is the case with reusable instruments or design techniques. The application of Adaptable Architecture of modules is illustrate in Figure 2 as follows:

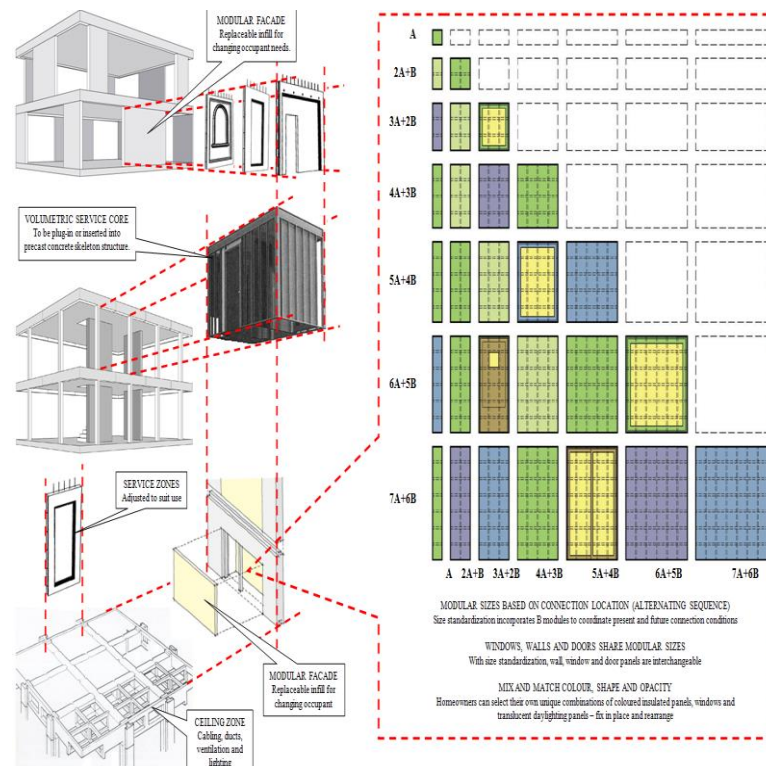


Figure 2. Adaptable Architecture for Housing Using IBS

Availability of technology was a strongly constraining factor for the housing. Throughout the years in which housing was developed, global technological developments such as development of new IBS and adaptable system, have had a strong influence on housing projects. In retrospect, technology can be seen as a critical enabler of adaptable housing, but reliability on specific existing technology or exclusion of a new technology can be a factor largely constraining the development and evolution of Adaptable Architecture. The role of technology in adaptability is unquestionably important. However, specific technological solutions fluctuate across housing projects. In correlation with the often constraining role of technology on some design aspects, it can be concluded that Adaptable Architecture needs to be formulated independently of any possible technological solutions. However it needs to enable and facilitate inclusion of technology and its consequences on adaptability.

CONCLUSION

The adaptability has a long history from traditional construction to more recent government led initiatives to promote IBS in Malaysia. Historically, the adaptable attributes found in traditional designs were primarily driven as methods to accommodate the diversity of everyday life at the scale of the component as opposed to increasing the longevity of the housing. Whilst historical efforts in Europe and Japan have embedded an understanding in architectural and construction of important concepts around adaptability, implementation has been a slow journey. Research into adaptability requires the effective communication between professionals and with clients and users. Expanding the adaptability towards Open Building System will link the manufacturers to a multitude of contextual dimensions for the success of IBS housing using architectural panel.

As a conclusion, to make exchangeability and (multiple) reuse of building components achievable in Malaysia, the architectural panel need to reconfigure. The design should focus on standardisation of form and dimension of the basic elements of construction systems. The use of building components composed by dry construction and assembling should be buildable and practicable. Thus, a new

adaptable innovative direction for housing using IBS of architectural panel should be developed further. This can allow architects and engineers to understand and meet design standard and user's needs.

