Where do the Children Play?

DESIGNING CHILD-FRIENDLY COMPACT CITIES

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" We are living in an ever increasingly urban world, with more children growing up in cities than ever before. It is therefore imperative that we design and build cities that meet the needs of children: seeking their input during the design process, providing them with access to play and education, and facilitating their social and cultural interactions."

- Prof. Klaus Schwab, Founder and Executive Chairman,
World Economic Forum

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Natalia Krysiak is an architect based in Sydney, Australia with a keen interest in how cities and spaces can be designed to promote the needs of children. She has been involved in advocating for child-friendly cities since graduating from Monash University, engaging in a range of child-focused initiatives and projects. On the basis of the David Lindner Research prize, Natalia has founded an urban think-tank 'Cities for Play' which aims to inspire and promote strategies for playful cities.

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Embedding children's needs into the compact city

As cities continue to densify and urbanize, the question 'where do the children play?' is one of vital importance and growing urgency.

Australian cities are densifying at a rapid rate. This is particularly evident in Sydney, where it is predicted that the population will double in size in just over 40 years[1] and by 2031 almost half of Sydney's housing stock will be in the form of high density[2]. With the urban landscape of cities shifting to higher densities, it is inevitable that an increasing number of families with children are choosing to live in apartments and medium density housing. We are already seeing 28% of apartments in Sydney occupied by households with children[3] and this number is growing throughout almost all Australian state capitals. As our cities continue to densify and open space becomes increasingly valuable, it is important to ask the question 'where do the children play?' to ensure the wellbeing of our youngest citizens is nurtured in the planning of cities. Apart from the changing landscape of our cities, the complexity of the question posed also comes from a broad shift in the way that children interact with their environments. As summarised by a study titled "Children in the City: Reclaiming the Street":

"It recent decades, in many cities, important changes in home and neighbourhood environments have significantly impacted the play and peer interactions of children. Many urban streets and public spaces have become inhospitable to children. Whereas children's freedom at home has grown, their freedom outdoors has greatly decreased. Children's daily territory—the places where children travel independently—has shrunken precipitously."[4] (Karsten & Van Viliet, 2006)

With a growing body of research linking the benefits of play and active mobility in children's lives to positive health and wellbeing outcomes, it is paramount for communities and city designers to consider the strategies known to promote these outcomes. This report focuses on a series of physical interventions which can be implemented in the
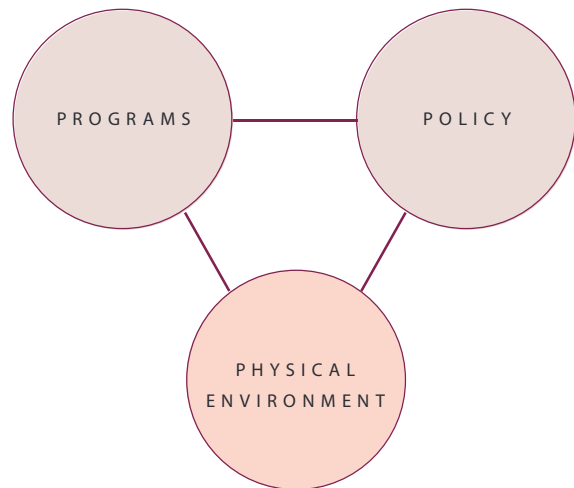

FIGURE 1: INTERVENTIONS WITHIN THE PHYSICAL ENVIRONMENT ARE INITIATED IN PARALLEL WITH PROGRAMS AND POLICY

urban city context to promote play and independent active mobility of children. Acknowledging that no physical outcome can be truly successful without social change, a series of supporting social and policy based recommendations have been put forward for parallel consideration.

The title of the report 'Where do the Children Play?' is intended as an open question, often ignored or simplified by designers, planners and councils, resulting in communities which could be labeled as 'child-blind'[5] (Woolcock & Gleeson 2010). The report takes the stance, that this question should form a founding part of the design of new developments and the revitalisation of existing ones. The report delves further into this question challenging the ways in which children access spaces independently and how they can be acknowledged as citizens in their own right within city design. Sydney, being Australia's most densified city, is in urgent need of a comprehensive strategy for meeting children's needs in the compact city. This report highlights some of the key issues and proposes a set of interventions for implementation.

A changing urban fabric

With more families choosing to live in compact urban settings the question is; can high density be child friendly?

Illustration: Matt Golding. Published in The Age, 2015

With Australia's population forecast to double by 2075[6], there is no doubt that the state capitals are shifting towards a more compact city vision to accommodate additional population growth. In Sydney, this trend is particularly evident with more than 100 suburbs with at least half the population living in apartments and overall 41% of dwellings being medium or high density[7]. The stand-alone home is predicated to be outnumbered within the next few years[3] with high and medium density dwellings now being built at almost twice the rate of traditional detached dwellings[8].

Apart from the urgent need to efficiently accommodate growth in population, the push toward higher-density living has been linked to the notion that compact cities deliver much more sustainable social, economic and environmental outcomes when compared to the lower density suburban growth which has characterised Australian cities. There has been evidence suggesting that with the right design, compact cities can mitigate some of the rising health concerns, by promoting physical activity, decreasing sedentary behaviour and increasing social capita. Research also suggests that high-density suburbs can promote sustainability, address many pertinent transportation concerns and provide affordable housing options.[9]

As we now look towards a new "Australian Dream", it seems to be vital that the same mistakes seen in our sprawling suburbs are not repeated in our vision for the compact city. Density alone will not ensure the wellbeing of its citizens unless good design is implemented. Apart from ensuring that the compact city provides environmental, economic and health benefits to its citizens, it is vital to understand the demographic which the city currently accommodates for. One part of the population, which has been significantly overlooked in the design of high density cities, are children. The exclusion of children from the compact city vision stems from a number of factors including; a social conviction that it is not an appropriate environment for children to grow up in and an assumption that families with children do not want to live in apartments, both of which deserve deconstruction.

HIGH DENSITY HOUSING IN THE FORM OF APARTMENTS AND TOWN-HOUSES HAS BEEN FOR MANY YEARS PROMOTED AS THE ULTIMATE DWELLING FOR URBAN SINGLES, DINKS (DUAL INCOME NO KIDS) AND OLDER 'EMPTY NESTERS'. VERY RARELY DO CHILDREN ENTER INTO THE MARKETING AND PLANNING STRATEGIES FOR HIGH DENSITY LIVING.

The rise of vertical families

Children living in apartments are an increasingly common demographic.

Far from being a child-free zone, the inner suburbs of Sydney have a growing population of families with children. With city fringes extending further away, many young families are choosing to live closer to city centers due to reduced commute times, increased access to public transport, a low-maintenance lifestyle and community and cultural amenities. With the only affordable option in inner cities being apartments or small units, it is not surprising to see that the number of families with children living in high-rises has been increasing over the past decade. Data has indicated that families with children make up 28% of high rise residents in Sydney, projected to increase to 32% in the next 6 years[3]. As more families with children choose to live in compact cities, the responsibility for creating child-friendly suburbs must not be taken lightly. As argued by Bill Randolph from the university of New South Wales:

"HOW WE PLAN FOR THE USE OF HIGHER DENSITY HOUSING BY FAMILIES WILL CRITICALLY DETERMINE HOW WELL THE FUTURE HIGH DENSITY CITY PERFORMS IN TERMS OF ITS SOCIAL SUSTAINABILITY AND LIVEABILITY FOR THE WHOLE COMMUNITY"[10] (RANDOLPH, 2006)

Conveniently for the developers, excluding families with children from high density housing by actively marketing towards the 'child-free' buyer, allows for a marketing vision which promotes 'low maintenance' outdoor spaces, minimal storage and laundry space and no responsibility for child-friendly amenities such as child-care centres and play spaces. The promotion of a child-free housing market also creates negative perceptions of children living in high density dwellings which can often have negative social effects on families with children living in apartments. One example of this is where strata rules are negatively geared towards children and parents with rules which actively discourage play in common areas, prohibit the storage of prams or larger toys in corridors or disapprove of laundry being visible from balconies. These rules might be marketed as convenient for the childless residents but for those with children, these factors can lead to a variety of health and mental problems stemming from isolation and discrimination.

Planning high density cities for families with children, requires thorough analysis of cities from the perspective of a child. This goes beyond the token-offering of a playground and into the realm of understanding children's wellbeing and developmental needs. Furthermore, addressing children's needs in compact environments, allows families to remain in high density dwellings after having children, retaining key workers and ensuring that the compact city vision is inclusive to all.

32%
projected number of households with children living in apartments by 2024[3]

1 in 4
residents in apartments are families with children[3]

In Sydney households with children comprised 28 per cent of the city's apartment population in 2016 (ABS, 2016).

