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Dimensions of Liveability: A Tool for Sustainable Cities

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INTRODUCTION

In Australian urban centres, as in many western countries, urban consolidation and compact urban form are viewed as key strategies to manage urban growth and contain urban sprawl (1)(2). Several researchers have explored the impacts of compact urban form and note benefits relating to efficient use of land, reduced reliance on automobiles and enhanced social interaction (3)(4). However, the concept of high density living, a key feature of the compact city, has also received criticism in relation to potential impacts on people's quality of life such as noise, limited space and perceptions of overcrowding (5) (6).

A policy-driven shift from traditional low density suburbia to higher urban densities represents a significant redirection for Australia's urban environment. Previous studies have indicated that community attitudes towards high density living in Australia have been neither positive nor supportive of this concept (7), concluding that the transition to high density living also challenges the existing entrenched suburban culture of Australia, where residents traditionally seek homes with backyards, rooms and features to meet their lifestyles (8). Lower-density environments based on almost 'rural' values remain the 'ideal' residential choice for many people. Nevertheless, as transport costs rise (including public transport fares, and the cost of fuel for private vehicles) more people rethink their choice of location from far-flung outer suburbs and seek locations closer to transport routes, sparking a crisis of housing availability and affordability, (9) and a wave of low quality speculative high-density development (10).

Given the current state of urgency surrounding the management of future urban growth and counteracting the negatives of urban sprawl (particularly in Australia's fastest growing urban region, South East Queensland) there is a need for higher density living to be embraced by the community as a viable alternative to suburbia. In order to achieve this cultural change within Australian communities attuned to the quarter acre block (10) the actual and perceived social, environmental and economic impacts of high density living need to be openly identified and managed.

Understanding the factors that influence residents' perceptions of liveability in high-density locations can assist with the planning, management and design of high-density residential buildings and neighbourhoods to create supportive and sustainable cities.

To that end, Queensland University of Technology (QUT) and Port of Brisbane Northshore Development Group undertook a four-year project (2006-2009) funded by the Australian Research Council, to investigate the environmental, social, and economic impacts experienced by residents living in high-density urban areas in sub-tropical Brisbane, Australia, in order to better understand the attributes of attractive higher-density neighbourhoods that offer people a high quality of life.

The Brisbane/South East Queensland (SEQ) context is important on a more global scale because of its location in a fully-humid climate which is comparable to similar sub-tropical regions around the globe. Cities in these equable climate regions are likely to experience increased migration toward them as climate change affects liveability in places which experience more extreme climatic conditions. SEQ is

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already experiencing increasing pressure on its capacity to accommodate the growing population, whilst achieving sustainable growth outcomes (1).

In a unique planning approach, governments at both the local and State level in SEQ have added another dimension to sustainable urban planning by acknowledging the need to actively engage the built environment with the climate. Brisbane City Council's vision for *Living in Brisbane 2026* includes the theme 'city designed for subtropical living – where you can see the stars at night, and hear the birds in the day' (12). Similarly the *SEQ Regional Plan 2009-2031* (1) explicitly envisions a 'well-designed subtropical region'. Clearly, the role that a positive response to climate plays in a location's character and identity and in achieving sustainable urban form is recognised.

In principle, high density buildings and precincts within sub-tropical environments can be designed and adapted to more effectively respond to the climate, taking advantage of natural ventilation and daylighting, thereby reducing pressure on natural resources through reduced demand for energy for heating or cooling, and lighting. Yet, the converse seems to apply with much contemporary urban development ignoring or negating the positive effects of the natural climate and forcing residents to rely on air-conditioning for thermal and acoustic comfort, and leading to public perceptions of low amenity of the buildings themselves and the surrounding neighbourhoods.

This research aimed to explore the actual and perceived social, environmental and economic impacts experienced by residents in higher density environments within a sub-tropical region; identify any discrepancies between actual and perceived impacts; and develop practical planning and design guidelines to respond to the key issues associated with high density living, including perceptions of environmental issues and how these relate to people's living environments and residential choices.

This paper describes some of the findings of the research and the subsequent development into a tool to aid a variety of stakeholders to understand the relationships between perceptions of density and building design; and to inform high density planning and building design to mitigate negative impacts, enhance positive impacts and integrate principles of sub-tropical design.

