FINAL REPORT

Vertical Living Kids

CREATING SUPPORTIVE HIGH RISE ENVIRONMENTS FOR CHILDREN IN MELBOURNE, AUSTRALIA

A Report to the Victorian Health Promotion Foundation
by
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This report presents the findings of “Vertical Living Kids”, an 18 month research project which ran from July 2008 to December 2009 and was funded by the Victorian Health Promotion Foundation (VicHealth). The research had two objectives: to explore the physical and social environmental determinants of Children’s Independent Mobility (CIM - the ability of children, in this case children aged 8-12, to autonomously explore public space) in central Melbourne high rise housing; and to uncover international best practice planning policy for these communities.

Forty children and their parents (18 living in public housing and 22 in privately owned housing) participated in this research project. We used a range of qualitative and quantitative methods, including children having ‘a week with a camera’ and creating an annotated collage of their pictures; a travel activity diary filled out by children; GPS monitoring to supplement the travel diary in terms of knowing where children go in the day; a parental survey; and a desk-top best practice policy review.

Research Findings:

• Significant differences can be found between the travel behaviour of children residing in public and private high rise housing:

  • Children in public high rise housing experience greater levels of CIM: 62% of their journeys were undertaken either alone or with other children; while only 17% of trips made by the private high rise sample were undertaken without adult accompaniment.

  • The geographies of children residing in public high rise housing were dominated by local, designated play spaces. Conversely, the geographies of children residing in private high housing covered not only a larger territorial range but a wider variety of purpose built play spaces as well as public transport and commercial spaces.

  • Distance to school and local open green spaces is a determinant of CIM. Participants residing within an 800m radius from their school or within 300m of local green space were more likely to access those spaces independently than children who had to travel further.

  • Factors contributing to children’s environmental preferences include accessibility and proximity to home, amenity, and the range of play and socialization opportunities

  • Singapore and Vancouver were identified to have best practice policies that support children living in high rise environments. Singapore enforces a clear hierarchy of walkable, transit-oriented play spaces and also provides sufficient housing diversity and social infrastructure for families in high rise housing. In Vancouver, high rise housing is regulated by design guidelines with explicit consideration of the needs of children and families, including the proportion of affordable family units, informal surveillance of children’s play space, common open and indoor amenity spaces, private open space, and community services.

Recommendations to State and Local Government:

• That state and local planning authorities develop specific design guidelines for children and families living in high rise housing, including enforcing a spatial hierarchy of interesting local play spaces that allow for a gradual extension of children’s travel range, facilitating informal surveillance of play spaces for younger children from adjacent housing, and supporting innovative design and age-appropriate play spaces for older children

• Consultation with children, and action on the recommendations arising from that consultation, that recognizes that the entire public realm can function as a play space for children, rather than the current norm of restricting child friendliness to child specific destinations such as parks and playgrounds.
ACKNOWLEDGEMENTS

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Finally, we would like to thank all of the children, parents and the schools that participated in this project. We gratefully acknowledge the time that you gave to this project and your willingness share your insights on high rise living in inner and central Melbourne.

In order to protect the anonymity of the children who participated in this research project we have altered their photo collages by obscuring any image or text which could be used to identify them. While we regret having to alter the children’s images, we felt that we had an obligation to protect their privacy.
1 INTRODUCTION: OBJECTIVES AND METHODS

1.1 Children in Central City High Rises

Australian skylines have undergone a profound change in recent years, with the emergence of new high rise residential developments occurring in tandem with economic restructuring and changing household demographics. In 1991, the City of Melbourne, comprising the central business district (CBD) and surrounding inner suburbs, had a population of approximately 34,000 people. By 2006, the population had doubled, to over 67,000 (City of Melbourne 2007a). The current population projections are for a further doubling of the municipality’s population by 2021, with the CBD and its adjacent waterfront districts, Docklands and Southbank, specifically identified as growth areas.

This high rise residential development in Melbourne’s centre has been planned on the assumption that new residents would comprise a mix of DINKs (dual-income-no-kids) and older ‘empty-nesters’ (Costello 2005; Fincher 2004). Consequently, the needs of children and families have been virtually ignored, and the newly developed areas are lacking essential facilities, services and appropriate open space for these residents. Yet, it is projected that almost 10,000 children aged 0 – 14 will reside in the City of Melbourne by 2021, many of whom will be accommodated in high rise housing (City of Melbourne 2007b). For the purpose of this report, high rise housing has been defined as buildings comprising four or more storeys, a standard definition in Melbourne (City of Melbourne 2009: Clause 19.03-3; DSE 2004; ABS 2004, 166).

Our research interest in vertical living kids (children living in high rises) is sparked by concern about the decline of children’s independent mobility (CIM; defined as the freedom of those under the age of 18 to move around in public space without adult accompaniment). Specifically, despite the fact that both scholarly research and the popular media in Australia have begun to show concern about the decline of CIM, there is virtually no research or coverage of urban children living in central cities rather than suburbs. As intensification of capital cities becomes orthodoxy in Australia, consideration must be given to how these environments can support children’s health and wellbeing. Findings from our research are intended to elucidate those physical and social elements that encourage CIM, and inform planners and policy makers on supportive environments for children living in high rises in Australia’s central cities.

1.2 Children’s Independent Mobility

Internationally and within Australia, there has been a radical decline in CIM over little more than one generation. In the 1970s, most Australian children walked or cycled by themselves to school, while today, most children are driven by their parents (Peddie and Somerville 2005; Timperio et al 2004a; Tranter and Pawson 2001). One longitudinal study in a primary school in the Melbourne suburb of Essendon found that 65% of children walked to school and 25% were driven in 1974. At the same school in 2005, only 8% walked and 89% were driven (Peddie and Somerville 2005).

While much of the CIM research concentrates on the journey to school, UK evidence suggests that this only accounts for only one fifth of children’s journeys (Mackett 2001, 1). Several researchers, following on from Hillman et al (1990) foundational study on CIM, talk about ‘licences’ as one way of measuring the shift in attitudes towards CIM. Licenses are the age at which parents allow children to travel to school alone; play in the street or a nearby park without adult supervision; cross main roads; travel to places other than school; take public transport; cycle on main roads; and go out after dark alone or with friends. Children aged 6 to
12 are at a key age where “graduated licenses” may or may not be granted by parents (Tranter and Pawson 2001, 31). While 80% of German 10 year olds were allowed to travel alone to places other than school in 1990, only 38% of 10 year olds in the UK, and 34% of 10 year olds in Sydney, were allowed the same freedom (Tranter and Pawson 2001, 41). The “territorial range”, or distance from children's homes to where they are allowed to wander independently, is also measured in some studies (Kytta 2004, 180). By whatever measure, CIM and associated travel has declined dramatically, to the point where one third of primary school aged children walk less than five minutes a day (VicHealth 2002).

The individual and societal costs of this decrease in children's independent exploration are onerous. Walking and cycling are both examples of the kinds of moderate physical activity that need to be undertaken on a daily basis for good physical health. There is also a substantial and growing literature on the importance of autonomous exploration of local environments for the social and mental development of children, and the prevention of chronic diseases such as anxiety and depression (Malone 2007; Tranter and Pawson 2001; Hillman et al 1990; Short 1989; Ward 1977). It has been suggested that increasing the level of CIM, which may increase the possibility for children to recreate outside the home, may positively impact on rates of physical activity, although a direct causal link is still be investigated (Mackett 2007a, 467). Prezza et al (2005, 437) discuss the impacts of reduced autonomous walking and cycling in neighbourhoods, including lessened environmental knowledge, retarded development of spatial, motor and analytic skills, and reduced number of local friends and acquaintances. At the societal scale, adult dependent mobility is associated with increased use of ‘the parent taxi’, reduced use of public spaces like parks and streets, and augmented fears of the strangers that surround us in cities (Martin and Carlson 2005; Tranter and Pawson 2001).

The most commonly cited reason for declining CIM is child and parental fears of traffic safety (children getting hit by a car) and stranger danger (children getting abducted by non-family members) (Timperio et al 2004a, 42). A more complex set of additional factors is found within a study on reducing children's car dependency in the UK: increasing car ownership and lessened public transport services in some areas; greater complexity in lifestyles, with more parents working; increasing sprawl, with workplaces, shops, schools, and leisure activities only accessible by car; the rationalization of services such as schools and shops (Mackett 2001, 5). A further social factor is the growing tendency to heavily schedule middle class children's and adult lives, a phenomenon that has been termed “turbo-childhood”. Coupled with social messages about the dangers of allowing children to engage in outdoor and unstructured outdoor play has been middle class pressures to place children in private schools, organize private sports and arts lessons, and organize expensive and exotic ‘play dates’ (Malone 2007, 516).

Studies that have looked at the environmental attributes of particular areas in relation to children's mobility choices have found that key determinants include the age, density, and proximity of the neighbourhood to the central city; a set of traffic danger signifiers, including amount of traffic, width of roadway, quantity and quality of footpaths, and dangerous crossings; and a set of stranger danger signifiers including visible incivilities and alcohol/drug use (dog muck, broken bottles, used drug paraphernalia); along with local air and noise pollution (Prezza et al 2005, 438). Several researchers have drawn attention to a negative spiral of fear leading to fewer people on the street, which in turn leads to increased potential for accidents and crimes (Prezza et al 2005).

Whether an individual child walks or cycles independently is also related to their gender, age, and socio-economic status (SES). The relationship between SES and CIM is oblique. Tranter and Pawson (2001) found that traffic levels were greater determinants of CIM than SES, in their study of four New Zealand neighbourhoods. In general, children from lower SES neighbourhoods are less likely to be physically active.
than children from higher SES neighbourhoods (Timperio et al 2004b, 21), even though low SES households are less likely to own vehicles. Morrow (2000), in her work with children in the UK aged 12-15, found that young people in low SES areas were deterred from their use of the urban environment by poor amenities and incivilities issues like garbage/filth, as well as fear of physical or sexual attack. Furthermore, visible minority youth were subject to harassment by authority figures such as shop owners and police.