+34%
increase in the number of couples with children living in apartments[3]

The number of couples with children living in apartments has increased by 34 per cent in 5 years from 2011 to 2016

28%
27%
9%
34%

● Households with children
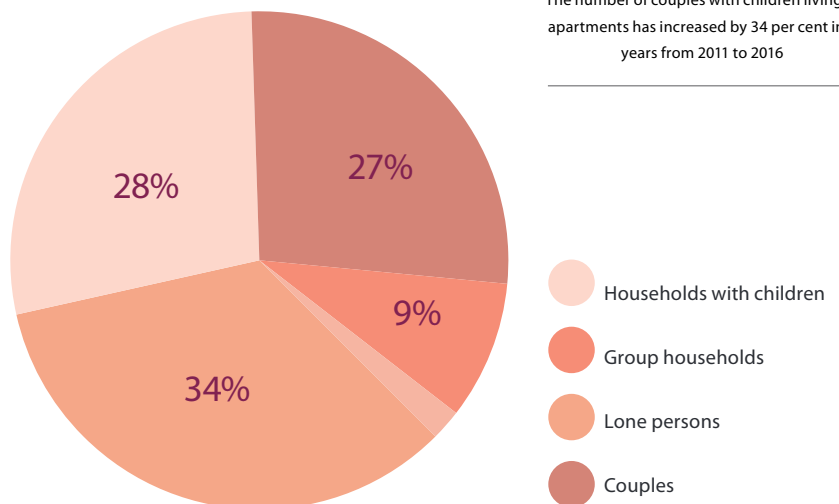
● Group households

● Lone persons

● Couples

FIGURE 2: CENSUS 2016, HOUSEHOLDS IN FOUR-PLUS STOREYS, GREATER SYDNEY

Image: Five small boys and two girls walking along a brick wall
1935, Sam Hood, State Library of NSW

Why focus on children's needs?

The health and wellbeing of Australian children is in many regards failing.

The focus on children's needs within the built environment is important not only because of the need to adjust infrastructure for urban childhoods, but also because the health and wellbeing of Australian children is in many regards failing. Over the past 40 years, many aspects of children's health and well-being has declined. As noted by epidemiologist and 2003 Australian of the Year, Fiona Stanley "whiles death rates are low and life expectancy is terrific, trends in almost all other outcomes [for children] have got worse"(2003a:2).

CHILDHOOD OBESITY HAS RISEN TEN-FOLD IN THE LAST DECADE WITH AN ESTIMATED 1 IN 4 CHILDREN IN AUSTRALIA OVERWEIGHT[11] AND ALMOST 1 IN 7 CHILDREN AND ADOLESCENCE EXPERIENCING A MENTAL HEALTH DISORDERS INCLUDING ANXIETY, DEPRESSION AND ADHD.[12]

During the same period of time that we have seen an increase in obesity and mental health problems in children and youth, there has been a steady decline in the number of hours that children spend playing outdoors[13] and actively walking or cycling to school[14]. A majority of Australian children do not meet the recommended minimum daily physical activity[15] and the number of children using active transport (walking, cycling) has declined by 42% since the 1970s[16]. Today it is estimated, that 60% of Australian children are driven to school[18] compared with only 16% in the 1970s[19].

The increasingly sedentary lives of Australian children has been attributed to a wide range of factors including the increase of screen-based entertainment, family reliance on the motor vehicle and societal anxiety towards risk. Given that the design and planning of our cities can be fundamental in facilitating healthy lifestyles, design opportunities should be sought which encourage children to partake in active transport, play and incidental physical activity.

"Children's growth developments (emotionally, physically, mentally and socially) are affected by how they are physically involved with the environment. Within existing research relating to children's use of outdoor spaces, there is recognition of the general relationship between time spent outdoors and level of physical activity (Veitch, et al. 2007, 2013). Therefore, stimulating, rich and varied outdoor spaces is essential in enabling the child to reach his or her greatest potentials (Eriksen,1985)"[17]

1 in 4
children are overweight or obese

In NSW, 28.6% of children aged between five and 15 years were overweight or obese in 2016[11]

3 in 4
spend less than 60min of physical activity a day

Three out of four children in NSW aged between five and fifteen years do not meet the recommended 60min of daily physical activity (outside of school hours)[14]

"AUSTRALIAN CHILDREN ARE SOME OF THE MOST CHAUFFEURED CHILDREN IN THE WORLD"

DR LYN ROBERTS
(Chief Executive Officer of the National Heart Foundation from 2001 to 2013)

1 in 7
children has a mental health or behavioural problem[12]

Almost one out of seven children in NSW aged between four and seventeen years experienced a mental health disorder in the past year.

60%
children are driven to school compared with only 16% in 1970 [18],[19]

The number of children being driven to school has significantly increased over the past 40 years.

There has been a
42% decline in young Australian's use of active transport
between 1971 and 2013[16]

The loss of freedom

Compared to other countries, Australian children have very low levels of independence.

The overall decline in children's physical activity and active travel correlates with an overall reduction of children's independent mobility (the ability of children to walk or cycle around their neighbourhoods without adult supervision[20]). Studies have indicated that children in Australia have far less 'freedom to roam' when compared to children in other western countries. Research by Karen Malone and Julie Rudner, show that when compared to Japan's children, Australia's youngest citizens are granted less than half the amount of freedom to walk around their neighbourhood independently.[21] With increasing numbers of children being chauffeured to school and other activities, there are fewer children walking around their neighbourhoods freely and independently. With this comes a loss of incidental physical activity, informal play and social exchange with other children as well as a lack of belonging and spatial understanding of their neighbourhoods.
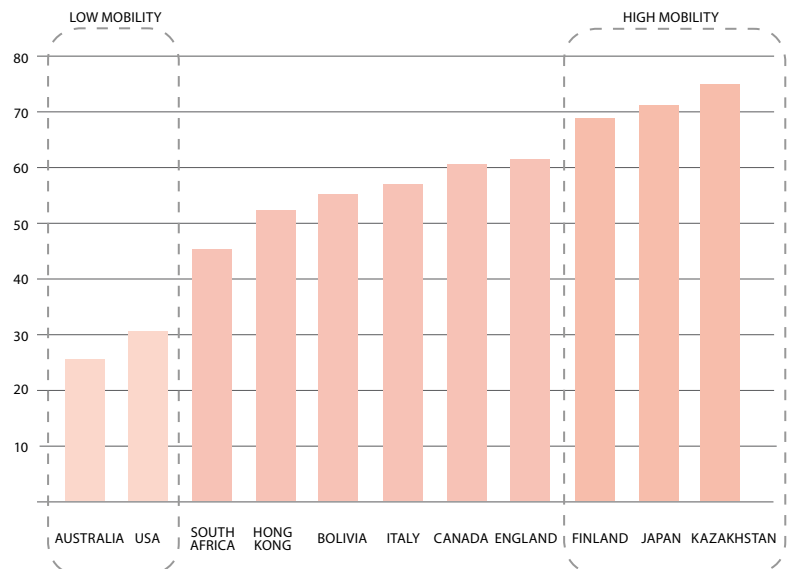

FIGURE 3: GLOBAL RANGE: CHILDREN WALKING TO SCHOOL DATA 2012-2014, MALONE AND RUDNER (2016)[22]

The benefits of play and independence in children's lives

When children are granted the freedom to play without direction or supervision they learn skills to thrive in life.

Given the high numbers of childhood and adult obesity and mental health problems in Australia, it is no surprise that an increasing number of researchers, policy makers and designers are looking towards physical activity as a key factor in tackling some of these health concerns. For children, encouraging play and independent active transport can provide more than just the physical benefits but also a wide range of positive developmental outcomes.

Play in particular, has been found to have a range of physical, social, cognitive, and emotional benefits to the development of children, as well as promoting overall healthy brain development[23,24]. Through play, children instinctively challenge and test the limits of their physical abilities, emotional behaviours and social relationships. This behaviour allows children to learn how to negotiate, empathise and foster relationships with others[13]; all through testing and rehearsing a variety of scenarios which they have observed in their daily lives. Studies in neurological science, show that a brain which is provided with opportunities for play and exploration, can adapt better in unknown environments and unexpected situations[25] - a skill which is a vital component in building resilience, creativity and emotional maturity. Apart from the multifaceted benefits of play on children's health and wellbeing, embedding play into the urban realm also provides children with a sense of belonging and attachment to their community, as well

as an increased spatial understanding of their neighbourhoods[26]. As described by Jenny Donovan in the book 'Designing the Compassionate City':

> "CONSEQUENTLY IF A CHILD IS DENIED A RICH AND ACTIVE PLAY LIFE, THEIR ABILITY TO THRIVE AND DEVELOP TO THEIR FULLEST POTENTIAL IS DIMINISHED (WHITE, 2004) AND WITH IT THEIR ABILITY TO CONTRIBUTE TO THEIR COMMUNITY."[27]
> (DONOVAN, 2018)

There have also been significant correlations drawn between the ability for children to play and explore independently, with positive mental health outcomes. When children are granted the freedom to take measured risks and gain independence, they learn that they are in control over their own lives (and not regulated by external factors beyond their control)– which is a vital component of mental wellbeing. Peter Gray has drawn such conclusion in the 'American Journal of Play', noting:

> 'THOSE WHO BELIEVE THAT THEY MASTER THEIR OWN FATE ARE MUCH LESS LIKELY TO BECOME ANXIOUS OR DEPRESSED THAN THOSE WHO BELIEVE THAT THEY ARE VICTIMS OF CIRCUMSTANCES BEYOND THEIR CONTROL.'[13] (GRAY, 2011)

By allowing children to freely play and explore their neighbourhoods, we provide them with the opportunity to learn skills of independence, feel a sense of belonging within their communities and develop connections with the natural environment.