CONCEPTS OF LIVEABILITY

While there is no standardised definition of liveability (13), the condition has been broadly defined as "the well-being of a community and represents the characteristics that make a place where people want to live now and in the future" (14). Research has linked the concept of liveability to a range of factors such as quality of life, health, sense of safety, access to services, cost of living, comfortable living standards, mobility and transport, air quality and social participation (7) (15).

Researchers studying high-density developments note that objectives regarding a balanced and healthy social mix, housing affordability and accommodation choice, service provision and the integration of work, home and services are often difficult to achieve (16) (17). Regarding social mix, researchers found that while residents are 'sociable' this does not always lead to 'social-mix' or the generation of 'community'. Different groupings of residents will interact within their own networks, both internal and external to the development. This is exacerbated by issues of housing affordability, tenure mix and higher-density living. Tunstall (18) indicated that one of the key failures is that there is a clear distinction between affordable and general housing, particularly from the outside looking in. This has the potential to create barriers between residents within the development and can lead to the attachment of social stigmas by residents outside the development.

Inadequate public transport and community services are often a frequent issue, impacting both on residents' mobility and access to services, as well as to negative impacts on the 'social-mix' as lack of services decreased potential venues for interaction. In terms of proximity to employment and services, general conclusions from previous research are that residents will continue to access services and

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networks outside of the development boundaries. The research suggests again, that even if facilities are provided for residents within the development the links and networks that the residents may have been part of before they relocated will still remain significant. Jarvis (19) found little evidence of 'localised living in practice'.

Residential satisfaction studies have indicated that liveability is also linked to specific features of the home and building such as dwelling age, size, structure and aesthetic feelings (7) (14), as well as features of the broader neighbourhood including access to green open spaces, mature vegetation, facilities, noise, pollution, safety risks, neighbourhood reputation and social features (14) (15).

Design and provision of communal spaces within the building also affects sociality. Foth and Sanders (21) highlight that there are 'unfulfilled promises and unmet challenges' in the design and architecture of physical public space to support the communication and interaction needs of urban dweller, and suggest three areas of potential engagement: serendipitous encounters between residents; sociocultural animation of neighbourhoods; and digital (virtual) augmentation of public space.

Relationship between sustainability and liveability

The relationship between density and sustainable urban form is based on the twin concepts that high density and integrated land use not only conserves resources, but also provides the critical mass of population needed for viable urban services. Research has indicated that cities will not be truly sustainable unless they are considered as high-quality places where people want to live (22).

Until now, studies have analysed the association between residential density and liveability. These studies have highlighted how liveability in high-density locations is related to factors other than residential density, which may not be unique to dense locations, such as environmental quality, traffic and transport, presence of air and noise pollution, degree of social cohesion and sense of community involvement, availability of services and housing options (14) (15).

The physical design of a location, in particular, provision of housing options, services and amenities can either foster or inhibit the way residents interact, and can subsequently impact on community connectedness. Srinivasan, O'Fallon and Dearry (23) conclude that 'the physical and social construct of the urban environment promotes isolation', and results in disconnected communities. Most modern car-dependent suburbs are not places designed to encourage social interaction (24). Reliance on the car to travel short distances in lower density areas also discourages "lively" streets, and reduces the opportunities pedestrians have to spontaneously interact face to face in public open spaces. Reduced interactions have a negative effect on social capital, decreasing social bonding and people's sense of belonging to their neighbourhood (3).

One or two person households emit 2 or 3 times more greenhouse gas per person than households with four or more residents. (25). Other studies (26) (27) have found that total per capita emissions for households living in apartments on average exceed those of detached suburban households. The reasons for this are because of apartments' lower occupancy rates, and higher operational and embodied energy consumption. In both new and existing dwellings in Queensland, energy consumed for air-conditioning has risen dramatically in recent years as housing poorly designed to take advantage of the climate has coincided with our affluent society's changing attitudes to thermal comfort. These factors, in combination with sustained population growth have exacerbated a surge in household power use over the past decade, and particularly affect the peak loads for power generation by coal-fired power stations.

RESEARCH DESIGN

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In this study 'high-density' is defined as 30 or more dwellings per hectare. Though not necessarily regarded as high density in other contexts, this includes flats, units, apartments, terraces, and villas. Typical suburban densities in Australia are around 8-10 dwellings per hectare.