Despite a clear social and health rationale for action, planners and policy makers have been slow to respond. A recent audit of local and state government policy in the State of Victoria found virtually no mention of CIM, even in ‘whole of government’ priorities such as Go For Your Life, which seeks to increase physical activity and intake of healthy foods, with children as a major target group (Whitzman and Pike 2007, 30). There is little mention of children’s needs or rights in the Melbourne 2030 metropolitan plan, in recent planning guidelines like Healthy by Design and Safer Design Guidelines, or in the ambitious Neighbourhood Renewal programme, which seeks to narrow the gap between the most disadvantaged neighbourhoods in Victoria and the rest of the State (Whitzman and Pike 2007, 33-35). While there are relatively new Child-Friendly Cities programmes in several local governments, which include an explicit “citizenship” approach to children’s right to autonomously explore public space, the focus thus far has been on consulting with children, rather than integrating their recommendations into land use planning policies (Whitzman et al 2009).

1.3 Objectives of Research Project

This project had two objectives: one research-related and one practice-related. First, we wish to explore the physical and social determinants of CIM and related physical activity of children aged 8 to 12 living in high rise housing in the Cities of Melbourne and Port Phillip. Our central research questions is: how do children and their parents residing in high rise housing in inner and central Melbourne perceive their local environments, and how their perceptions impact on children’s independent exploration of public spaces? Because much of the literature on children and open space has stressed the importance of socio-economic status, we seek to compare the experiences of children residing in public and privately-owned high rise housing. The project pilots interdisciplinary methodologies drawn from health promotion, environmental psychology, transport modelling, children’s geographies and urban planning that will be extended in an upcoming Australian Research Council funded national study of children’s travel behaviour, physical activity and independent mobility (CATCH: Children, Active Travel, Connectness and Health DP 1094495, 2010-2013).

The second objective is to uncover international best practice policy supporting children residing in high rise housing with a specific focus on promoting CIM and related physical activity. Findings from the project are intended to help create supportive environments for children living in high rise housing, particularly those in Australian central cities, through providing policy recommendations to the Cities of Melbourne and Port Phillip to inform their child friendly city policies and help them to develop inner and central high rise environments that are responsive to children’s needs and support CIM.

We focus on children aged eight to twelve, corresponding to upper primary school grades four to six, as research indicates that this is the age group whose independent mobility has been curtailed most severely in recent years (Hillman et al 1990, Timperio et al 2004a). As outlined in Figure 1, 40 children (18 males and 22 females) participated in the study, comprising 18 and 22 participants drawn from public and privately
owned high rise housing respectively in the CBD and adjacent inner suburbs: Docklands, Southbank, Melbourne, North Melbourne, Flemington, Carlton, St. Kilda, and Port Melbourne.

**Figure 1: Overview of Population Sample**

<table>
<thead>
<tr>
<th>Public High Rise Housing</th>
<th>Male</th>
<th>Age</th>
<th>Female</th>
<th>Age</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melbourne: Carlton</td>
<td>7</td>
<td>11</td>
<td>6</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Melbourne/ Moonee Valley: Flemington</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Melbourne: North Melbourne</td>
<td>1</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Privately-Owned High Rise Housing</th>
<th>Male</th>
<th>Age</th>
<th>Female</th>
<th>Age</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melbourne: Southbank</td>
<td>3</td>
<td>9</td>
<td>5</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Melbourne: CBD and St Kilda Road</td>
<td>2</td>
<td>10</td>
<td>3</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Melbourne: Docklands</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Port Phillip: Port Melbourne</td>
<td>2</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Port Phillip: St Kilda</td>
<td>2</td>
<td>9</td>
<td>3</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
<td>8</td>
<td>12</td>
<td>8</td>
<td>22</td>
</tr>
</tbody>
</table>

The case study areas (illustrated in Figure 2) cover two generations of high rise housing construction in Melbourne with populations of vastly different SES levels. The participants from Carlton, Flemington and North Melbourne are drawn from state-owned high rise public housing estates which were built in the 1960s. The public housing estate in Carlton, where the largest number of public housing participants are drawn, is currently undergoing a massive redevelopment as a result of state government Neighbourhood Renewal and Community Renewal policies. On a smaller scale, Moonee Valley City Council (in partnership with different state government departments, community agencies and residents groups) has also embarked on a redevelopment project, the Flemington Community Capacity Building Project, which aims to improve the health and wellbeing, social, educational and economic outcomes for residents of the estate.

The second generation of high rise housing under investigation are Southbank, Docklands and Melbourne (both the central business district and St Kilda Road). The City of Melbourne’s Postcode 3000 campaign and
the redevelopment of former industrial/port areas into waterfront residential and entertainment precincts have encouraged a return to central city living during the past two decades. The redevelopment of these areas are characterised by the high-end luxury apartment living which caters to the other end of the SES spectrum. Supplementing the private high rise sample from Docklands, Southbank and Melbourne (both the CBD and St Kilda Road), are the suburbs of St Kilda and Port Melbourne. These established inner city suburbs offer an intermediary between these two extreme environments – public high rise housing on the outskirts of the central city and the luxury apartment complexes within the central city – as they contain a mix of older ‘six pack’ apartment developments from the 1960s and recently built apartment complexes.

Figure 2: Map of case study sites

Source: Both images retrieved from the Id. website on 4 December 2009:
1.4 Research Design

The project employs a rich set of methodological tools to elicit the views of children and their parents presently living in high rise housing about their surrounding communities. This mixed method approach applies and expands the earlier research on CIM by Australian and UK public health and planning researchers to the under-researched area of children in central and inner city high rises (Carver et al. 2008; Mackett et al. 2007b; Duncan and Mummery 2007; Hume et al. 2005).

Figure 3 provides an overview of recent CIM studies from which Vertical Living Kids draws inspiration. Following a brief summary of the research undertaken, the differences, including gaps or limitations of each study, are identified.

**Figure 3: Overview of Existing Studies using a similar mixed methods approach**

<table>
<thead>
<tr>
<th>CIM study</th>
<th>Population Sample</th>
<th>Methods</th>
<th>Limitations or Gaps</th>
</tr>
</thead>
</table>
| **The CAPABLE Project** (Mackett and Paskins 2008; Mackett et al. 2007a; Mackett et al. 2007b; Mackett et al. 2006,) | 1073 children from the UK (Hertfordshire County Council and the London Borough of Lewisham) aged 8-12 | Method:  
  - Accelerometer and GPS measurements and travel diaries (200 children)  
  - Questionnaires (486 parents and 1073 children)  
  - Map annotation and map drawing activities with children  
  - Photography exercise (accompanied by interviews) | The CAPABLE project is the most extensive and successful project investigating CIM using a comprehensive mix of qualitative and quantitative methods and thus heavily influenced the design of VLK.  
A key point of difference between CAPABLE and the Vertical Living Kids is in the way that children's perceptions of their environment are obtained. CAPABLE elicited children's views through surveys, a mapping exercise and a photography activity which sought to compare the "subjective world portrayed in the drawing" to the "objective world represented by the GPS trace" (Mackett et al. 2007b: 1, 5). Thus the mapping exercises focuses more on the capacity of children to recall features in their local environment and their journey to school rather than on their attitudes towards these environments. Moreover, the photography activity only asked children to identify "special places" for children, thus only the places they liked were identified. The photography activity undertaken in Vertical Living Kids was developed as a tool to identify children's spatial range, but also investigate their preference for particular spaces and their both positive and negative perceptions of their local neighbourhood. Finally, SES was not a variable used to compare perceptions of different environments. |
<table>
<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Findings</th>
</tr>
</thead>
</table>
| **Follow-up of the CLAN Study (Carver et al. 2008; Timperio et al. 2008)** | A cross sectional study involving 188 children aged 8-9 and 346 children aged 13-15 in Melbourne | - Accelerometer measurements
- GIS (to develop objective measures of the road environment and distance to public open spaces) and environmental audits
- Parent surveys and surveys with children aged 13-15 focusing on active transport. | Arguing that many CIM studies focused on environmental perceptions rather than empirical evidence, this study sought to explore associations between physical activity and local road environments and features of public open spaces. Accordingly methods to engage with parents or children's environmental perceptions were not adopted. Children's travel behaviour was determined through the parent and children surveys rather than via GPS trace or travel diaries. Moreover, as only children from the older cohort completed the surveys, the views of children aged 8-9 were not considered. Finally, SES was not a variable used to compare different environments. |
| **Hume, Salmon and Ball et al. 2005**     | 147 10 year old children in low SES areas Melbourne | - Map drawing of their home and neighbourhood environments (147 children)
- A subsample of children undertook a photography activity of places and features in their environments that are important to them
- Accelerometer monitoring (127 children) | The study sought to first explore children's perceptions of their environment and then examine the associations between these perceptions and physical activity. The study did not incorporate GPS or travel diaries, nor did it try to engage the parent's perceptions of their environment. Finally, SES was not a variable used to compare different environments. |
| **The CLASS Project (Salmon et al. 2004; Telford et al. 2004; Salmon et al. 2002)** | A cross sectional study of 5-6 year olds and 10-12 years old of high and low SES areas in Melbourne (comprising 1210 families). | - Qualitative interviews with 40 parents with children aged 10-12
- Surveys (291 5-6 year olds, 919 10-12 year olds and 1243 parents)
- Accelerometer measurement | The study did not involve GPS. Travel activity data was only generated from the parents and children's surveys as travel diaries, a record of children's physical activity over a defined period, were not used. The researchers recognised that using the questionnaires with children are problematic, partly because much of children's physical activity is incidental and not the result of structured or formal recreational activities. Therefore this reduced the accuracy of the children's recollection on much physical activity they had undertaken. Moreover, using the survey instruments with the children aged 5-6 was found to be particularly challenging. Engagement with children did not involve visual methods which have proved effective in other studies exploring children's environmental perceptions. |
| **Romero 2007**                          | 83 children aged 9 to 12 in Sydney | - Surveys for children
- Drawing activity for children wherein they draw a "neighbourhood that is good for children to walk in" (Romero 2007)
- Focus group discussions regarding the children's drawings | The research focused solely on children's environmental perceptions with a particular focus on the school journey. Travel diaries, accelerometer and GPS readings were not utilised in the study and the parent's environmental perceptions were not explored. |
| **The PEACH Project (Page et al. 2009)**  | 1307 children aged 10-11 and in the UK | - Accelerometer measurements
- Questionnaires for children
- Other measures were recorded including the level of deprivation of the area, pubertal status and body mass index | Visual or photographic methods, travel diaries and GPS were not included in the study. |
In this study, the children have a ‘week with a camera’, wherein they photograph spaces they like and dislike in their neighbourhood, and using these photos, create annotated collages of their neighbourhood. They fill out a four day travel diary, comprising two weekdays and the weekend (see Appendix A) (adapted from Mackett et al 2007a: 458). They are also loaned GPS trackers and accelerometer\(^1\) (a physical activity monitor no larger than a pedometer) to use over the same four day period. This is in accordance with the research undertaken by Trost et al. (2000: 426) that established “the minimum number of days of monitoring required for accelerometers to assess usual physical activity in children” is four days: two weekdays and the weekend.