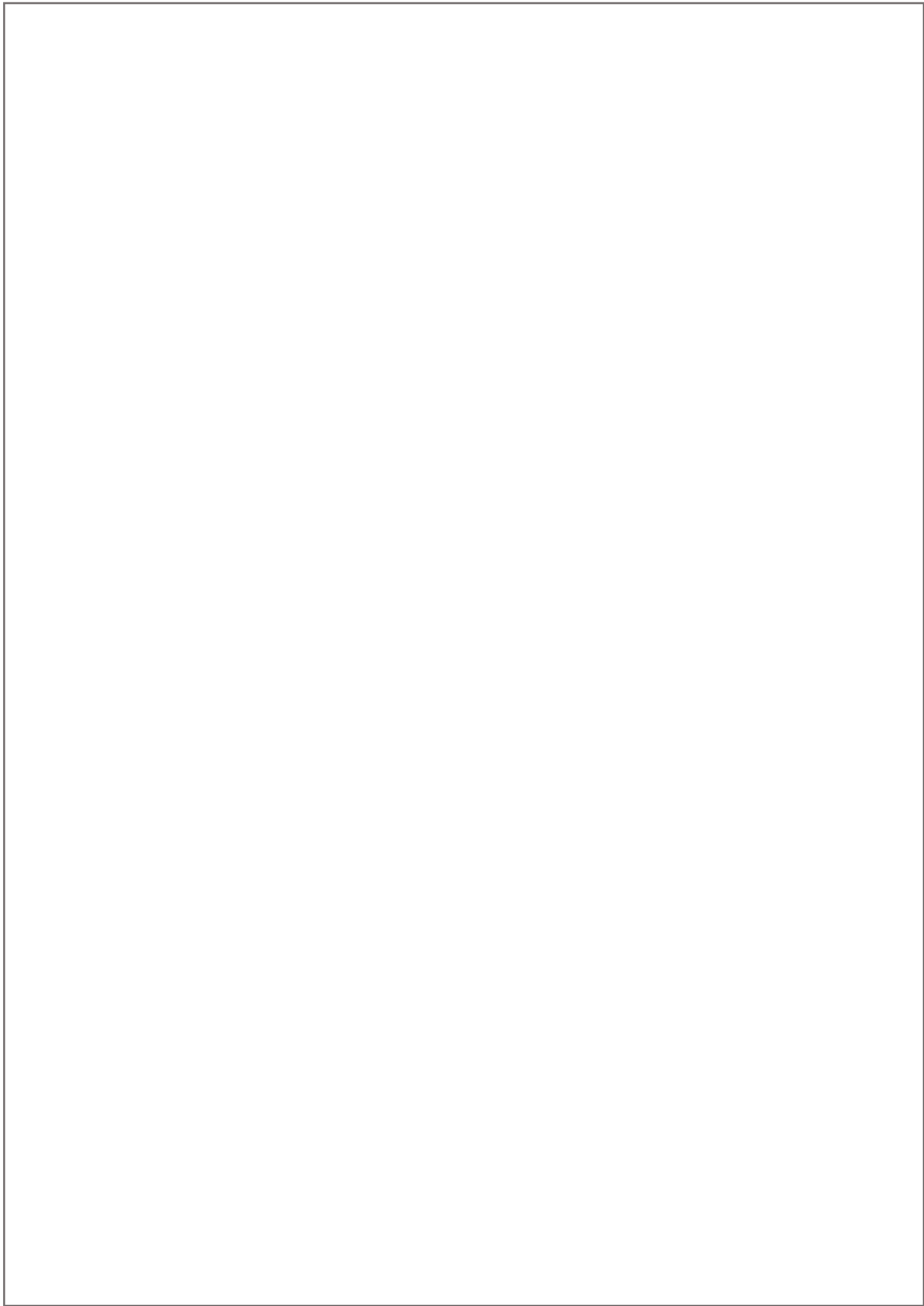
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