Six inner-city Brisbane neighbourhoods, Highgate Hill/West End; South Brisbane; Teneriffe/New Farm; Kangaroo Point; Fortitude Valley; and Hamilton were selected as case study sites on the basis that inner urban areas are typically characterised by residential densities that are greater than conventional suburbs; diversity of land use; a supportive structure for walking and public transport; mixed building types and ages, accommodating diverse tenancies; a culturally diverse population; and an engaged community (28). These neighbourhoods have experienced considerable urban renewal of post-industrial sites over the past decade, but are also the location of many detached houses described as 'character' housing as well as long-established apartment buildings and many newer types of multiple-residential typologies.

All multiple-unit developments within each neighbourhood were identified and using a proportionate sampling technique, 2311 dwelling units were randomly selected and residents of these units received a questionnaire by post. A total of 636 questionnaires were returned, providing a 28% response rate. The 'Living in the City' Survey was a comprehensive social capital questionnaire in seven parts including standard demographic data using Australian Bureau of Statistics categories (29).

Participants answered approximately 140 open and closed questions about the positive and negative social, environmental and economic impacts they experience as residents of inner-urban high density dwellings. The 'Living in the City' questionnaire was developed to assess the following key areas: satisfaction with current dwelling, design features and climate control; satisfaction with neighbourhood features and neighbours; impacts from noise, odours, pollution and smoking; quality of life and social capital; recycling, water and energy use; transport usage, journeys to work and travel modes.

In order to gain a deeper perspective on their experiences of life in an inner-urban high density environment, semi-structured qualitative interviews were conducted with 24 participants from all six precincts, representing a mix of age, gender, income, marital status and dwelling type. Questions covered their likes and dislikes of their current dwelling and neighbourhood; social contacts within the dwelling; opinions on sustainability; transport practices; design perceptions; and general opinions about high-density living.

Information on the actual quality of urban spaces of three selected case-study locations: South Brisbane, Highgate Hill and Hamilton was gathered using Carmona's attributes of successful places (comfort and image; access and linkages; uses and activity; and sociability (30)) and observation techniques developed by Gehl (31) to examine how urban spaces are used. Pedestrian counts and surveys of stationary activities (behavioural mapping) provided information on where people walk and stay either as part of their daily activities or for recreational purposes. Information on where and how people sit, stand or carry out other stationary activities in public places acts as a good indicator of the urban quality of those spaces. Public space was also mapped with drawings and photographs of the area, with a focus on the permanent, physical components of the area (for example extent of tree canopy, seating, lighting, ground floor facades) to provide insights into how urban design influences the public use of these areas.

Additional environmental data was gathered to get a more complete picture of economic and environmental conditions in the case study locations. Sensors monitored ambient air temperatures, and wind speeds experienced at selected developments and compared with BOM weather station data. Acoustic monitors recorded levels and sources of external noise. Data on traffic volume on streets and roads in the precincts was obtained from Brisbane City Council and the Queensland Department of Main Roads. Economic referencing was obtained regarding median house prices and rental levels. The cost of

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local goods and services (for example, grocery prices at local shopping centre) were compared to a national data base.

OVERVIEW OF FINDINGS

In terms of social mix, household size ranged from one to six people, with most households consisting of two people (54%) or one person (31%). Very few surveyed households included children under 18 years. 56% were owner-occupiers and 44% renters. Overall, the respondents were well-educated, with high average household income. Five key topic areas emerged at the intersection of social, environmental and economic concerns or objectives; climate responsiveness of the dwelling; management of noise and other pollution; community and sociality; position and services; transportation and mobility.

Climate responsive design – individual dwelling and host building

Survey and interview data indicate that access to breezes and natural light are highly valued by residents of higher-density dwellings, and these qualities are acknowledged by them as improving their quality of life and contributing to sustainability. When surveyed about their level of thermal comfort within their dwellings, residents indicated a preference for natural air flow (83%) rather than air-conditioning, as their first choice. Interviewees noted that the benefits of cross-ventilation were not available where apartments were accessed from corridors. Respondents' appreciation for climatic design extended to knowledge of the effect of solar orientation on their access to breezes and sun light, and a desire to have improved control over their dwelling's degree of exposure to the sun's heat and light. These findings align with research on thermal comfort that has shown that occupants of naturally ventilated buildings are comfortable in temperatures that closely reflect the outdoor climate, and that feelings of well-being are related to occupant control over operable Windows (32).