Children were asked to take off the accelerometers and GPS trackers when participating in contact or organised sports (such as football, netball or ballet) to prevent damage to the equipment and to keep the focus of the research on incidental and unstructured recreational physical activity. To supplement the data arising from the child-focused research activities, parental perceptions of their environment and their attitude towards their child’s independent mobility were also explored by means of a parental survey (See Appendix B).

For children, participation in the project involved three one hour sessions: the first to introduce them to project, and provide them with disposable cameras and parent surveys, the second to collect the cameras and parent surveys and distribute the travel surveys and GPS/accelerometer units (“the places where I go”), and the third to return the printed photographs to the children and create photo collages (“the spaces I like and the spaces I don’t like”). In addition, the travel diaries, GPS maps, accelerometer readings and photo collages were returned to them upon completion of the project. However, approximately one third of the final sessions, wherein the children created their photo collages, ranged from 90 minutes to 120 minutes because of the children’s enthusiasm for the activity. As a result, the photo collages range from one to five A3 pages. The data was collected from March to September 2009. While the research team recognised that collecting data on children’s travel behaviour during winter would not be ideal, it was deemed necessary in order to coincide with the school year which would enable schools to participate in the project. The second aspect of this research, which occurred concurrently, was to review policies that support children living in high rise housing, with particular emphasis on places that have been identified as good practices. Figure 4 summarises the intended process and outcomes of each method.

The data from the parental surveys and travel diaries and photo collages were entered into Excel spreadsheets for statistical analysis. The small sample size necessitated a qualitative analysis of quantitative methods as a strict quantitative analysis would not be statistically viable.

The photo collages, as an indication of children’s environmental preferences were coded by two theme categories. The first theme focuses on the types of destinations that children identify in their photo collage, to understand what sort of spaces dominate children’s play and travel geographies such as purpose built space (that is, places designed specifically with children in mind such as playgrounds, parks or skate parks), commercial venues (from shopping centres to amusement parks) and the public realm generally (such as train stations, CBD laneways, the Southbank promenade etc). Although an inventory of the destinations frequented was important, the project also sought to further understand children’s environmental perceptions. Thus, the second coding theme focused on why children preferred particular spaces over others and coded the positive and negative aspects of the destinations that participants identified such as issues relating to access, amenity, safety and opportunities for social interaction. The photo collages of

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\(^1\) The StarNav BTS 110 (Stars Nav Tech Ltd., Taiwan) GPS tracker and the Computer Science and Applications Inc (CSA) 7164 activity monitor (Shalimar, Fla) accelerometers were used in this project.
children from public and private high rise housing were coded separately in order to determine the influence of SES on children’s spatial and play geographies as well as environmental perceptions and preferences.

As a beneficiary of the project, the City of Melbourne provided in kind contribution to the project in the form of GIS assistance, converting the raw data extracted from the GPS devices into a graphic format which could be utilised by the research team. A ‘Home Zone’ was established for each participant, comprising a buffer zone around each participant’s home residence of 800 metres, about a 15 minute walk. The intention was to establish how much of the child’s time was spent within their local neighbourhood and what types of destinations are frequented most often within the zone. More importantly, it was hoped that differences in travel range and CIM could be linked to the types of services, facilities and recreational spaces for available for children within their home zone, such as schools, parks and community centres. The following extract has been provided by the City of Melbourne Spatial Systems unit to describe the technical processes undertaken:

The macro pulls the longitude, latitude, date and time values from the original spreadsheet and then calculates the time spent at each point. These values are all then placed in a new spreadsheet, where the time was changed to 24 hour time. Each day for each child had its own spreadsheet. Each new spreadsheet was then opened in ArcCatalog where a shapefile was created from the xy values within the spreadsheet. The shapefile was then projected in ArcCatalog from the geographics projection to UTM. A project file was created for each child in ArcMap. Each of these project files combines Melways imagery with the shapefiles for each day for the child. An additional shapefile was created which showed an 800m buffer around the home of each child. This was added to the ArcMap project file as the Home Zone.
**Figure 4: Overview of Methods**

<table>
<thead>
<tr>
<th>Method</th>
<th>Process</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photography Activity</td>
<td>Children were asked to take photographs of their neighbourhood of the places that they like and dislike which they frequent regularly after school and on weekends. The participants were shown how to use and hold the camera (such as when and how to turn the flash on and that they should take photos with the sun behind them). The researchers developed the photos and returned the printed photographs to the children along with A3 paper, glue sticks and coloured markers. They were asked to select their best images of their favourite and least favourite places to use in a photo collage with the intent to highlight particular features of their neighbourhood with accompanying descriptions of the environment(s) depicted. The children were asked to keep four questions in mind when they made their collages and annotated their photos: What is this place and what do you do there? Why do you like or not like this place? How do you get there? And who do you go there with? The research team also encouraged the participants to describe or draw additional places, to draw and annotate maps of their local area and develop ‘wish lists’ of things that they would like to change or improve.</td>
<td>Graphic depiction of where children go, the preference that they have for particular spaces and what features of their neighbourhood they would like to change or improve.</td>
</tr>
<tr>
<td>Parental Survey</td>
<td>The surveys were distributed to children to take home to a parent. The survey concentrated on when and how often their children play, at what age they allow their child to travel on their own, along with what concerns they may have about allowing their child to travel independently. The researchers collected the questionnaires from the children. The surveys were also made available in Arabic, Somali, Vietnamese and Chinese.</td>
<td>Provides a measure of parent's perspective of their child's level of autonomy and physical activity and the neighbourhood mechanisms that support these levels.</td>
</tr>
<tr>
<td>Travel Activity Diary</td>
<td>The research team demonstrated how to fill out the travel activity diary to participants through a visioning exercise where children were asked to recall what they did on the previous day. Once the children demonstrated their ability to fill out a sample day, the travel diaries were distributed. Children were asked to record the places where they go, who they travel with, the mode of transport used and the things that they do once there for two weekdays and the weekend. The children were encouraged to use the additional ‘reflection pages’.</td>
<td>Written record of the places children go, what mode they used to get there and who they travelled with.</td>
</tr>
<tr>
<td>Accelerometer readings</td>
<td>The researchers demonstrated how to wear and use the accelerometers and GPS devices. These were then distributed to the participants along with an accompanying take home instruction sheet. Children were asked to wear the accelerometers and GPS devices concurrently with the travel diary over a four day period.</td>
<td>Accelerometer: Written record of the intensity of physical activity during children's neighbourhood travels GPS: Visual record of the spatial range of children in their neighbourhood.</td>
</tr>
<tr>
<td>and GPS monitoring</td>
<td></td>
<td></td>
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<tr>
<td>Policy Analysis</td>
<td>Section 3.3 of the literature review establishes the physical and social attributes that might support CIM and related physical activity in high rise environments in the inner and central city. Following these findings, a desktop review of best practice international policies supporting children residing in high rise environments was undertaken to establish: what kinds of open space and social infrastructure has been developed to support the CIM in high rise environments; what kinds of consultation strategies with children and parents support these planning strategies; and how positive outcomes are evaluated.</td>
<td>A desktop review of international best practice policy to assist planners and policy makers in central and inner Melbourne to create supportive environments for children.</td>
</tr>
</tbody>
</table>
Ethics approvals for the study were obtained by the University of Melbourne, the Department of Education and Early Childhood Development and the Catholic Education Office. In accordance with these ethics approvals, written consent was acquired from the children and parents participating in the project and the principals of the participating schools. Public and private primary schools in inner Melbourne were invited to participate in the study. One private primary school and five public primary schools participated in the research study. The schools assisted the research team to locate and recruit participants for the study and allowed us to undertake the three sessions during school hours on school premises. Six participants were recruited with the assistance of body corporate organisations, private contacts and through the general advertisement of the project through local papers and newsletters. In these cases, sessions were undertaken at the child’s private residence and were supervised by a parent or nanny.

1.5 Why employ both qualitative and quantitative methods?

The qualitative methods employed in this study – the photography activity with children and parental surveys – were adopted because of their effectiveness to elicit the children's and parents perceptions of their local environment. Parental surveys have been a commonly used tool in CIM studies to garner parental perceptions of their local environments and their attitudes towards CIM. Likewise, visual methods, particularly mapping and photography techniques are posited in much child focused research as an effective tool to gauge children's perceptions of their environment as “they provide the child with the opportunity to interpret and actively record their experiences” (Hume et al. 2005, 3). It enables the interview to be “driven” by the participants themselves as they are able to “self-select relevant events from their own lives and illustrate these events with photographs”, thus are able to “retain some control of the interview” (Clark 1999, 40-1; see also Morrow 2001, 257-258).