PLAY AND INDEPENDENT MOBILITY

PHYSICAL HEALTH

- HEALTHY BRAIN DEVELOPMENT
- MOTOR SKILLS
- BONE HEALTH
- REDUCED RISK OF OBESITY AND DIABETES

MENTAL HEALTH

- SOCIAL SKILLS
- EMPATHY
- RESILIENCE
- CREATIVITY
- EMOTIONAL STRENGTH
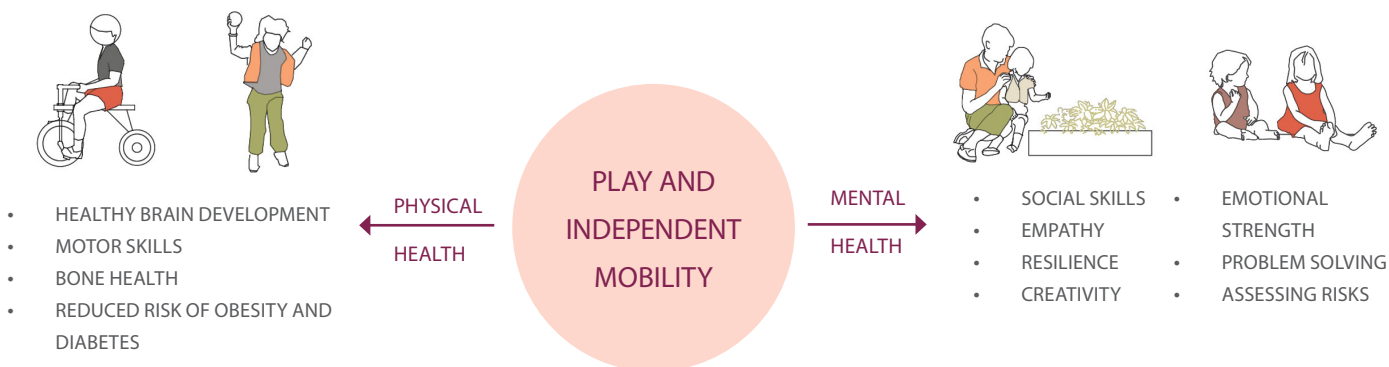- PROBLEM SOLVING
- ASSESSING RISKS

FIGURE 4: BENEFITS OF PLAY AND INDEPENDENT MOBILITY TO CHILDREN'S HEALTH AND DEVELOPMENT

"Play is nature's training for life. No community can infringe that right without doing enduring harm to the minds and bodies of it's citizens." David Lloyd George (quoted in Hewes 2007)

Understanding the barriers and perceptions

The decline in children's independent play and mobility can be attributed to a wide range of factors.

In order to consider strategies to increase children's participation in their physical and social environments, the various barriers which limit this from occurring must be understood. Any proposed physical intervention, must be coupled with strong policies and programs which address the deeper social barriers which may prevent children from accessing and belonging within their communities. It is simply not useful to provide a playspace or safe walking route to school if parents do not allow their child to access the space due to perceived risks or fear of judgment from other parents. Some of the key concerns which parents identify as the reason for limiting their child's independence are concerns about road safety and 'stranger danger' perceptions[28]. For these concerns to be alleviated, an integrated programs/ policy/ physical intervention strategy should be implemented. This would consider 'physical interventions' such as safe pedestrian crossings along with 'policies' reducing vehicular speed near schools and 'programs' educating children about road safety and the community about the benefits of children's active and independent mobility. Apart from a concern for children's safety, factors such as increased pressures of academic performance have also contributed to the increasingly scheduled lives of children resulting in a lack of time for free play both during and after school hours. Entire communities must be on board to enable a truly inclusive city where all residents, no matter how old or young, feel welcomed and valued as individual citizens. For change to occur, a shift in perceptions is required which can be assisted through an integrated programs/ policy/ physical intervention strategy.

"While parents have always been concerned for their children's safety, current concerns are dominated by fears that may not be justified, leading to constrained worlds in which children are likely to be anxious and unadventurous"

(Skenazy, 2009)

Photo: Alfred Eisenstaedt, Garden City, 1942

Increased pressures on academic performance resulting in increasingly scheduled lives and lack of free play time

'Stranger - danger' perception and lack of trust in other adults to look after children's wellbeing

Fewer children within families

Increased use of screen based-entertainment as a way for children to 'play'

Fear of judgment from other parents for being seen as neglectful

Increasing numbers of mothers in paid employment resulting in changes to the schedule of family lives

Lack of trust in children to assess risks independently

SOCIAL

Policies surrounding 'risk anxiety'

State level prohibition of unsupervised play

Reduced play time at schools due to academic pressures

Lack of planning policy for child-friendly cities

Increasing costs of insurances for public spaces resulting in a reduced appetite for 'adventurous' public/ play spaces

POLICY

Car-oriented urban planning reducing the ability to walk due to distance and increased traffic dangers

Access limitations due to lack of public transport or inadequate pedestrian and cycling infrastructure

Lack of open green spaces and areas for safe play due to over-development

Car parking taking over 'leftover spaces' previously used by children

PHYSICAL ENVIRONMENT

Loss of 'wild' natural spaces in urban environments

Lack of passive surveillance in neighbourhoods - car garages replacing residential front windows
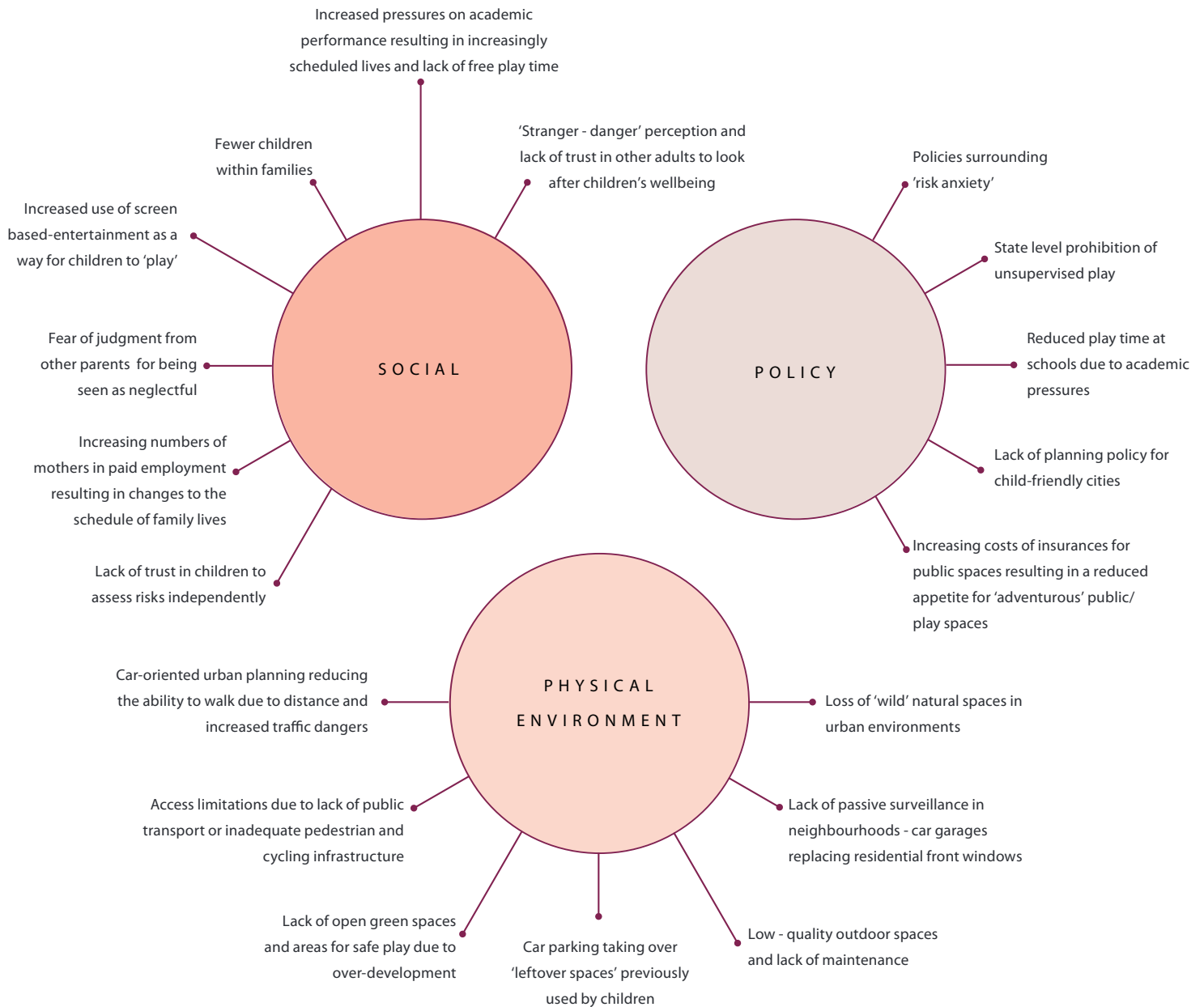
Low - quality outdoor spaces and lack of maintenance

FIGURE 5: BARRIERS AND PERCEPTIONS TO CHILDREN'S
INDEPENDENT ACTIVE TRANSPORT AND PLAY

42-51%

of parents state 'stranger danger' and traffic as a concern[16]

In NSW, 42-51% of parents state the main reasons why a child is not allowed to cycle or walk alone to school is a concern with stranger danger and the dangers posed by traffic.

only 24%

of parents believe their child's school encourages students to cycle[16]

A survey by the Australian Heart Foundation found that only a quarter of parents believed their child's school encouraged cycling to/ from school.

"DESPITE THE CONSISTENCY OVER RECENT GENERATIONS IN THE THINGS AND PLACES THAT CHILDREN VALUE, THERE HAVE BEEN SIGNIFICANT CHANGES IN CHILDREN'S LIVES: CHANGES IN FREEDOM (THEIR INDEPENDENT ACCESS TO LOCAL NEIGHBOURHOODS), CHANGES IN THE CONTROL AND SURVEILLANCE OF THEIR LIVES, CHANGES IN THE LEVELS OF ADULT-SUPERVISED ACTIVITY, AND CHANGES IN THE URBAN ENVIRONMENT THAT LIMIT CHILDREN'S ACCESS."
(FREEMAN & TRANTER)[29]

How do we design more child-friendly neighbourhoods?