Balconies and other outdoor living areas were considered to be important by 87% of survey respondents. Many interviewees identified the balcony and its association with open space, daylight and views, as their favourite design feature of their dwellings. Over half of survey respondents believed it was very important to conserve water and energy. Residents operated within the design constraints of their dwelling, but believed if sustainability features were built into the dwelling, this would help them reduce their ecological footprint. Respondents expressed their dissatisfaction with a lack of opportunity to harvest rainwater or recycle grey water or to recycle waste. Lack of clothes lines to air dry washing forcing people to use clothes dryers, was also a recurring theme.

Noise and other pollution

In terms of pollution in their neighbourhood, the respondents indicated that, on average, they were quite aware of smog/air pollution and noise due to traffic, and dust in the air. They were also frequently aware of intrusive noise from air conditioner condensers and the unpleasant smell of cigarette smoke.

The mean overall response to the extent of noise heard from a range of sources suggests sounds from motorcycles or cars are the most commonly heard noises. In subsequent interviews, residents identified noise from other residents, construction sites, and noise from nearby non-high-density residences or activities as being prevalent, though not all of these were seen as intolerable. As found in the survey results (Table 1), interviewees suggested noise from other people in the complex, or from neighbours in other types of dwellings, may be more annoying than traffic noise. Most expressed their preference of not having to hear, register or engage with sounds made by other residents in the building.

-insert Table 1-

Table 1. Extent to which noise from a range of sources annoys residents of high density buildings

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However, intermittent loud noise from traffic and emergency services vehicles is also a problem at night. The following interview transcript reveals the conundrum experienced by residents between desire to keep windows open for comfort and climate control, and dealing with the amenity issues of noise and air quality.

'If it wasn't for the traffic noise [I would open the windows at night]. But I mean this sort of noise ... is worse at night because during the day it's a steady noise at night you'll get a motorbike roar past, an ambulance go by with the sirens going or that sort of thing, heavy trucks. If anything it's worse at night than during the day. There might be less vehicles but it's a different type of noise' (Int #16).

Managing noise is crucial for enhancing the liveability of a dwelling. Minimising noise impacts can have the liveability benefits including: improved comfort levels and health (for example, reduced annoyance and sleep disturbances); better relationships between neighbours; reduced distractions and improved productivity; and, greater resident satisfaction with dwelling and surrounding neighbourhood.

Community/Sociality

A clear finding from the research is that privacy is valued and clear delineation between private, communal and public areas are sought. While some residents liked 'chance meetings' in corridors and lift wells, most preferred to keep to themselves and valued privacy in these shared spaces. Many interviewees indicated they were happy to maintain a simple 'hello' relationship with their neighbours yet did not want to feel pressure or obligation to talk to neighbours. Some even avoided social contact completely if possible.

According to the survey, communal open spaces within high-density developments were generally well-made and attractive but due to spatial design, likely to be dominated by a few residents most of the time. For example, two thirds of the surveyed residents had a swimming pool in their complex, yet only 10% of residents used the pool or gym on a daily basis, while 40% used the pool infrequently, or preferred to use these facilities in privacy at times when it was unlikely others would be there. 31% stated they never used the common facilities, some preferring to use public pools or gyms. As qualitative interviews revealed, generally, residents did not like the idea of sharing communal spaces at the same time as other residents, suggesting that living in close proximity in high density housing may, for some people at least, heighten the need for privacy.

However, interview data further contextualises the concept of 'community', indicating that, while residents may not talk to their immediate neighbours, they enjoy the sense of community that their broader neighbourhood offers. This is created by access to local goods and services and a familiarity with the area and people working or living in the area.

It's the area. It's the fact that, two minutes and I've got twenty odd restaurants to go to. I can see work from here. I get the bus to work. I can walk to get my haircut, see my doctor, walk, walk, walk. And it's reminiscent of the environment I was brought up in overseas, where you just walked a few minutes and there was ... all that you needed, all the shops and so on. But it's community oriented so you knew the people as you went and you met people in the shops and the shopkeepers knew you. Whereas you go to supermarkets they don't [know you] (Int #3).

In terms of the sense of belonging to the wider community, many respondents defined their neighbourhood in terms of walkable access to services, recreation and work, rather than in terms of a specific urban boundary. The composition of both physical and human elements was sometimes referred to as well. Survey respondents were less likely to have neighbourhood connections or participate in the community, yet knowing shopkeepers, cafe or restaurant staff, market stall holders and seeing familiar faces were important to them. Table 2 below indicates that two thirds of respondents had not visited a neighbour in the past week (66%) and only approximately one in five

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respondents (19%) would run into friends and acquaintances when they went shopping in their local area. Almost half had not attended a local community event (such as a church fete, school concert, craft exhibition) in the past six months. Approximately two thirds were not active members of a local organisation or club.