Hume et al. (2005, 2) argue that “environmental perceptions may be equally predictive of physical activity as objectively measured environments” and that behaviour, including their level of physical activity, access and use of public space, are influenced by the interrelated familial, neighbourhood and societal contexts within which they live. However, on the other side of the fence, there is a rising concern regarding the lack of objective measures or quantitative methods in CIM research and the perceived overreliance on parents and children’s perceptions of the environment and “self report” (Duncan and Mummery 2007, 51; see also Carver et al. 2008, 532-3). Accordingly, following on from recent studies attempting to reconcile environmental perceptions with objective measures of physical activity (Page et al. 2009; Mackett et al. 2007b; Hume et al. 2005) this study deliberately adopts a mix of qualitative and quantitative methods so that both the physical and social influences on CIM can be explored.

The trio of quantitative methods that have been used in this study – the travel diary, GPS data and accelerometer – have proved effective in recent studies, particularly when undertaken simultaneously, to explore the relationships between children's travel behaviour, actual use of public space and energy outgo (Mackett and Paskins 2008; Mackett et al. 2007a; Mackett et al. 2007b). Moreover, as a previous study revealed that participants tend to under-record their trips in travel diaries, this suggests that using GPS to provide an accurate measure of children's actual use of space and travel behaviour is necessary (Mackett et al. 2007, 4).
Figure 3 clearly illustrates that a study combining all of the methods outlined in Figure 4 has not been attempted in Victoria. Although a previous Victorian study (Hume et al. 2005) used mixed methods to test out the relationships between environments and physical activity, it did not include high-rise environments, explicitly address independent mobility or use GPS. As outlined in Figure 3, while the CAPABLE Project, a more recent project in Queensland (Duncan and Mummery 2007) and the Victorian CLAN Study (Carver et al. 2008; Timperio et al. 2008) have used a Global Positioning System and/or accelerometers to gauge children’s actual use of public space and their energy use, the combination of these technologies is as yet unused in Victoria. Finally, there is only very limited research on the perceptions, needs and ideas of children living in high rise housing in Victoria. This is particularly disconcerting in light of recent metropolitan strategies such as Melbourne 2030 (or in its more recent incarnation, Melbourne @ 5 Million) towards higher density living.

This study is therefore well placed to provide a substantial contribution to the existing body of CIM research in Australia using the perceptions of children and their parents to develop recommendations on supportive environments, particularly in light of metropolitan strategies towards higher density living.

1.6 Limitations

The project encountered several difficulties in the implementation of the research design outlined in the previous sections. Most previous studies with children have been based in particular neighbourhood schools, which allow large numbers of children to be sampled. It was extremely difficult to find children to participate in this study, due to the fact that there are no primary schools in Melbourne’s CBD, Dockland, or Southbank neighbourhoods, which means that children in private housing in those areas had to be individually contacted through their parents or through schools adjacent to these districts. It was recognized from the onset that the research would be limited to a small number of children, and thus be exploratory rather than hypothesis-proving in nature.

The photo collage activity proved most popular with the participants and was completed by 39 of the 40 participants. Of the 40 children involved in the study, only 28 parental surveys were completed. Proportionately, a greater number of children (20 participants) residing in private high rise housing returned completed parental surveys compared to public high rise sample which only produced eight completed surveys. Although the survey was supplied in five different languages (English, Vietnamese, Chinese, Somali and Arabic), the school adjacent to public high rise housing complexes had indicated that language barriers were still a likely factor as many parents may not be able to read in their native language.

As with other studies using GPS and accelerometer devices and travel diaries, few children provided a complete data set (Mackett et al. 2007a, 460). Of the total sample of 40 participants, 16 completed the travel diary for four days while 11 completed it for three days. Only the travel diaries of these 27 participants were considered for analysis. Although the participants were asked to wear the GPS trackers and accelerometers for four full days, this proved technically difficult and few children were able to actually achieve this. The accelerometers proved much easier for the children to use than the GPS trackers as they do not need to be turned on and off and are not required to be charged. Of the 40 participants, 13 wore the accelerometers for 2 days, 12 wore the device for 3 days and 11 wore it for 4 days.
Following on from Ekelund et al (2007, 1833-4; 2004, 585) and their assessment of “free living” physical activity, the research team had intended to analyse the accelerometer data by comparing the time spent in sedentary, light, moderate, vigorous and very vigorous activity as a proportion of daily activity counts. While Ekelund et al (2007; 2004) integrated these measures to the participants’ body mass index with the objective to explore the relationship between levels of physical activity and obesity, we intended to take a different approach by integrating the accelerometer data with the information retrieved from the travel diaries to explore if higher rates of active travel impacted on the intensity of physical activity. We were to address two research questions. First, did children who travelled to school by active travel modes record a higher intensity of physical activity throughout the day? Second, did children who recorded using active travel modes for 60% or more trips in their travel diary exhibit a higher intensity of physical activity than children who were more car dependent? The data was initially entered into Excel spreadsheets and then analysed using MAHuffe accelerometer analysis software (from MRC Epidemiology Unit, http://www.mrc-epid.cam.ac.uk/Research/PA/Downloads.html). We decided to focus on the intensity of physical activity because the research team did not collect the participants’ weight and height measurements necessary to calculate the body mass index that MAHuffe software requires to estimate the measure of energy expenditure. In preparing the data for analysis we used the same cut-offs as Ekelund (2007; 2004) in defining the different bands of physical activity (such as sedentary, light etc.) and the minimum number of minutes that the participants were required to have recorded to be considered in the analysis (that is, 600 minutes of physical activity for at least 3 days). Unfortunately, only a handful of participants from our small sample wore the device for 600 minutes, and completed travel diaries for that period. Consequently, we had to abandon the accelerometer analysis as we did not have sufficient data to proceed.

The GPS trackers were much more difficult for the participants to use because they had to be charged each night and the participants were required to turn them on and off frequently as they do not function properly indoors, producing false readings which are difficult to separate from the accurate readings. Unfortunately, many children left their GPS devices on indoors (such as when they were at school or when they were left charging all night) thus impacting significantly on the data quality. As a result the research team limited the time of analysis to 6.30am to 9.30am and 2.30pm to 11pm on weekdays and 7am to midnight on weekends in order to prevent data collection when it was assumed that children would be indoors. Only nine participants wore the GPS device on four days with another 10 wearing the trackers for three days. However, in most of these cases the children did not wear the GPS tracker for the full day required and many only switched it on for a short period such as the journey to school (because they either deliberately turned the device off when they went indoors or played sports or they simply forgot to turn them back on once outside). As with the travel diaries, only the participants that wore the accelerometers and GPS devices for three or more days were considered in the analysis. Two children residing in private high rise housing who wore the GPS device for four days were excluded from the GPS analysis because one travelled outside the Melbourne metropolitan area to a holiday home in regional Victoria over the weekend and the other stayed at his grandparents place over the weekend. Given the issues relating to data quality outlined above, the use of GPS data was limited.

Finally, the discussion of international good practice in land use policy related to children living in central city high rises was limited, because there is little such policy, despite the high numbers of children living in these environments. We will return to this question in our final chapter.
2 LITERATURE REVIEW

As discussed in Chapter 1, there is a large and growing body of research on the relationship between the rapid decline of children’s physical activity and independent mobility and increased rates of child obesity and other health concerns (including cardiovascular disease, diabetes and impacts to social and mental development). Studies exploring the reason for this decline in children’s physical activity and independent mobility stress the importance of physical design and social factors. However, these studies rarely consider the needs of children residing in high rise housing. Australian metropolitan strategies, including Melbourne 2030, are encouraging a higher density urban form and population forecasts indicate that the number of vertical living kids is on the rise. But research on the perceptions and needs of children living in high-rise housing is extremely limited.

The purpose of this chapter is, first, to review the literature relating to children in high rise housing, with an explicit focus on how this housing form may impact on CIM, related physical activity and unstructured play. Second, the provision and attitudes towards high rise housing for families in the Melbourne context is briefly examined. The third section determines the physical and social elements that could support children living in apartment housing in the central and inner city. Finally, international best practice policies in that support CIM and related physical activity in high rise settings are described.

2.1 High rise living: is it appropriate for families?

In Australia, the single-storey detached family housing has long reigned supreme as the dominant housing type (Randolph 2006, 473). Indeed, the “Great Australian Dream” is premised on attainment of a “large house on a quarter acre block in the suburbs”, with the backyard considered a crucial space in Australian psyche (DOI 1998, 3; see also Costello 2005, 54).

Yet despite this perception that high rise living is somehow ‘abnormal’ in Australia, apartment buildings have been extensively used in used for family housing, particularly in the case of public housing. The first large-scale high rise housing projects in Australia were reactions to conditions of inner-city living in the first half of the twentieth century. Inner suburbs were perceived as slums: poor, ramshackle, overcrowded and breeding disease and sin (Costello 2005). After World War Two, the Housing Commission of Victoria (HCV) focused on slum clearance and replacement by high rise buildings surrounded by green spaces, where children could be raised in clean, modern environments and not be forced to play in the streets and alleyways. The official discourse celebrated the high rise for its capacity to house large numbers of people in sanitary conditions, with low construction costs (thanks to the modern construction methods), and an overall improvement to both physical and moral health of low-income families (Costello 2005, 53).

The 1960s, which saw the construction of many of these high rise public housing estates, also witnessed an immediate backlash against them (Costello 2005). These critiques described the high-rise block as the new ghetto, rife with social disorder and crime. The high rise form itself was “considered to be ‘alien’ to the architectural and housing preferences of the Australian urban citizenry”, and essentially became “highly visible enclaves of disadvantaged people” (Jamieson and Jacobs 1996, 78, 83). The failures of such projects in the UK and the US were already becoming publicised. Jamieson and Jacobs (1996, 83-4) insist that the “demonising of the high rise was always relative to the belief that it was the ‘wrong’ sort of housing, especially for the functional family” as it was out of sync with “Australian belief that it was the detached, single-story dwelling which was the ‘healthy’ way to raise families”.
Early Anglo-American studies concluded that high-rises, by and large, are not beneficial for residents, detecting problems ranging from mental stress, anxiety and suicide to behaviour problems (Gifford 2007). High-rises were accused of exacerbating crime and damaging the character of the neighbourhood, contributing to family breakdown and also, overwhelmingly, of hindering child development (Gifford 2007).