Designing cities which encourage children to freely explore and play throughout the public realm and feel a sense of belonging.

Through innovative design and forward planning, the compact city can provide many opportunities which address the growing concerns of children's mental and physical health, including obesity, social isolation and community belonging. A compact city can provide the required proximity to make destinations walkable, the critical mass to enable infrastructure projects and the social exchange to create thriving communities[9]. Understanding the ways in which children can use and belong to their neighbourhoods forms the foundations of creating a truly child-friendly city. As a starting point, it is important to understand how children can feel welcomed throughout the entire urban realm and dispel the notion of 'child-only spaces'.

Children's everyday lives are often limited to three distinct zones; the home, the school and the playground. Even though these spaces are designed and intended for children, they are often heavily regulated by adults, allowing few opportunities for children to adapt or take ownership. Furthermore, these spaces often become 'destinations' which require parents to drive their children and usually remain for the duration of 'play to occur' in order to supervise and chauffeur back (FIGURE 6). As described in the book 'Children and their Urban Environment: Changing Worlds'

"Children have become increasingly relegated to 'child spaces' in the city (playgrounds, skate parks, school grounds) and seen as increasingly unwelcome in parts of the city... Their presence on the street, in public spaces and in natural spaces (traditionally major social and activity sites for children) has become a source of disquiet; indeed, children's visibility in many urban areas is conspicuous by its absence." (Freeman and Tranter, 2011)[29]

This is very different to how children would play in previous generations with play often occurring in driveways, on streets and in underutilised pockets of space throughout cities. As our cities continue to densify and open space becomes more valuable, it is critical to consider how we can embed children's needs into the design of our cities.

A walkable network of children's destinations

This report takes the stance that a truly child-friendly city should consider the entire urban fabric as a canvas for providing opportunities for children's play and independent active transport. For this to occur, a series of walkable child-centric networks should be overlaid onto the urban fabric, creating incidental opportunities for exploration, play and social exchange (FIGURE 7).

Considering that children spend most of their time at home or at school, these two elements are considered anchor points which enable a complex network of play and learning opportunities to take place throughout the public realm.
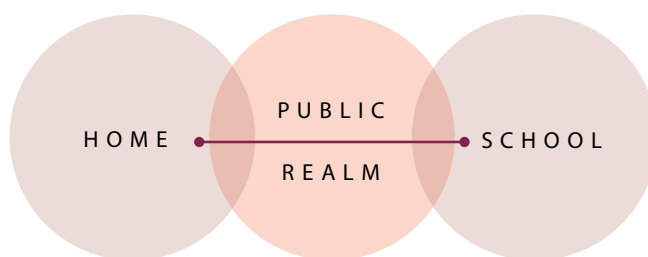

FIGURE 5: The home and school are considered anchor points for interventions within the public realm

The proposed physical interventions have been categorised into four elements: (#4) School networks which filter into the public realm (#3) Play in high density housing (#2) Safe travel routes to enable children's independence and (#1) Play opportunities within the public realm. Communities within the school and housing clusters become the anchors for ensuring that interventions within the public realm (#1 & #2) are well supported and thriving. The ability for these elements to filter into one another (both physically and socially) becomes key to their success as an integrated network. Apart from the physical interventions put forward, a crucial part in ensuring that community perceptions and barriers are addressed is the need for programs and policy. An integrated programs/ policy/ physical intervention strategy is proposed for each discussed element.
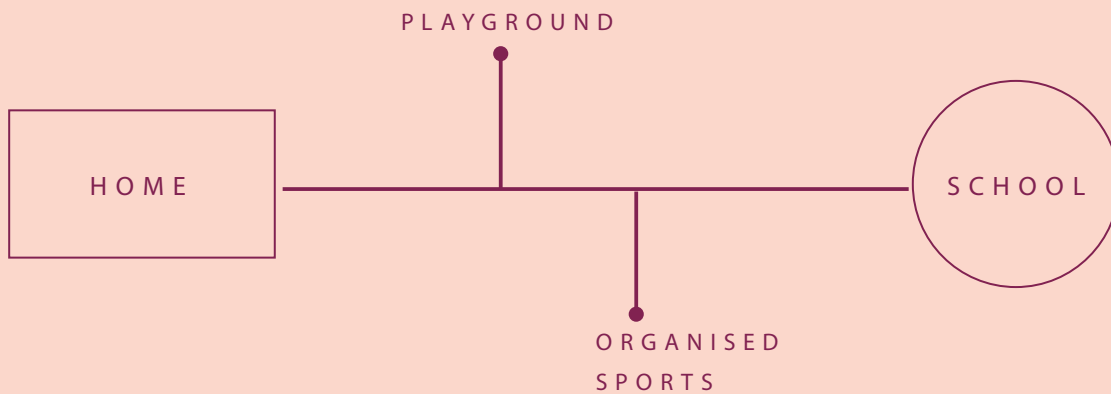
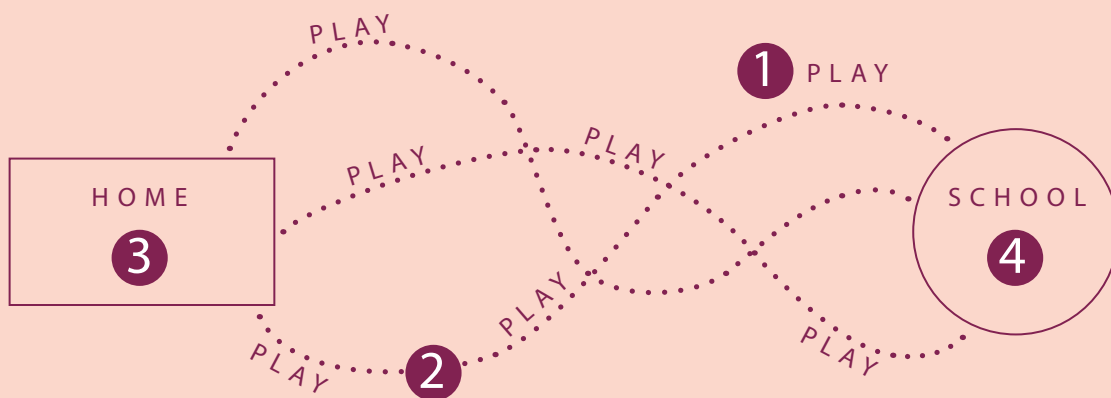FIGURE 6: Car-centric children's destinations

FIGURE 7: Walkable children's networks

1 PLAY IN THE PUBLIC REALM

2 SAFE TRAVEL ROUTES

3 PLAY IN HIGH DENSITY HOUSING

4 SCHOOL NETWORKS

design strategies

1. **PLAY IN THE PUBLIC REALM**

A network of play opportunities
throughout the city

2. **SAFE TRAVEL ROUTES**

Safe travel routes to enable children's
independence

3. **PLAY IN HIGH DENSITY HOUSING**

Opportunities for children's play and social exchange
in high density housing

4. **SCHOOL NETWORKS**

School networks which filter into the
public realm

1.

Play in the public realm

Play opportunities should naturally weave into the urban fabric.

One of the underlying principles in creating a more playful city, is to dispel the perception of play as something that should only occur in the enclosed 'playground' and instead allow it to naturally filter into every corner, cranny and void throughout the city. Opportunities for play should be generously applied throughout neighbourhoods and envisaged as one large networked playspace which becomes a natural part of city life. Neighbourhoods should develop comprehensive play network strategies to be applied to their urban fabric. Encouraging 'incidental play' opportunities throughout neighbourhoods will benefit both children, parents and the community.

BENEFITS TO CHILDREN

Apart from providing children with a sense of pure joy, play can also aid in developing crucial skills including (a) resilience and coping skills[30] (b) learning to regulate emotions, self-control and empathy skills[13] (c) creativity and problem solving skills (d) healthy brain development[22] and improved academic performance.[13] Active play will also assist in achieving the minimum amounts of daily activity targets for children. Studies have shown that even small physical play interventions such as line markings can increase the physical activity of children[31]. Allowing children to engage in community life can also facilitate strong relationships with other children which in turn fosters a sense of belonging within the community.

BENEFITS TO PARENTS

Filtering play into everyday routes and within areas of 'waiting' such as bus stops or outside shops, creates a more natural way for children to achieve their daily play needs while parents and carers go about their daily routines and errands. This diminishes the need for parents to have to drive to 'play destinations' and allows for play to become a routine part of everyday city life. Play opportunities between children in the urban realm will also reinforce relationships amongst parents and encourage a safe and active street life with opportunities for incidental engagement and social exchange.

BENEFITS TO THE COMMUNITY

Providing opportunities for play within the public realm promotes children's physical and mental wellbeing, which in turn can promote healthy lifestyles reducing the need for health intervention further on in life.[32,33] Studies have also shown that where children play, adults also tend to gather[34] which can have positive economic benefits for surrounding businesses. Apart from the economic benefits to local businesses, an active street life can foster social networks and promote communities which participate in volunteering, actively look after their neighbourhood and one another - all of which can save money on maintenance, crime prevention and social infrastructure provisions[35].

PROGRAMS AND POLICY

1. PLAY NETWORK STRATEGY

Councils should establish a comprehensive 'play network strategy' in their local neighbourhoods, ensuring that no child has to travel further than 500m to a play opportunity.

2. PLAY PARTNERS
Local businesses located along designated children's travel routes, should be encouraged to become 'play partners' to assist in promoting play activities outside their local business and provide safe zones for children to navigate to if in need.