–insert Table 2–

Table 2. Neighbourhood connections and community participation

Local parklands were identified as an important feature within the neighbourhood. One resident who had a small child explained how she would prefer accessing the local park rather than a shared area within her complex. Though few households in the survey group had children, the quote below indicates a positive experience of raising a child in an inner-urban high-density location.

I: You said before there were a few kids in the building. Is there a common area that the kids [can] play in?

P: No.

I: Do you think that's needed?

P: No, I probably wouldn't use it anyway. We'd probably just go to the park. New Farm Park is just down the road. It's a nice walk. We walk down there often anyway.

I: Do you think this a good place to bring up kids?

P: Yeah I do. People say 'what are you going to do, you'll have to get a yard and a garden' and I say 'No' – that's the last thing I want. I mean it's one more hazard to have to watch everything. I'd rather take him to the park every day where he can play and it'd be a bigger area and I don't have to maintain it and look after it. You know he'll meet other people there. Many European kids have been brought up in apartments for years. There's nothing wrong with them.

Position, walkability and rideability

Walkability has been defined as “the extent to which the built environment supports and encourages walking by providing for pedestrian comfort and safety, connecting people with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys throughout the network” [p.248, 5]. Therefore, issues such as comfort, safety and time-efficiency have to be taken into account when designing for accessible and sustainable mobility.

A key enabler encouraging people to choose inner-urban high density living, which emerged from the survey and interviews is the lifestyle advantage of living in a locality where residents can readily walk or ride to amenities, work and recreational facilities. Many respondents (94%) indicated that their neighbourhood is close to the CBD, with convenient access to services, recreation and life's daily needs a key element of decision to seek residence in an inner urban location (Table 3). Meanwhile, interview data, verified by site mapping, also revealed that walk-ability and ride-ability may be unpleasant and hazardous due to a variety of factors including lack of shade and shelter, frequent heavy traffic, degraded and narrow footpaths, and lack of dedicated bike lanes. Interviews also brought to light that even when services were offered within the local area, some residents chose to access more distant locations, particularly for shopping trips. Many residents expressed a preference for driving to shopping centres, describing them as 'one-stop-shops' where they could do all their shopping and access more affordable and a wider range of goods.

-insert Table 3 -

Table 3. Factors that affected the decision to live in location.

Mobility and Transportation

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Though residents may walk beyond a 10 minute walk to meet their day to day needs, 90% of the sample reported owning at least one car. The majority of participants walk to recreational facilities, restaurants and community services. Cars were generally used for typical non-work trips such as visiting friends or relatives and shopping. Despite 80% of survey respondents stating that public transport was available and convenient, Table 4 shows that 41% of respondents who are workers choose to drive their cars to work each day, and are the sole occupant of the vehicle. Those who choose or rely on public transport also point out some of the pitfalls which make it less attractive, such as few services after peak hour, and overcrowded services during peak hour.

I use public transport for certain trips (e.g. to city) or certain times of day (e.g. daylight). Usually if it's seven o'clock or later, I'll catch a cab because I've found that after 6:30pm the buses are too unreliable and adding twenty minutes standing at a bus stop waiting for a bus is just, it just adds that extra time and that extra element of exhaustion (Int #5).

And,

I'm actually quite lucky that if I want to choose, if I want to take a bus, then there's a bus virtually every ten minutes during the main peak hour. But the trouble is I've actually stood there and watched two buses go past (without picking me up). Where I would expect to get a bus in ten minutes time, I've had to wait nearly three quarters of an hour 'cause they're all full (Int #1).

-insert Table 4-

Table 4. Mode of transportation to work

These findings test the level of agreement with assumptions of planners regarding the ability of high density development to discourage car use. To encourage uptake of sustainable transport, the built environment must provide easy, accessible connections between buildings, walkways, cycle paths and public transport stations. However, this research indicates that access to sustainable modes of transport does not necessarily guarantee use. Transport mode choices have been linked to other factors, besides accessibility, including perceptions of convenience, practicality, safety, comfort, individuality and cost (1)(2)(3)(4).