In relation to CIM, high rise housing was considered unsuitable for children because the difficulty in supervising children outdoors as well as the unsuitability of much of the open space surrounding these buildings for active play (Gifford 2007; McDonald & Brownlee 1993; van Vliet 1983, 22; Conway and Adams 1977, 599; Sutton 1976, 13, XXI). A joint study conducted 1974 by the Housing Commission of New South Wales and the School of Behavioural Sciences, Macquarie University, found that 96% of high rise residents believed that this form of housing affects their children (Sutton 1975, 13, XXI). Forty nine percent of these residents claimed that children were “cooped-up (can’t get out)” in the high rise flats while 57% cited that there was “nowhere to play” (Sutton 1975, XXI).

The open space provided on these public housing estates were seen to “belong to everybody and therefore belong to nobody” – a “‘no-man's-land’, free and unsupervised” – and consequently were considered a poor substitute to the backyard (Stevenson et al. 1967, 146-7). This led to reduced play opportunities for children, as “parents in high rises either keep their children indoors more often, which means close protection or over-protection in an indoor environment, or allow them outside, many floors away which can result in under-supervision” (Gifford 2007, 12 see also van Vliet 1983, 22; King 1974: 17).

Variables influencing children’s play in high rise housing that have been consistently raised in the literature include the age of the child and the height of the building. First, with respect to the age of the child, the freedom to roam the public housing grounds unsupervised and explore the surrounding neighbourhood independently is progressively relaxed for older children (van Vliet 1983, 22; Conway and Adams 1977, 600; Stevenson et al. 1967, 92-5). With regards to the latter variable, the greater the height of the building, the greater the restriction on children’s independent play (Conway & Adams 1977, 600; Avery & Dalton 1976: 7). For instance, a comparative study of a low rise (two to three storeys buildings) and a high rise housing estate (15 storeys buildings) outside Copenhagen revealed that young children from the low rise apartment blocks played on their own outdoors at a younger age and played more frequently for longer periods of time than children who resided in the high rise estates (Bengtsson 1974, 42-3; see also Conway and Adams 1977, 600).

Other variables relate to the design and location of play equipment and play areas on public high rise estates. For instance, a comparative study of high rise and low rise housing estates in San Francisco found that there was either a failure by planners to recognise that children of different ages would require different types of play equipment, or it was assumed that older children would not need facilities on site as they could access nearby play facilities at neighbouring estates (Cooper 1972, 17). Regardless of the reasoning, clearly the provision of play space and equipment was not appropriately provided for children of all age groups. Moreover, the “kinds of things that children like to do are rarely considered” in the design of many of these purpose built play spaces on the estates as they lack the ‘adventure playground elements’ that provide opportunities for children to “manipulate their environment” (Cooper 1972, 17). Finally, children’s use of play space is also influenced by its location on the estate, particularly, its position relative to traffic flow and car parking (Cooper 1972, 15).
The perception that high rises constitute an aberration to the normal housing form of choice for families – the detached dwelling – is an underlying assumption of many of these studies. Thus, a common theme in much of the literature is that high rise housing is considered an unsuitable housing form for families with children simply “because too few of the attributes of a single-family house have been accounted for” (Cooper, Marcus and Hodge 1977, 34 cited in Gifford 2007, 11). Stevenson et al. (1967, 9) likewise noted that “in Australia, with its suburban attitude to housing, we are used to low density living, and our thinking tends to be related to this standard”. This attitude is further reinforced by the life cycle model of residential mobility in the private housing market developed by John Rennie Short. Although Short (1978, 247) suggests that housing choices may deviate from this model, he claims that for middle-income households in the private market the “overall direction of movement…is outwards towards the suburbs”. As Figure 5 illustrates, the catalyst for this move to the suburbs and shift from apartment to home living is the child rearing stage.

**Figure 5: Housing needs associated with different stages of the life cycle; model developed by John Short.**

<table>
<thead>
<tr>
<th>Stage in life cycle</th>
<th>Housing needs/aspirations</th>
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<tbody>
<tr>
<td>1. Pre-child stage</td>
<td>Relatively cheap, central city apartment</td>
</tr>
<tr>
<td>2. Child-bearing</td>
<td>Renting of single family dwelling close to apartment zone</td>
</tr>
<tr>
<td>3. Child-rearing</td>
<td>Ownership of relatively new suburban home</td>
</tr>
<tr>
<td>4. Child-launching</td>
<td>Same areas as 3) or perhaps move to higher status area</td>
</tr>
<tr>
<td>5. Post-child</td>
<td>Marked by residential stability</td>
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Avery and Dalton (1976, 9) are more cautious, suggesting that “at least in societies where the majority of children have access to a garden, those living in flats usually have less opportunity and freedom to play than those living in houses”. Therefore, they suggest that design solutions must attempt to provide alternatives to the backyard such as supplying a greater number of both indoor and outdoor play areas and locating larger family size flats closer to the ground level.

As Gifford (2007, 4) notes, there are several “moderating factors” which may influence residents’ experiences of high rise housing, such as: the location of the building, population density, dwelling design and the particular characteristics of the resident including economic status, the degree of choice that residents have to select their housing, life cycle stage, gender and culture (see also Avery and Dalton 1976, 9). Likewise, appropriating the findings of international research related to high rise housing to an Australian context is also problematic as children’s and parental perceptions of high rise living are likely to differ if they live in a culture where high rise, high density living is the norm (van Vliet 1983, 227).

As van Vliet (1983, 227) emphasises; “apartment children do not… live in a vacuum”, rather, “they are embedded in more encompassing social, cultural and spatial systems that may alleviate or exacerbate any effects that may occur”. Many of early studies conflate ‘high rise living’ with public housing, which has increasingly been populated by new migrants, households with very low SES, and sometimes, individuals with complex mental and physical health problems (see King 1974, 5). It therefore becomes impossible
to disassociate the particular socio-demographics of the residents with the design of these public housing estates. The tendency to focus on public high rise housing suggests that research on children's experience of high rise housing predominately reflects the experiences of a particular demographic, rather than the high rise experience of children generally, a gap that the Vertical Living Kids research is attempting to address.

In this light, a comparative study undertaken in the 1970s of children's experiences in both private and public high rise flats in Sydney is of particular relevance here (King 1974, 5). Significant differences were found between the samples. First, with regards to weekend activities, children residing in private high rise housing travelled a greater distance on weekends than their counterparts in public high rise housing. Children residing in public high rise housing generally played with friends living in the same block and visited friends or facilities that were “within easy travelling distance for a ten year old” (such as the local park, playground or pool) or undertook family outings to “nearby areas or the city... or nearby relatives” (King 1974, 10-11). In contrast, children living in private high rise housing were generally “more involved with their parents' activities which occur at home, with friends or which involve travelling some distances” which for some were outside the metropolitan area (King 1974, 10-11). They were also found to have more time for entertainment pursuits and some were engaged in structured activities such as organised sports or music classes.

King also argues that children residing in private high rise housing identified with communal open spaces (and other facilities such as pools or gardens) provided on site more positively, expressing a sense of ownership or belonging over the space, than the children residing in the public high rise housing (King 1974, 11, 15, 22). King (1974, 12) claims that this may be due to the following “failures” of the communal outdoor space of the Waterloo public housing estate: (1) The character and design of the open space lacks “small scale and intimacy of detail that may be necessary to give the child some feeling of security”; (2) because the block is ‘child dense’ this puts “excessive demands on space”; and (3) greater provision of supervised play facilities is required. In summary, King’s (1974) study suggests that children's experiences of high rise living is better for more affluent households which can offset the disadvantages of flat living as the apartment complex is more successfully addressing children's needs and because the residents are financially in a better position to engage in a greater range of activities on weekends.

In conclusion, we are left with the following question: is high rise housing _per se_ the problem? Much of the research indicating that high rise housing is inappropriate for children focuses solely on public high rise housing and are coloured by the assumption that the high rise is an inferior living environment to the detached dwelling. In many case, these estates suffered from poorly designed and located play spaces which did not appropriately cater for children and youth of all ages. Finally, the review concludes that while King's (1974) comparative study offers a refreshing departure from existing high rise research, further investigation is warranted to consider how SES may influence children's experiences of high rise living. This will become particularly important as a new wave of high rise development, marketed toward the other end of socio-economic spectrum, changes Australian cityscapes.
2.2 The new generation of private high rises: a family-free zone?

Melbourne’s waterfront and CBD have been undergoing a profound transformation since the 1980s as unused office blocks and obsolete industrial precincts are converted into high rise residential developments. As the City of Melbourne mounted its Postcode 3000 campaign, the charms of the urban lifestyle become extolled as the solution for those unburdened with children (Costello 2005; Fincher 2004). This new high rise housing, particularly in Docklands and Southbank, is marketed as luxurious, targeting a wealthy, leisurely consumer who can embrace the 24-hour lifestyle of the vibrant, exciting city. The convenience, easy access to public transport, city attractions, gym and pool facilities within the apartment complex, combine into one promotional ‘lifestyle’ package. Both Costello (2005) and Fincher (2004) in their analysis of the changing discourses surrounding the new luxury high rise appearing on the Melbourne skyline, found that the traditional assumption that child rearing requires a backyard still holds. Both developers and planners assumed that their central and inner city high rise developments would be populated by childless households. Following this logic, these developments were designed as family free zones, lacking sufficient services, facilities and open space for families (Fincher 2004, 331; see also Randolph 2006; Fincher 2007; Costello 2005, 57).

However, it is not just the surrounding neighbourhood environment that signals a failure to consider families or children in Melbourne’s newest generation of high rise housing. Family sized dwellings are lacking, with the majority of apartments comprising one or two bedrooms (Gleeson et al. 2007, 33; Randolph 2006, 477). Moreover, the legal structures managing apartment living (strata title) can impact on children’s capacity to use common space within their apartment complex. Gleeson et al. (2007, 33) contend that strata title “in some instances actually legislates against children, for example by banning their play in common areas.” Cathy Sherry (2008, 16-17, 19), in exploring the effect that strata title has on children, found that not only can such schemes forbid children’s play only both outdoor and indoor common property, but could also regulate children’s play behaviour in their own apartment, though noise restrictions.