3. PLAY WORKSHOPS
'Play Workshops' should be organised for parents and the community to educate about the value of play and the need for children to use public spaces actively and independently.

4. ADDRESSING PLAY BARRIERS
Local council workers should be educated about the benefits of children's active play to ensure that certain activities are not banned from public spaces for e.g. climbing trees or building cubby houses in the local parks.

4. PLAY STREETS
Designated streets should be closed off during certain times of the day to allow children to freely and safely play on the street.

5. PLAYWORKERS
Councils could consider staffing community play spaces with trained playworkers to create safe and enjoyable places for younger children to use without parental supervision. [36]

1. PLAY OPPORTUNITIES PROMOTING PHYSICAL ACTIVITY

Physical activity should be encouraged through playful interventions such as trampolines and active games in public spaces.

2. PLAY OPPORTUNITIES AT 'WAITING ZONES'

Bus stops, tram stations and waiting lounges can be activated through play opportunities such as swings, book libraries and games.

3. WILD NATURE 'POCKETS'

The integration of wild pockets of nature into urban spaces promotes children's love and respect for nature and provides spaces where children can be messy and get dirty.

4. PLAY IN UNDERUTILIZED SPACES

Opportunities for play interventions should be sought in underutilized spaces such as under highway bridges.

5. PLAY AS A LEARNING TOOL

Learning opportunities should be implemented throughout cities, encouraging children to learn through games and art.

6. INTERGENERATIONAL PLAY

Play interventions should encourage people of all abilities and ages to participate.


7. OWNERSHIP OF PLAY SPACES

Children should be engaged in the design of play spaces and actively encouraged to adapt their environments with for example a 'Eco Cubby' program[37] in the local park.

8. STIMULATING THE IMAGINATION

Encouraging play does not require complex interventions. A playful change in height or texture of the surrounding built fabric can stimulate children's active imagination.
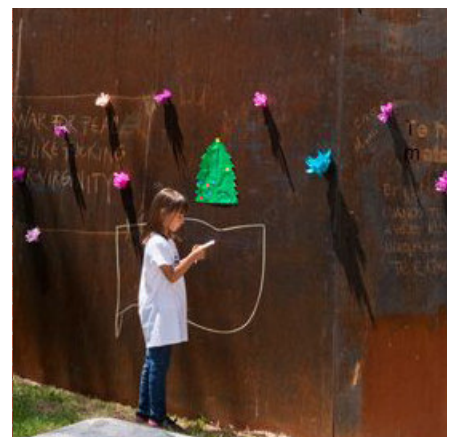
9. INTERACT WITH THE BUILT ENVIRONMENT

Play interventions should integrate into building facades with opportunities for chalk walls, climbing structures and games.

2.

Safe travel routes to enable children's independence

Encouraging children to walk and cycle through their neighbourhoods independently encourages healthy patterns both physically and socially.

Alongside a comprehensive network of play opportunities, it is vital for designers and councils to considers the ways in which children can access these spaces independently. This has paramount importance in enabling children to take control of their lives and feel as if they are valued members of society and included in neighbourhood life. Evidence suggests that the two key aspects of enabling children to independently access destinations is firstly; ensuring proximity and secondly; safety.[38] To make active, independent travel a viable option, councils, designers and planners must (a) ensure proximity of schools and other destinations to children within a local council (b) understand children's common travel routes and (c) invest in traffic control and supportive infrastructure within these routes. The benefits in pursuing these interventions is wide ranging and will benefit the entire community as well as parents and children.

BENEFITS TO CHILDREN

Encouraging children's active independent travel is beneficial for children's well-being, developing a variety of skills including (a) sense of control of their own lives[13] (b) resilience, coping skills and self-confidence[13] (c) social skills and feelings of belonging[24] and (d) spatial awareness of and knowledge of road rules[39]. Studies have also shown that children who cycle or walk to school demonstrate a significant increase in concentration levels[40]. Participating in active travel is also beneficial to a child's physical health and encourages them to be active citizens for life[19].

BENEFITS TO PARENTS

Allowing children above a certain age the freedom to access their neighbourhood independently, frees up time for parents who would otherwise have to drive their children to all activities.

BENEFITS TO THE COMMUNITY

Encouraging active transport can help reduce traffic congestion; leading to safer neighbourhoods, reduced air pollution levels and more sustainable cities through reduced greenhouse gas emissions[41]. Furthermore, children which are active daily are less likely to suffer from a number of physical and mental health problems including Type II diabetes, metabolic syndrome, bone health and mental health problems[31,32], saving the community money in public health expenditure. Finally, encouraging children to partake in city life, can promote social connectedness, street activity and encourages passive surveillance which in turn creates safer and more resilient communities[38].

PROGRAMS AND POLICY

1. CHILDREN'S ACTIVE TRAVEL STRATEGY
Councils should identify safe travel plans for all schools within their local area and invest in physical interventions; such as traffic calming initiatives, along designated routes.

2. ACTIVE TRAVEL PROGRAMS
Active travel programs should be implemented, linking school curriculum's with tasks involving neighbourhood mapping and teaching children how to access destination independently. 'Walking School Buses'[42] should also be encouraged.

3. ACTIVE TRAVEL PARTNERS
Engage local businesses in safe travel programs, providing safe zones along common travel routes for children to identify and use if in need.

4. ACTIVE TRAVEL WORKSHOPS
'Active Travel Workshops' should be organised for parents and the community to educate about the value of children's independent active travel.

5. REMOVE BARRIERS TO INDEPENDENT MOBILITY
Legal obstructions which discourage children from using cities independently should be discouraged.

6. BIKE AND SKATEBOARD LESSONS
Councils and schools should provide free cycling and skating lessons for children.

7. BIKE LIBRARIES
Schools should initiate 'Bike Libraries' which provide students with access to bikes and encourage older students to maintain and manage the program.

*Refer to page 34 for image references

1. ENSURE WALKABLE PROXIMITY TO SCHOOLS AND CHILDREN'S FACILITIES

Schools should be within a walkable radius from all housing. Studies show that children are 5-10 times more likely to walk or cycle if they live within 800 meters of their school.[35]

2. MAP OUT CHILDREN'S COMMON TRAVEL ROUTES

Routes which children are most likely to take to school should be mapped and child-friendly initiatives should be concentrated within these routes.

3. TRAFFIC CALMING STREET DESIGN

The number of pedestrian crossing required to travel to school should be minimized and traffic calming incentives implemented along children's travel routes.

4. SEPARATION OF STREET AND WALKWAY

Streets and walkways should be separated with planting and street furniture along children's travel routes.
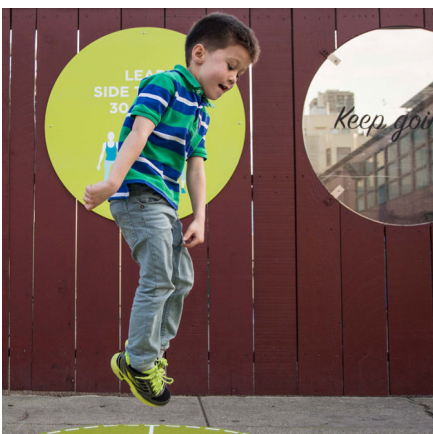

5. PRIORITISE SAFE PEDESTRIAN CROSSINGS

Pedestrians should be prioritized along children's travel routes and crossings emphasized for safety and education.

6. ACTIVE STREET FRONTAGES

Ensure dedicated children's travel routes are designated on streets with active frontages to enable passive surveillance.

7. PLAYFUL JOURNEYS

Link designated routes with playful games and puzzles to assist children with knowledge of their neighbourhoods and encourage active transport.

8. COMMUNITY SIGNAGE

Provide signage indicating to the community which routes are designated as child-friendly.

9. CHILDREN'S BIKE PATHS

Ensure sufficient footpath width to enable children to safety use for cycling.

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3.

Play in high density housing

As more families with children chose to live in apartments, play opportunities within common areas must be considered.

The reality of families with children living in high density dwellings is becoming an increasingly common occurrence. To ensure that the children growing up in apartments have access to safe play space both indoors and outdoors, it is paramount that guidelines and policies are developed and implemented. Families living with children in apartments currently report that while there are many advantages associated with living in high density housing, including proximity to work and increased public transport, the biggest challenge is the lack of space. With this in mind, shared common areas such as lobbies, corridors and shared courtyards have a vital role in providing additional space for play and recreation. It is important to note that even when these spaces are provided for shared use, strata rules can inflict certain regulations on residents such as 'no ball playing' which invalidates the benefits of these spaces particularly for children[43]. Parents also report that other residents will often complain about the sound of children playing, creating a perception that it is socially unacceptable for children to impede on the peaceful lives of other residents. Unless we can actively encourage play in high rise dwellings, children living in apartments will be at loss with negative consequences to their health and wellbeing.

BENEFITS TO CHILDREN

Apart from providing children with a sense of pure joy and numerous health and wellbeing benefits described

previously, providing opportunities for play in common areas will encourage children to get to know other children living in the complex, creating strong social networks between residents. Allowing children to take control of certain elements within shared areas (such as a chalk wall within an apartment lobby), will foster children's sense of belonging within their community.

BENEFITS TO PARENTS

Providing facilities for children to play in high density housing allows play to occur close to home diminishing the need for parents to drive to designated play areas. Knowing that children's needs are catered for, allows parents to remain in cities after having children rather than making the common choice of moving further out to the suburbs to cater for their children's needs. For many families remaining in cities means reduced commute times, a more connected lifestyle and closer proximity to cultural facilities.