DEVELOPMENT INTO TOOL

A range of liveability indices which measure liveability of location (for example, the European Union's Urban Audit (34)) or liveability characteristics (e.g. Demographia International Housing Affordability Survey (9)) produce a quantifiable measure of liveability at a broader level. One common liveability index is the Economist Intelligence Unit's liveability rating (35) which forms part of the *Worldwide Cost of Living Survey*. Each city is assigned a score for over 30 qualitative and quantitative factors across five broad categories: stability (safety), health care, culture and the environment, education and infrastructure (transport, housing availability, water, energy, communications). Other global measures include Mercer's Quality of Living Survey (36), the International Living Quality of Life Index (37) and the United Nations Human Development Index (38). The Australian Unity Well-being Index (39) measures personal well-being (e.g. standard of living, health, safety, community inclusion) and national well-being (such as social conditions, state of environment, business and national security).

The integrated results of the survey, interviews, economic referencing, environmental data and behaviour mapping pointed to the need for a tool that could be used by a range of stakeholders to achieve alignment of their objectives for liveable, sustainable, higher density urban form, by producing qualified measures to plan, design or analyse liveability at the level of the precinct, building or individual dwelling.

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The *High-Density Liveability Guide*, informed by residents' perspectives, has been developed to provide residents, building managers, local authorities, designers and developers with a practical guide to assess the liveability of a dwelling, building and surrounding community without duplicating the functions of a plethora of existing rating tools and score-cards for sustainable buildings or precincts (40)(41). This guide focuses on specific liveability features relating to residential satisfaction in inner-urban high-density dwelling locations in subtropical regions, and incorporates viable sub-tropical design principles for high density developments with social and economic considerations. The objective of implementing the tool is to engender community well-being and to ensure future urban developments include the characteristics that make a place where people want to live now and in the future.

The tool is accessible on line and has been conceived as a collection of fact sheets which address issues pertaining to the individual dwelling within a multi-unit complex, to the building itself and to the surrounding community. Those under the heading of the dwelling address thermal comfort and ventilation; natural light; and noise mitigation. At the building scale, fact sheets deal with shared space; good neighbour protocols; and environmental sustainability. The community scale is addressed through accessible and sustainable transport; amenities and services; and sense of community. The recommendations of these fact sheets interact with one another to produce a holistic picture of liveability. For example, factsheets focusing on noise mitigation through good neighbour protocols and ways to reduce both air-borne and structure-borne noise which may undermine the liveability of dwellings for residents, are developed. Checklists tailored for each of the main stakeholder groups help them to acknowledge, identify and achieve the liveability benefits of certain actions, and physical conditions.

CONCLUSION

The examination of life within higher-density accommodation is an emerging field with few pre-existing, validated survey instruments that can be used to measure impacts. In terms of the future of high density as a viable residential option, and whether high density is a good way to manage future population growth in South East Queensland and other growing urban areas in the subtropics, this research provides valuable insights into people's concerns and lifestyle preferences, and what factors may convince some urban dwellers that it is worth making the choice over outer-suburban low-density locations. High on the liveability list is the preference for privacy at home, and sociability in the local community. Proximity to workplaces and services is also valued. Being able to take advantage of the natural attributes of the subtropical climate both for lifestyle satisfaction and environmental reasons are desirable outcomes for residents. These liveability aspects are critical for environmental social and economic reasons.

Whilst high density living in theory presents a sustainable option, climate change adaptation and mitigation demands a more comprehensive response to urban sustainability. The relationship between climate, building design and people's perceptions of and experiences with these, were explicitly addressed in the research, and the findings have been embedded in the resulting tool. The High Density Liveability Tool is unique in its approach and appeal across a range of stakeholders. It puts in plain language the liveability benefits of getting the design of and balance between internal and external environments of high density dwellings and the areas where they are located, whether in urban infill, post-industrial urban renewal, and master planned communities in greenfield areas.

Acknowledgements

The authors wish to thank the Australian Research Council (ARC) and the Port of Brisbane Northshore Development Group (NDG) for funding and supporting this research project. They also acknowledge fellow members of the research team: Prof Peter Grace, Prof Mike Hefferan and Assoc Prof Clevo Wilson (QUT), Ms Jenny Ryan and Ms Wendy Brewster (NDG), and research assistants Ms Lorraine Bell and Ms Kalara McGregor.

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