However, families with children are found in these new central city flats. In 2001, 20% of the population in high-rise units across Australia were living as a family containing children (ABS 2004, 169). In 2006, dual or single parents with children comprised 7.09%, 4.76% and 8.64% of households residing in Docklands, Melbourne (CBD) and Southbank respectively (City of Melbourne 2008, Appendix 7). This same year, children below the age of 12 comprised 3.1%, 2.1% and 3.3% of the total population of Docklands, Melbourne and Southbank respectively (City of Melbourne 2008, Appendix 2). Moreover, by 2021 children aged 14 and below will comprise 7.7% of the total population of the Melbourne, Docklands and Southbank, equating to just over 4,000 people (City of Melbourne 2008, Appendix 19). Although children comprise only a small proportion of the high rise population, it certainly suggests that due consideration should be afforded to them in the design and planning of these areas.

There are parts of Australian central cities where planning policies are encouraging more families with children. Bounds and Morris (2006, 105) cite a City of Sydney planning director who has been encouraging developers in Pyrmont Ultimo, a central city district, to provide “a mix of units, numbers of bedrooms, larger storage spaces”. As Woolcock and Gleeson (2007, 6) point out, metropolitan strategic planning in Australia is becoming increasingly consumed with creating “high density urban futures” to meet the needs of singles, DINKs and empty nesters, and this light, “contemporary strategic planning has become almost child-blind”. Given that planners, developers and designers appear unprepared for families with children to take up residence in high rise areas, what will the impact be on children who end up living there?
2.3 What kind of physical and social environments might support children living in central and inner city high rise housing?

As we have already established, the last few decades has witnessed a rapid decline in CIM and a growing awareness of how this may contribute to increasing rates of child obesity and a host of other physical and developmental health problems. Although once extolled as the most appropriate and healthy environment for child rearing, the suburban lifestyle is now increasingly associated with sedentary, couch-potato living. However, while we may now decide that suburban living is becoming increasingly unhealthy, our received image of inner-city living does not include children. How do we, then, build high rise environments supportive of children in the central city? This section examines the physical and social attributes that have been found to positively affect children’s independent mobility and autonomous exploration and play in central city high rises. These conclusions have been obtained by integrating different bodies of research drawn from the CIM, high rise living and children’s environmental perceptions literature.

2.3.1 A spatial hierarchy of interesting play spaces

The value of play has been espoused by many as “fundamental to all domains for childhood and adolescent development,” particularly with regards to cognitive, social, emotional and physical development as well providing an outlet for healthy exercise (Hart 2002, 136; see also Bjorklid 1984/85, 7; Becker 1976, 545). As the need for exploratory, free-form play in healthy development has been articulated (Hart 2002), there has been a greater understanding that playgrounds ought to be inspiring spaces offering a variety of play opportunities that will please, excite, challenge and satisfy a range of children. The designing of these playgrounds requires an understanding of children’s play, imagination and even an acknowledgement of necessary risk (Shackell et al 2008; Commission on Architecture and the Built Environment 2007; Cooper Marcus and Sarkissian 1986). There are excellent guidelines on designing interesting play spaces (Shackell et al 2008; Hart 2002; Cooper Marcus and Sarkissian 1986).

However, increasingly risk-averse safety requirements have resulted in playgrounds critiqued as boring and unpleasant. These play spaces are unpopular with children and adults alike, and therefore largely unused. Falling into disuse and disrepair, many become targets of vandalism, making the street feel more unsafe, and deterring street activities even further. As Hart (2002, 144-5) reflects on the evolution of playground provision in New York, “what began as a concern for safety has become a paranoid attempt to create no-risk environments” which is diametrically opposed to the type of play that children actually require; that of “physical challenge” where children can “test their competencies”. He concludes that the playground settings “continue to be relatively sterile environments that allow only for running, jumping, climbing and swinging” and are thus wholly inadequate in meeting children’s needs (Hart 2002, 146).

This is true for all play spaces. A particular element in high rise living is the desire to have some informal surveillance possible, particularly in play spaces for younger children. Essentially, the higher the family lives, the harder it becomes for adults to observe the child playing at ground level, and the higher their reluctance to let them (particularly young children) out on their own. Consequently, it has been proposed that families with younger children be accommodated to lower floors of high rise buildings (Cooper Marcus and Sarkissian 1986, 43; Avery and Dalton 1976) and that the design layout should enable all dwellings to overlook communal play areas (Cooper Marcus and Francis 1995, 89).
Prezza et al (2001, 440-1), in a rare study concerned specifically with the factors that enhance or deter children’s independent mobility in an urban high rise context, found that internal courtyards proved not only the most popular ‘play’ setting for children aged 7 to 12, but that they were also used more frequently (at 2 to 3 times a week) than nearby parks and private streets. Moreover, the internal courtyard was also found to be the play environment which enabled the greatest degree of unsupervised play as 36.5% of the children who played there did so independent of adult supervisions compared to only 5.3% for parks and 9.5% for private streets (Prezza et al 2001, 440-441). Significantly, the study revealed that the “protected space of the condominium courtyard … permits a gradual passage toward the city” as children’s autonomy in the courtyard “expands beyond this space to the home-school journey to the neighbourhood streets” (Prezza et al 2001, 447). Thus a supportive environment for children living in high rise would be one where children’s range can be incrementally extended via enclosed around their home or nearby parks, providing the first step towards independent mobility.

Cooper Marcus and Sarkissian (1986, 135-184) provide a comprehensive set of design guidelines for medium density family housing, including the need for different play spaces for under 5s, primary school children, and children over 12. In their differentiation between these different stages of childhood they recommend a gradual extension of children’s range. For instance, young children’s play is confined to private spaces and/or spaces surrounding their dwelling such as the private balcony, their doorstep, the footpath outside their house and play spaces immediately adjacent to the residence. Therefore, while the responsible adult may not be constantly watching or even physically near the entire time, they can get the situation into full view instantly and, if necessary, immediately intervene. The need for parental surveillance decreases as the age of the child increases so the play range expands to cover the entire estate and adjacent play areas in the neighbourhood. Thus the internal courtyard or onsite playground becomes of particular import for this middle childhood age range as they may function as a public, but also protected, space where parental surveillance is possible (Prezza et al 2001, 436). In the latter stage of childhood opportunities to recreate beyond the estate become more significant.

Of course, this provision of adequate play space presumes a social structure that supports both formal and informal surveillance of nearby children. It has been suggested that if the places are open to informal surveillance from many neighbouring apartments, it creates a sense of shared responsibility, contributing to a greater sense of community as well as increased socialisation between adults (Prezza et al. 2001, 436). However, as Churchman and Ginsberg (1984, 40) note, this may be an outcome of a particular cultural context, noting that the gap between the perceived negative image of high rise housing to the actual experience of high rise living in Israel can be attributed to a “cultural difference of neighbour relations and the freedom of movement of children” where it is “customary and expected that neighbours will help each other and be in frequent contact” which “includes looking after neighbours’ children in semi-public open space”

In addition to facilitating surveillance, design guidelines for family friendly high rise housing generally stress the importance of imaginative design (Elley 2004; Marcus and Francis 1995; Cooper Marcus and Sarkissian 1986; Becker 1976; Cooper 1972). One of the problems in all play spaces, but particularly those around high rise housing, is a tendency to ‘over-program’ space, to fill up space with play equipment rather than allowing water, sand, pebbles, and other elements that can be manipulated by children. A number of writers on supportive environments utilize the environmental psychology term “affordances” to describe perceived physical opportunities in any given place (Clark and Uzzell 2006; Kyttä 2004). These opportunities might include play opportunities like particular surfaces supporting running, climbing, skating, or sitting, but they might also include social opportunities like role playing, watching other people, getting food, or just “hanging
Environmental psychologists also remind us that two key developmental needs for children, like adults, are the need for both public spaces where they can engage in social interaction and places where they can retreat (Clark and Uzzell 2006).

Numerous studies concentrating on the environmental preferences of children living in high rise environments have confirmed that playgrounds are not necessarily always used in the manner expected by the planners or designers who created them (for instance see Elsley 2004, 157; Bjorklid 1984/85, 9). Other research focusing on high rise housing suggest a relationship between the level of vegetation and the incidence of play, particularly, creative play (Faber Taylor et al. 1996, 19, 22). Cooper Marcus and Sarkissian (1986, 109) note that “merely laying out some grass between two sets of houses and expecting children to flock to it reflects a naiveté about what children actually do when they play.” Recently, concerns have been raised that the new generation of high rise housing complexes are lacking “multi-functional greenspaces” that would allow a variety of activities, as most often they contain “no more than patches of grass” (Beer et al 2003, 134).

Designing age-appropriate play and recreational spaces relates to the importance of catering to children of all ages, ranging from the preschooler, middle childhood and teenagers, particularly as it is often the needs of these older age groups that are often overlooked (Randolph 2006, 486). A study of children aged 10 to 14 years in a mixture of social and private housing in a disadvantaged neighbourhood of Edinburgh, Scotland, revealed that the older children are unlikely to use adjacent play spaces if they are perceived as places “for babies” (Elsley 2004, 159).

2.3.2 Accessibility and Traffic Safety

As already discussed, the CIM literature posits perceptions of traffic danger as one of the most significant factors accounting for the decline in CIM over recent decades. Not surprisingly, research concentrating on children residing in high rise environments focus on this issue of traffic safety, suggesting that the high rise housing development should segregate car traffic from pedestrian, and particular children’s movements within the estate grounds (Cooper Marcus and Sarkissian 1986; Bjorklid 1984/85, 9). In addition to ensuring a pedestrian orientated site design, Cooper Marcus and Sarkissian also stress the importance of calming traffic in the neighbourhood generally and particularly adjacent streets and nearby play spaces to ensure that children can easily access play spaces beyond the estate without the threat of traffic danger (1986).