BENEFITS TO THE COMMUNITY

Making high density housing more attractive to families with children, ensures key workers are retained within cities, driving the local economy.[44] Apart from ensuring the long term economic stability of cities, retaining families with children, will also ensure the overall diversity of communities, enhancing cultural life and strengthening the livability of cities. Safeguarding diversity in the compact city can also promote knowledge spillovers and increased productivity.[45]

PROGRAMS AND POLICY

1. REMOVING BARRIERS TO PLAY IN HIGH DENSITY HOUSING

Councils should enforce the removal of any legal obstructions which discourage children from playing in common areas by strata rules. Body corporations should be prohibited from enforcing rules which disadvantage children and their families.

2. SOCIAL PLAY NETWORKS

Common areas within apartment units should facilitate the display of information regarding play events and meet-ups for children and parents.

3. DEDICATED OUTDOOR PLAY SPACE

As is enforced in cities such as Rotterdam and Toronto, housing developments above four storeys which are not within 250-500m of a playground must prioritise child-friendly features in common outdoor areas.

4. SOUNDPROOFING BETWEEN APARTMENTS AND COMMON AREAS

Noise complains are a major contributor in limiting the ability for children to play freely within common areas. Building standards must ensure that soundproofing is sufficient between apartments and common areas.

5. HOUSING DIVERSITY

Councils regulations should ensure a diversity of unit sizes are available within apartment complexes.

*Refer to page 34 for image references
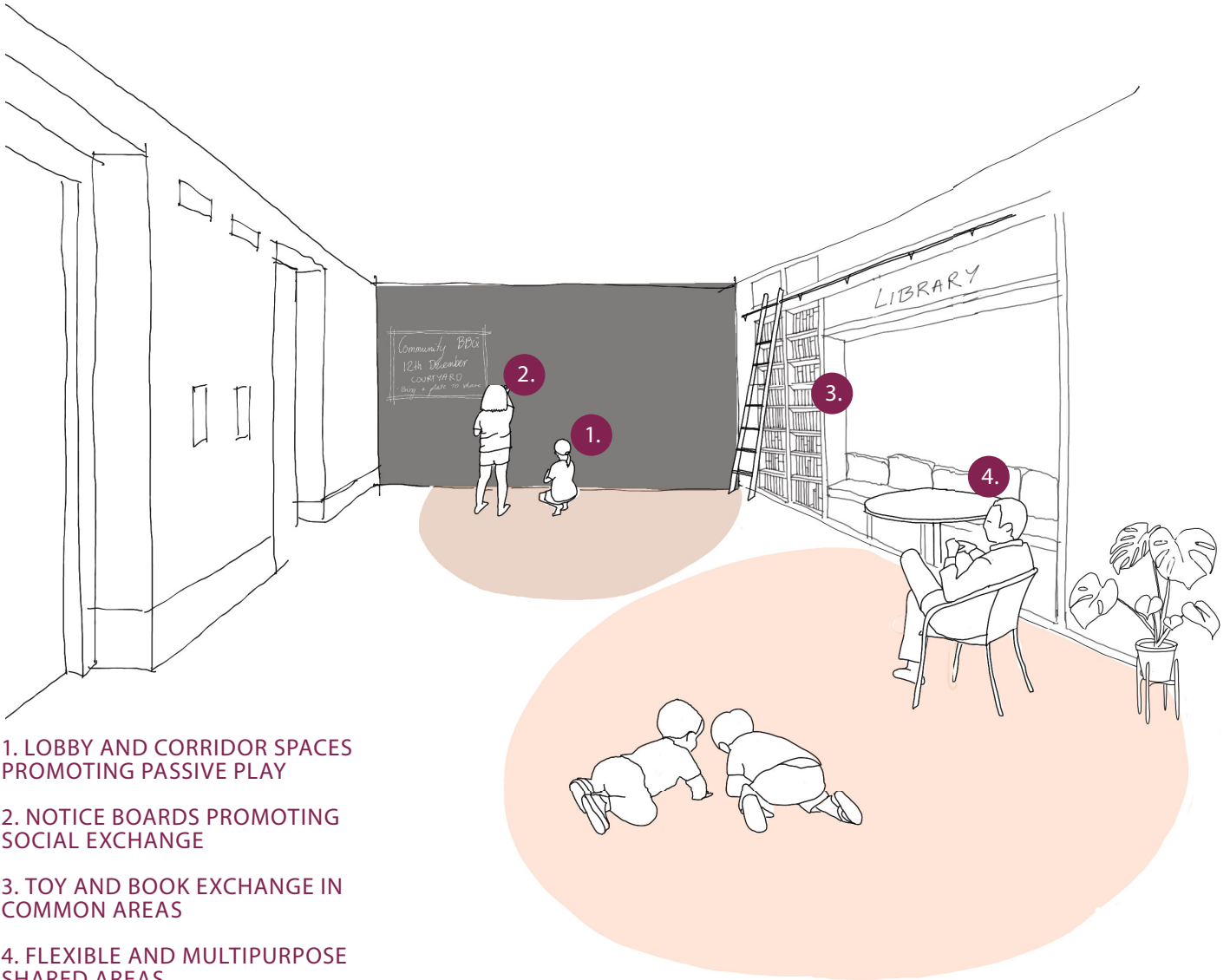
1. LOBBY AND CORRIDOR SPACES PROMOTING PASSIVE PLAY

2. NOTICE BOARDS PROMOTING SOCIAL EXCHANGE

3. TOY AND BOOK EXCHANGE IN COMMON AREAS

4. FLEXIBLE AND MULTIPURPOSE SHARED AREAS

5. THE ABILITY TO STORE LARGER ITEMS SUCH AS PRAMS AND TOYS IN COMMON AREAS

6. DIRECTLY ACCESSIBLE OUTDOOR SHARED SPACES

Open shared areas should be directly accessible from the apartment lobby without the need to cross a street.

7. PASSIVE SURVEILLANCE TO OUTDOOR SPACES

Open shared areas should be directly visible from windows and balconies particularly of larger 2 and 3 bedroom units.

8. INTERGENERATIONAL RECREATION

Opportunities for play and recreation should be inclusive to all residents regardless of age.

4.

School networks which filter into the public realm

Schools should be considered porous entities which filter into cities, allowing children to discover their neighbourhood and partake in community life.

Children spend a large portion of their time under the care of educational facilities. All too often these facilities are considered to be independent from the public realm both physically and socially. Regulations defined by an aversion to risk, often require these spaces to be fenced off and secured from unregulated public use. Land ownership and insurance policies pose particular challenges when it comes to shared land use - who pays the claim when someone breaks their arm on site after school hours? While there is no doubt that safety regulations have an important role to play, over-protective regulations often create barriers for true community engagement and shared use of facilities. Rather than closed private institutions, schools should be considered opportunities for collaboration and exchange of knowledge between the community and the local children. Without rigid boundaries, schools could start to infiltrate into the community, providing learning opportunities throughout the city for all residents. Furthermore, children should be encouraged to use the surrounding community facilities in order to familiarise themselves with their neighbourhood context and build relationships with the community around them. Allowing schools to filter into the public realm both physically and socially will have a number of benefits to the community and the children including the following:

BENEFITS TO CHILDREN

Allowing school networks to filter into the public realm will provide children with a sense of belonging within their community, fostering increased social skills and confidence.[46] Synergies between local businesses and schools have been found to show improved learning outcomes[42] including building new skills, developing more positive attitudes and fostering relationships between children. Embedding learning within the public realm will also assist in a child's spatial awareness and knowledge of their neighbourhood.[36]

BENEFITS TO PARENTS

Fostering networks between the school and the community creates strong relationships between local groups and encourages parents and grandparents to actively engage and form social networks .[42]

BENEFITS TO THE COMMUNITY

Sharing facilities between the school and the community creates efficiencies in the use of under-utilised facilities and sharing of resources and knowledge. Fostering strong social connections also promotes values of empathy and responsibility within the community.[42]

1. PLAYFUL LEARNING NETWORKS
Schools should be encouraged to partner with local businesses for combined learning and play opportunities. For example, a maths session could be taught at a local bakery.

2. PLAY AS EXTENSIONS TO THE SCHOOL CURRICULUM
School programs should encourage the use of play spaces outside of school grounds as part of the curriculum. For example; an art class could be conducted at the local park where students would design and build 'cubby houses'.

3. PLAYFUL SYNERGIES BETWEEN SCHOOL AND COMMUNITY
Local councils should identify potential vacant or underused sites which could be temporarily leased out as extensions of the school network. These spaces could be used by the school as 'satellite classrooms' embedded in the community and attracting teaching programs with professionals such as 'scientists in schools'.

6. PARTICIPATION IN DECISION-MAKING AND DESIGN
Students should be actively engaged in the decision making and design of facilities and programs which are intended for their use.

5. BARRIERS TO SHARED FACILITIES
Local councils should mimimise the legal challenges which schools face when developing shared-use programs.

*Refer to page 34 for image references

1. SUBTLE SCHOOL BOUNDARIES

Subtle school perimeters focused on low fencing and planting should be encouraged to ensure welcoming frontages.
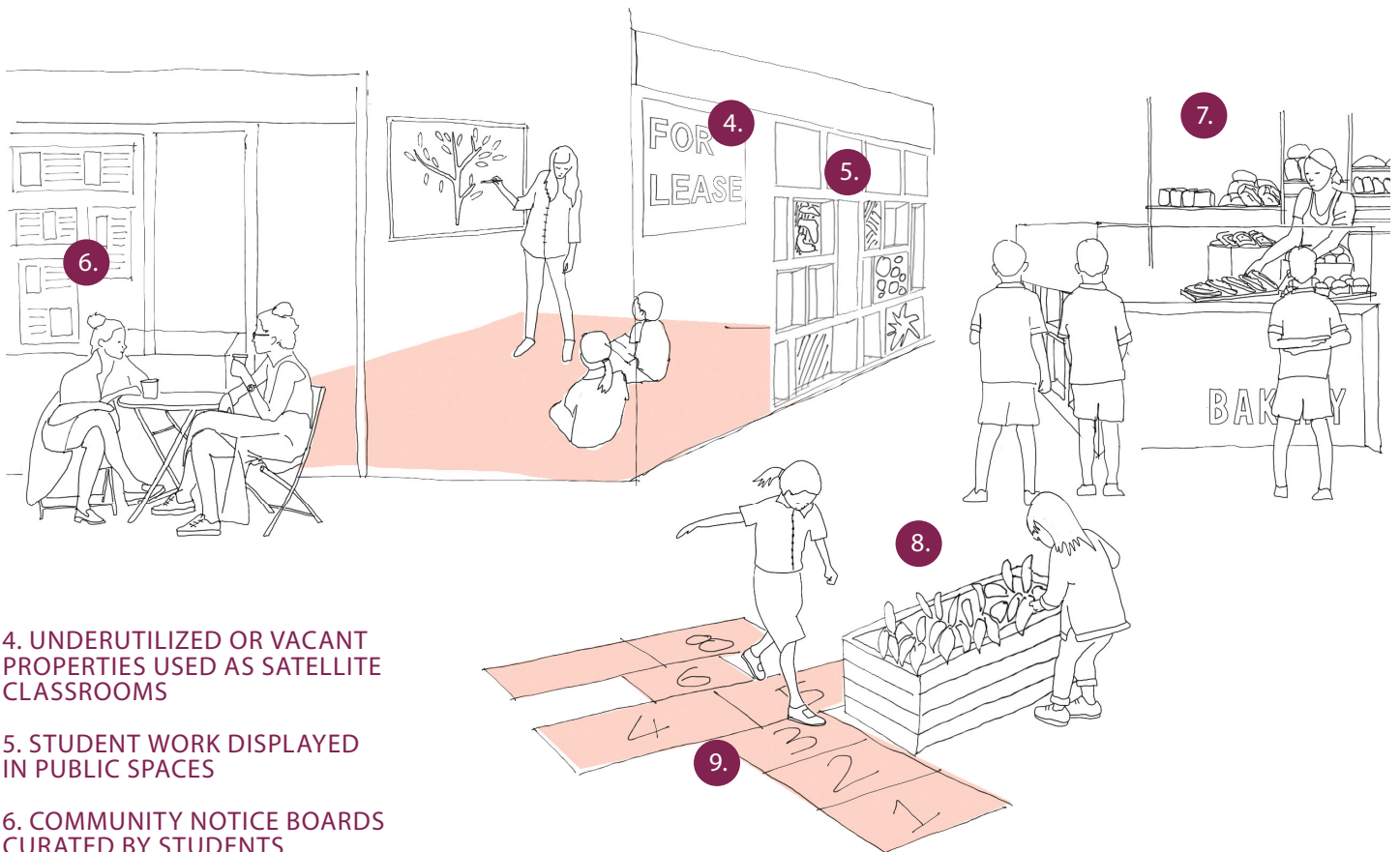

2. SHARED FACILITY USE

Facilities (both closed spaces and open play spaces) should be shared between the local community and school.

3. LEARNING OPPORTUNITIES IN PUBLIC SPACES

Learning opportunities should be embedded throughout the city as extensions of schools.

4. UNDERUTILIZED OR VACANT PROPERTIES USED AS SATELLITE CLASSROOMS

5. STUDENT WORK DISPLAYED IN PUBLIC SPACES

6. COMMUNITY NOTICE BOARDS CURATED BY STUDENTS

7. PARTNERSHIPS BETWEEN LOCAL BUSINESSES AND SCHOOLS

8. GARDENING AND UP-KEEPING PROGRAMS RUN BY SCHOOLS

9. LEARNING THROUGH PLAY

A design overlay

CASE STUDY: Green Square

Imagine an overlay onto a masterplan which considers opportunities for children's play and independent mobility.

As a case study, I have considered a masterplan for a new residential community, located 3.5km from Sydney's CBD. The proposed new Green Square development is estimated to be Australia's most densely populated neighbourhood at 22,000 people per square kilometer. An estimated 2700 primary school aged children and 1800 secondary school aged children are expected to be living in Green Square by 2031[47]. That is 4500 children, who's needs should be seriously considered in the design and planning of this neighbourhood.

Imagine if the masterplan had an overlay applied to it, which specifically considered opportunities for children's play and active independent mobility. Using a selected few interventions proposed in this report, we can already start to engage with the needs of children who will live in this new community. A number of key questions outlined below should be asked of the planners, designers and architects during the masterplanning stage:

- How will children living in this new community walk independently to school?
- Have play opportunities been considered along designated safe travel routes?
- Does every dwelling have access to a play space within a maximum of 500m?
- Has passive surveillance and direct access been considered when locating play spaces?
- Where are the opportunities for children to gather and take ownership of their community?
- Where are the spaces which allow children to run wild, get dirty and connect with nature?
- Are there opportunities for the proposed primary school to filter into the community infrastructure?
- Have opportunities for play within apartment complexes been considered?
- Have safety measures been applied to the design of pedestrian crossings near the proposed primary school?

By directly engaging with the children and youth living in the surrounding suburbs, we can start to delve further into these questions to create frameworks where policies/ programs and physical interventions can occur.

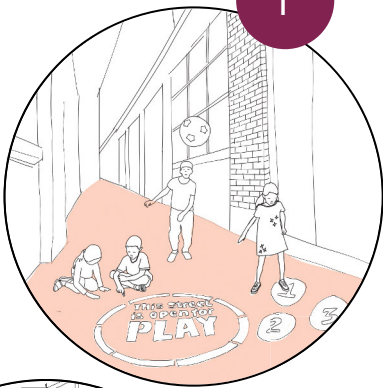**1.** PLAY OPPORTUNITIES THROUGHOUT THE PUBLIC REALM

2. SAFE TRAVEL ROUTES TO ENABLE CHILDREN'S INDEPENDENCE

3. PLAY IN HIGH DENSITY HOUSING

4. SCHOOL NETWORKS WHICH FILTER INTO THE PUBLIC REALM

2 PLAY PARTNERS
Local businesses should be encouraged to become safe zones for children to play and socialise

1 PLAY STREETS
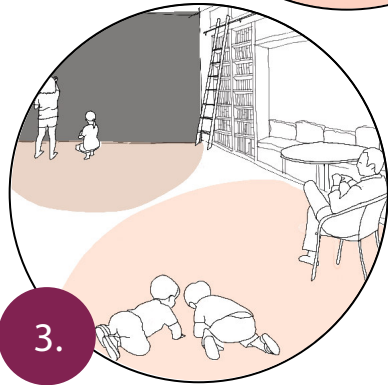Quiet streets within the neighbourhood should be identified with potential to become 'play streets' during certain times of the day

4 SCHOOL NETWORKS
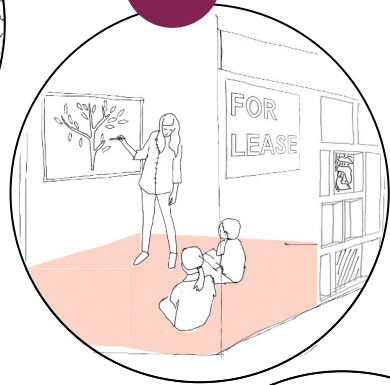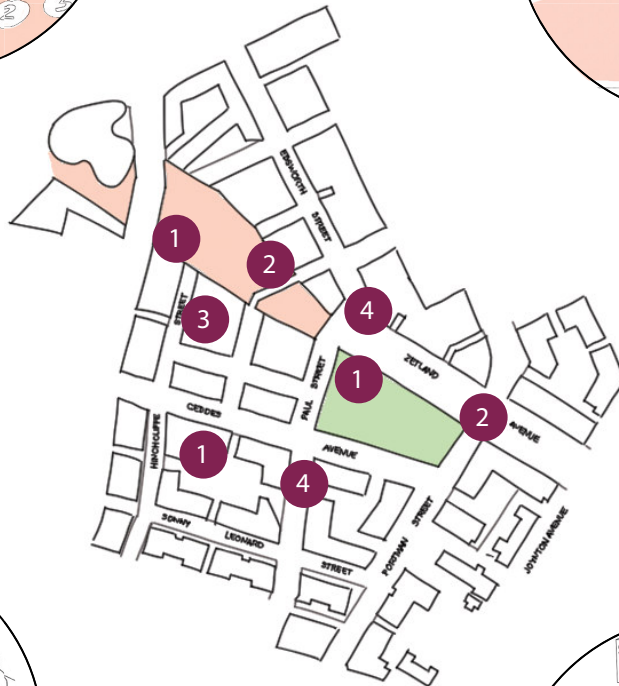Vacant shops and offices can become community classrooms

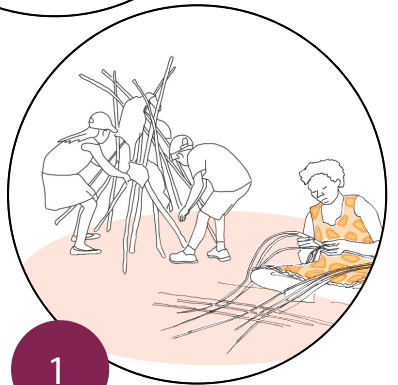**3. PLAY IN COMMON AREAS**
Apartment lobbies should provide opportunities for children's play