Marketta Kytta, an environmental psychologist who has contributed much to the study of CIM, has developed a matrix that compares potential affordances with children’s ability to access those affordances. Areas with low levels of affordances and low levels of independent mobility she calls “cells.” In “wastelands,” there may be high levels of independent mobility, but children find only dull environments in their immediate surrounds. “Glasshouses” combine mobility restrictions within an area rich in affordances. Finally, areas with high levels of affordances and high independent mobility are termed “Bullerby,” a ‘noisy village’ in a set of Swedish children’s books where children have complete access to all spaces, take part in everyday activities and are considered important people (Kytta 2004, 182-183).

An innovative approach of “street reclaiming” has been proposed by David Engwicht. He argues for a shift from relying on “engineering devices that force [drivers] to slow down” to using “intrigue and uncertainty to seduce drivers into slowing down” (Engwicht 2006, 5). He calls for the establishment of an entirely “new culture which respects and accommodates both functions of the street” which call cause the driver to “immediately [slow] down to accommodate the possibility of the unexpected happening” (Engwicht 2006,
A similar approach to calming traffic is that of the Woonerf, which emerged in Netherlands in the 1960s and 70s and, in its more recent incarnation in the UK, the ‘home zone’ (Gill 2006; Cooper Marcus and Sarkissian 1986, 116-7).

Reducing the distance to destinations would also support children residing in high rise environments and facilitate greater CIM. Having a school within walking distance, particularly if the walking does not involve unsafe road crossings, is particularly important. Although not specifically focused on a high rise, inner city setting, recent research in Melbourne found that the distance to school was a significant determinant of active travel in the journey to school, as children who resided within 800 metres of their school were found to be 5 to 10 times more travel to school by active travel modes (Timperio et al 2006, 48).

Likewise, the impact of distance to destinations on CIM and autonomous play has also been highlighted, albeit, somewhat indirectly, in Lia Karsten’s (2003, 2573) research on a gentrifying former port area in inner city Amsterdam. Her interviews with “YUPPS” or “young urban professional parents” residing in this area reveals that the inadequate provision of local services and facilities for children within the neighbourhood requires families to travel to adjacent neighbourhoods to access such services. As “these locations are too far away and too dangerous for young children to reach on their own” children are consequently driven to these destinations (Karsten 2003, 2581). This research offers an interesting parallel to the Melbourne experience as it is similarly embarking on compact city policies and experiencing a revival of central city living.

2.3.3 Social Spaces

Some researchers have suggested that the number of children in a neighbourhood is an important determinant of how much children play outside: that children go to playgrounds and other places to play with children, not play on equipment (Prezza et al. 2001, 436; see also Gehl 2006, 117; Elsley 2004, 159). Churchman and Ginsberg (1984) posit that a distinct advantage of high rises for children in that there are a greater number of peers from which they can choose their friends. This would be true, of course, only if there were a critical mass of children in those buildings. A comparative study of suburban and city teenagers found that presence or absence of peers significantly impacts on children’s satisfaction of their neighbourhood, since “relative proximity of children in the same age group may be an important factor in peer group interaction and friendship formation” (van Vliet 1981, 463). This same study also found teenagers residing that areas with a greater number of places for recreation (such as playgrounds, sports facilities, pool halls etc) and community organisations (community centres, churches and police stations) knew more people in their neighbourhood, suggesting that the “opportunities for meeting people in the local environment may affect the number of people children say they know in their neighbourhood” (van Vliet 1981, 463). Certainly, an integral element of a child friendly urban environment is the opportunity to meet friends, which is why the children “desire, and what they lack most, is the presence of inspiring but safe public meeting places” (Haikkola et al 2007, 343; Chawla 2002). An Italian study confirmed a correlation between CIM, independent play and greater socialisation as children with higher levels of CIM and autonomous play were more likely to socialise with other children and play more frequently (Prezza et al 2001, 446).

There is, however, a slight danger of too much ‘child density’. A few studies, predominantly focused on public high rise estates (Becker 1976, 548), suggest that where child density is too high the (often poorly designed) play infrastructure or open space is overwhelmed by demand, which causes conflict between children competing to access and use the space. It has also been suggested that this reduces the capacity
of children to be able to form a sense of ownership over these spaces, particularly when large open expanses of green space are not broken up into smaller parcels or ‘territory’ that children can identify with (Cooper Marcus and Sarkissian 1986, 119; King 1974, 11-12, 23).

2.3.4 Making the entire public realm child-friendly

The previous factors focus on ‘child-specific’ places. However a supportive urban environment for children cannot be restricted to an “archipelago of ‘safe’ spaces in a sea of adult-centric space” (Fincher and Iveson 2008, 107-9). Cooper Marcus and Sarkissian (1986, 136) discuss how “providing play areas alone will not fulfil children's needs”. Rather children “need access to the whole site or neighbourhood, to explore and discover their own play spaces, to watch and cooperate with adults engaging in their daily activity”. As noted in Colin Ward’s (1977, 87) influential *The Child in the City*:

One should be able to play everywhere, easily, loosely, and not forced into ‘playground’ or ‘park’. The failure of an urban environment can be measured in direct proportion to the number of ‘playgrounds.’

Becker (1976: 548, 560-561) distinguishes between what he describes a “designated playgrounds,” or recreational spaces specifically designed with children in mind, to “found play space” including “facilities, equipment or spaces whose primary function is not play related but which children use for play” which are often forbidden by adults (such as using the space between buildings for playgrounds).

While traditional children's play spaces continue to figure highly in children's environmental preferences (for instance see Min and Lee 2006), recent studies suggest that children may also like to explore the general public realm. Research has found that commercial spaces, services and other facilities such as recreation centres also figure prominently in children's environmental preferences (Haikkola et al. 2007; Min & Lee 2006; van Vliet 1981).

Research on children's environmental preferences in disadvantaged neighbourhoods found that alleys and streets are popular play spaces for children (Castonguay and Jutras 2008, 6; see also Elsley 2004, 158). Likewise, Brower and Williamson’s (1974, 342) investigation into patterns of outdoor space usage in inner city residential areas in Baltimore found that the street functioned as a significant play space for children. They proposed “[retaining] the basic characteristics of a street, but... make the space more suitable for recreational use”. While this included conventional responses such as widening sidewalks, reducing traffic speeds and lanes, introducing appropriate street furniture and reducing the number of “blind walls” to enable opportunities for resident surveillance to the street, they also recommended that “street furniture should be designed so that it can serve a recreational function” (Brower and Williamson 1974, 342-3; see also Cooper Marcus and Sarkissian 1986, 242, 114-5). For instance, they suggest installing fire hydrants that could also be used for leapfrog and using paving surfaces that would be suitable for four square games. Thus a high rise environment supporting children's independent play and exploration is not one where children are confined to the playground, but where children can access, play and explore the general public realm in the neighbourhood and beyond.
2.4 Policies supportive of children living in central city high rises

Across Victoria, there has been little discussion in land use and design policies of the needs of children in relation to high rise housing. For instance, Victoria’s planning Guidelines for Higher Density Residential Development (DSE 2004) does not mention the specific needs of families, let alone children. There is a great deal of emphasis on design considerations, such as access to sunlight, wind protection, rooflines, building entrances, and access to parking, but very little on social or economic considerations. One “suggestion” is that “a range of dwelling types… (eg., to suit single people, family groups of varying sizes, students, the elderly, people of limited mobility and people on low to moderate incomes)” be designed (objective 5.1), while another suggestion is that “private open spaces are useable and provide reasonable levels of amenity” (objective 6.1). Public open space should be “appropriate to its context” (objective 6.6), but there is no suggestion as to its users.

At the local government level as well, land use planners and designers have responded to children’s needs in high rise housing in very limited ways. Playgrounds and schools are usually the only two spaces where children’s needs have been explicitly discussed, and even in those spaces, the emphasis has been on ‘families’ rather than ‘children’ playing alone or with peers. A review of policies in a number of Victorian ‘Child Friendly City’ local governments, including the Cities of Melbourne and Port Philip, found only two mentions of ‘family/families’ in Port Phillip’s Municipal Strategic Statement (MSS), the overarching land use plan, and only three mentions in Melbourne’s MSS. There was only one mention of ‘children’ in Port Phillip’s MSS, in relation to childcare provision, and only three mentions of ‘children’ in Melbourne’s MSS, two in relation to the community profile, and one in relation to public space (Whitzman et al 2009, 27-28). However, the City of Melbourne’s Health Plan 2005-09 does state the need to “provide a range of safe, challenging and fun play environments that encourage regular physical activity in consultation with a range of interested residents… including children” and the City of Port Phillip’s Child-Friendly Cities Implementation Plan includes actions to “develop criteria for child-friendly buildings and developments” (in Whitzman et al 2009, 26). Unfortunately, as interviews with council staff in these municipalities indicate, there is still a barrier dividing land use planning practices and policies from social, health, and family service practices and policies (Whitzman et al 2009, 30).

2.4.1 Singapore’s hierarchy of open spaces

An alternative planning model for high rise housing that accommodates families is evident in much ‘vernacular’ or traditional housing. For instance, the perimeter block, which is a widely used form of housing throughout South America, Africa, the Middle East, Eastern Asia, and Europe, commonly has a four or five story apartment building on all four sides of a large block, with a semi-private courtyard accessible only to residents of the block within (Edwards 2006). This inner courtyard is described by Edwards as a space for women and children, as opposed to the masculine space of the street. When well-designed, it can have good ventilation and sunlight, and can be seen as a bridging environment between home and city, the public and private realms, and thus a quality play space for younger children who can be informally supervised by parents and other people in the apartments.