1 OWNERSHIP OF PLAY SPACES
Opportunities for play should encourage children to take control over their play environments

1 INCIDENTAL PLAY OPPORTUNITIES
Play opportunities should be embedded within the public realm
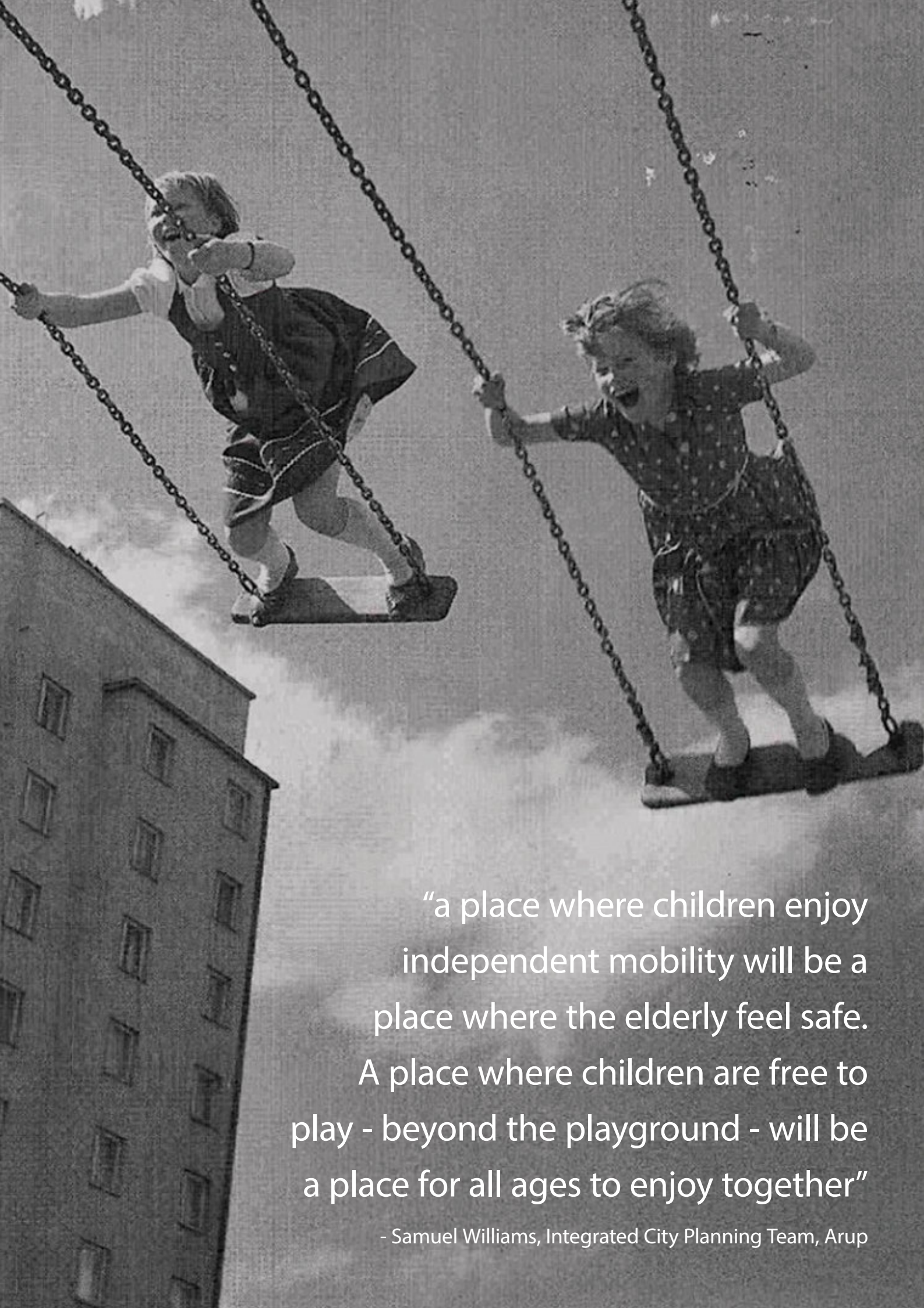
4 STUDENT CURATED GALLERIES
Student art work should be displayed in public places including bus stops

2 CHILDREN'S TRAVEL ROUTES
Signage and wayfinding should be implemented around designated 'children's walking routes'

"a place where children enjoy independent mobility will be a place where the elderly feel safe. A place where children are free to play - beyond the playground - will be a place for all ages to enjoy together"

- Samuel Williams, Integrated City Planning Team, Arup

Conclusions & Recommendations

There is no doubt that we are seeing a significant densification of Australian cities and with this, an increase in the number of children living in high density dwellings. With backyards shrinking or altogether disappearing, common public and semi-public space will become increasingly important in providing opportunities for children to play. With careful design of compact cities, we can encourage children's active mobility, ensuring positive health and wellbeing outcomes of children and increased community engagement. Furthermore, addressing children's needs in compact environments, allows families to remain in high density dwellings after having children, ensuring that the compact city vision is inclusive to all.

But deeper than the economic, environmental and social benefits which come with encouraging families with children to remain in cities, lies a fundamental question about childhood and the place which children hold in our society. If we are serious about the future, then we should begin by asking ourselves how we can make the present better for children. After all, they are the decision makers of the future.

This report has outlined a number of strategies which can be implemented to any new and existing neighborhood, encouraging a balance of social and physical interventions. Apart from highlighting various design opportunities and interventions, this report recommends the following actions.

1. ESTABLISHING A CHILDREN'S PLAY AND ACTIVE MOBILITY DESIGN POLICY FOR NSW

2. ESTABLISHING PLANNING AND DESIGN STANDARDS FOR LOCAL COUNCIL WHICH SUPPORT THE DESIGN POLICY.

3. EMBEDDING THE PRINCIPLES OF THE DESIGN POLICY INTO THE DECISION-MAKING PROCESS WITHIN LOCAL COUNCILS THROUGH WORKSHOPS AND EDUCATIONAL FORUMS

Numerous government agencies, councils and key industry players around the world are recognising the importance of designing cities for children to ensure the long-term viability of compact cities. The city of Toronto has recently released a guideline 'Planning for Children in Vertical Communities' (2017), as has the City of Rotterdam with the guideline 'How to build a Child Friendly City' (2013). Arup consulting has also recently released a report titled 'Cities Alive: Designing for Urban Childhoods" (2017) which outlines the numerous benefits to communities and economies which comes with designing child-friendly cities.
Australian capital cities ought not be left behind.

The story of children in the context of Australia cannot be told without an acknowledgment of the place that children hold in the society of the aboriginal people, the traditional custodians of this land. Archaeological evidence suggest that Aboriginal people have inhabited this land for over 65,000 years as the longest continuous culture in the world. There is no doubt that a culture which is so resilient can provide a lot to learn when it comes to perspectives on children.

"Children playing: frolicking in sparking blue sea, scampering along bright, white sand, climbing into deep green, fruit-laden trees, slipping and sliding on grey mud. The sounds that go with these memories are squeals of delight and expectation; the feeling is of boundless energy, running, jumping, swimming and throwing. These children were lucky. They lived in the bush on their own land, never appeared to be bored and were forever finding new and exciting things to do" (Haagen, 1995)[48]

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'A NETWORK OF PLAY OPPORTUNITIES'

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De Potgieterstraat Street,
Amsterdam

2. DP Architects in collaboration with the
Singaporean government
Experimental Bus Stop, photo by
Infocomm Media Development Authority

3. Site Design
Garfield Park Play & Grow Garden V1.0,
Chicago

4. Phillips Farevaag Smallenberg
Landscape Architects
Underpass Park, Toronto

5. Aspect Studios
Darling Quarter Playground, Sydney

6. Henge Designs
Tompkins Square Park, New York

7. Statkus Architecture
Eco Cubby House Project
Photo by Marie Muggivan

8. Architectural Playground Equipment
Muelheim an der Ruhr, Germany

9. Gaeta-Springall Architects
Memorial to Victims of Violence, Mexico

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'SAFE TRAVEL ROUTES TO ENABLE CHILDREN'S INDEPENDENCE'

1. Community Gardens
Punggol, Singapore

2. Community Bus Stop
Punggol, Singapore

3. NACTO (National Association
of City Transport Officials)
Urban Street Design Guidelines,
Neighbourhood Street

4. Matarozzi Pelsinger Design Build
Noriega Street Parklet, San Francisco

5. Christo Guelov in collaboration
with Torrelodones Council, Madrid
FUNNYCROSS, "Waves" - School Lourdes
Photo by Rafael Perez Martinez

6. Manchester Laneway, Melbourne
Photo by Martina Gemmola

7. Telegraph Hill Neighbourhood
Center in collaboration with KaBoom!
'Play Everywhere Challenge'
Happy Lane, San Francisco

8. Alameda County Safe Routes to School
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'PLAY IN HIGH DENSITY HOUSING'

6. Meriton Developments
Rosebery Avenue, Sydney

7. Levitt Bernstein Architects
Ocean Estate, London
Photo, Tim Crocker

8. Christian Duvernois Landscape Studio
Ascension School Rooftop Garden,
Manhattan

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'SCHOOL NETWORKS WITH FILTER INTO THE PUBLIC REALM'

6. Hayball Architects
South Melbourne Primary School,
Melbourne

7. Hayball Architects
South Melbourne Primary School,
Melbourne

8. Jane Hutton & Adrian Blackwell
Landscape Architecture
Dymaxion Sleep Structure, Quebec

2017

Australian
Institute of
Architects