Public housing estates in Singapore, which house close to 90% of the city-state’s population (Chang 2000, 97), are based on this perimeter block housing model, in turn based on the traditional ‘kampung’ (housing cluster). Singapore’s public housing buildings, ranging from 10 to 30 storeys, tend to have a range of apartment sizes, from one to five rooms. A small market and coffee shop are likely to be either at the ground floor of a building or within a one or two minute walk, often through a covered walkway. Many blocks have ground level ‘void decks’, equipped with benches, tables, and bicycle ranks. Child or elder
Care facilities are also common ground floor uses. Parapets enclosing common spaces above ground floor are high, in order to prevent children or adults accidentally falling off, but railings allow views of the wider environment. These planning principles tend to lead to high use and satisfaction by families with children under 12 (Appold and Yuen 2007).

While Singapore’s planning policies are facilitated by the Housing and Development Board exercising a virtual monopoly, a learning process has occurred “which saw the HDB shifting from its early preoccupation with speed and efficiency of production to a growing concern for amenity and quality of life of its residents” (Yuen 1995, 242). A hierarchy of open space provision is now seen as vital for ventilation and human scale activity as well as recreation and leisure, with ‘doorstep’ facilities like a small games court or a children’s playground provided within every cluster of three to four buildings, comprising 500 to 1000 units. These precincts in turn are linked by footpaths to neighbourhood centres, which are in turn linked by both footpaths and rapid transport to town centres. Standards for new high rise developments include one children’s playground and hard court for volleyball or badminton to every 1000-1200 dwelling units, 1 ‘precinct garden’ of at least 0.2 hectares for every 3000 dwelling units, one neighbourhood park of at least 1-1.5 hectares plus one football field for every ‘neighbourhood’ of 6000 dwelling units, and one town park of 5-10 hectares, plus sports complex, swimming complex, and indoor stadium for every new town of approximately 150,000 people (Yuen 1995). Singapore thus provides a model for how destinations, walkability, and a network of recreational spaces can be planned into high rise housing, through an implicit assumption that families will be living there.

2.4.2 Vancouver: land use policy and evaluation explicitly considering high rise children’s needs

Vancouver, like Melbourne, is a largely low-rise single family home-owning city renowned for its liveability. Between 1971 and 1996, an additional 120,000 people were accommodated within its built up area, and 40% of that growth was on the margins of downtown, in a series of waterfront mega-projects and redeveloped neighbourhoods. Vancouver is widely considered a planning and design success story, largely because of its institution of good design guidelines and emphasis on participatory planning practice (Punter 2002). One of these aspects of good practice is the acknowledgement that children and their parents would be living in high rises in this new redevelopment, and the development of detailed planning guidelines to support liveable high density communities.

The City of Vancouver, the local government covering over one million residents in the central city and inner suburbs, adopted *High Density Housing for Families with Children Guidelines* in 1992. Planning guidelines include:

- Effective access to essential community services and recreation: “Sites selected for family housing development should be within 0.8 km walking distance of an elementary school and its outdoor play area, a day-care centre, an after-school care facility, a community centre, and grocery shopping and within 0.4 walking distance to a playground and a public transit shop... Effective access means a walking route which is both safe (free from barriers such as the need to cross a major, unsignalled traffic arterial) and secure (having an environment suitable for elementary school children)” (City of Vancouver 1992, guideline 2.1.2)

- Number of family units: “Twenty family units in a single project is the suggested minimum... The number of households related to a common, semi-private outdoor open space should not exceed 100...” (City of Vancouver 1992, guideline 2.4.2)
• Common Open Space: “Experience has shown that children will play everywhere; the entire site should be designed to withstand use by children” (City of Vancouver 1992, guideline 3.2.2)

• Supervision of (Small) Children’s Play: “The design of a family development should maximize the potential for adults to supervise children at play. The basic elements of this supervision are: visual access for the parent or caregiver, preferably from the unit; natural surveillance from other overlooking units and common areas; and a direct and unobstructed route between the family units or observation point and the common play area along which visual contact with the play area can be maintained.” (City of Vancouver 1992, guideline 3.4.2)

• Common Indoor Amenity Space: “A multipurpose meeting with a wheelchair accessible washroom and kitchenette should be provided for non-market and moderate rental family housing developments… The potential for other indoor amenity spaces such as a hobby room, a workshop, an indoor play space for small children, or a teenage lounge should be considered…” (City of Vancouver 1992, guideline 3.7.2)

• Private Open Space: “Each family unit should have a private open space [such as a balcony] which is a minimum of 1.8 m deep by 2.7 m wide. The private open space should be designed to maximize sunlight access, safety, adaptability for a variety of family activities” (City of Vancouver 1992, guideline 4.3.2)

Like Singapore, Vancouver’s planners addressed walkability, community facilities, and a hierarchy of recreational spaces (from balconies through courtyard play spaces through small playgrounds to larger parks), in this case from an explicit assumption that families would be part of the demographic mix.

In 2008, The University of British Columbia’s School of Community and Regional Planning worked with the City of Vancouver to undertake a large scale post-occupancy evaluation of False Creek North. This 18 month study investigated a 67 hectare brownfields redevelopment site that has become the home to over 10,000 people in the past decade, with housing comprising both private and non-market housing. Ninety five percent of new dwellings in False Creek North are apartments in buildings with five or more storeys; and 24% of the households are families with children aged 25 or younger, only slightly less than the Vancouver CMA average of 29% (Hofer 2008, 30-31). There were specific affordable housing allocations for families with children, and 13% of the population is under the age of 19, including a larger proportion of those living in the approximately one quarter of non-market housing (Hofer 2008, 2).

Over 96% of 500 survey respondents claimed they would recommend living in their neighbourhood (Hofer 2008, 7). A separate ‘week with a camera’ photo collage activity was carried out with elementary school children, and the findings integrated into the post-occupancy evaluation. Other consultation exercises included children along with adults. Children and their parents found that while the High Density Housing Guidelines had excellent objectives and there was general satisfaction with number of family units, surrounding land uses, and pedestrian routes, even more social infrastructure was necessary: “the day-care and school are full, the grocery store is expensive, and there are not enough activities for older children throughout the development” (Hofer 2008, 168). Furthermore, the play equipment was seen as unimaginative and lacking in a range of play spaces (active, quiet, creative, structured). Common spaces were too manicured, and lacking in natural materials, for children to fully enjoy. In some play spaces, there was inadequate sunlight, while in others, there was insufficient weather protection. The quality of the indoor...
amenity spaces was lacking, suggesting that the phase ‘considered’ was inadequate to enforce a sufficient range of spaces. While open balconies were popular, closed balconies received mixed ratings (Hofer 2008, 169-173).

The City of Vancouver has thus demonstrated a highly applicable example of good practice to the central Melbourne context. Not only are there explicit policies supporting children living in high rise housing, but there is also a commitment to a post-occupancy evaluation process that ‘mainstreams’ children’s participation.

2.4.3 London and the UK

In London, a Children’s and Young People’s Strategy was created in 2004. Annual progress reports (which appear to have ended since the replacement of Ken Livingstone as mayor with Boris Johnson) indicate that impacts have included increased play spaces in existing and new developments, free public transport, and involving children in assessing local traffic safety (Mayor of London 2004, 2005). At the national level, a Fair Play strategy has been implemented, that seeks children’s opinions on parks and local playgrounds in their locality, but does not really engage with other public spaces that children might play in (Department for Children, Schools and Families 2008). One feature of the London approach worth emulating is its seamless inclusion of children from birth through to the cusp of adulthood. Interviews undertaken with planners in Victorian local governments this year identified a gap between mandated Early Years Plans (usually covering children from birth to age eight) and voluntary but common Youth Plans (usually covering those aged 15 to 24). While consultation with youth as a part of the development of plans was common, and consultation with parents (and less frequently children) aged 0 to 5 also common, there is no formal planning process or required plan covering children aged 9 to 14 (Whitzman et al 2009).
3 RESEARCH FINDINGS

This chapter reports the key findings of the research project in order to ascertain children’s and parent’s perceptions of their high rise neighbourhoods, how this impacts on CIM and children’s travel and play behaviour. Given the multitude of methods used in this study and the complementary nature of these methods, the discussion takes a thematic approach rather than discussing the findings of each method in turn. Where feasible, results have been analysed so as to identify the differences in CIM and travel behaviour between participants residing in public and privately owned high rise housing.

3.1 CIM and Age

Parents were asked at what age their children are allowed to travel without an adult to various destinations (school, a friend’s house, a park or playground, a shop or shopping centre) and at what age they are able to undertake particular types of travel (using public transport, riding a bicycle on public streets and crossing a main street). As outlined in Figure 6, the results indicate that children’s ‘licences’ vary according to the destination, type of travel and age.

Figure 6: Parent survey responses – the age that their child is allowed to travel without an adult

<table>
<thead>
<tr>
<th>Age</th>
<th>To School (%)</th>
<th>To a Friend’s House (%)</th>
<th>To a Park or Playground (%)</th>
<th>To a Shop or Shopping Centre (%)</th>
<th>On Public Transport (%)</th>
<th>On a Bicycle on Public Streets (%)</th>
<th>To Cross a Main Street (%)</th>
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<td>7</td>
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</tbody>
</table>

The journey to school appears to be the trip where children are afforded the greatest level of independent mobility, as 85% of children are allowed to travel to school without an adult by the age of 12. Moreover, children are able to travel unsupervised to school at a younger age than to other destinations, with 67% of parents indicating that they allow their child to travel independently by the age of 10. In comparison, only 41%, 44% and 59% of children are allowed to travel to a friend’s house, a shop or shopping centre and a park or playground respectively without adult supervision at the age of 12. When examining the type of travel permitted without an adult, a greater number of children are allowed to cross a main road and use public transport without adult accompaniment than ride a bicycle on public streets.

It appears that age is a crucial factor in determining the level of CIM as children’s licences become more pronounced above the age of 10. For instance, while only, 11.5% of children are allowed to use public transport without an adult at the age of 9, by the age of 12, this jumps to 53.8% of children. Likewise, only 15% of children are able to travel to a park or playground and a shop or shopping centre without an adult by the age of 9; however, by the age of 12, a further 44% and 29% of children are permitted to travel to these destinations independently.
3.2 Mode of travel and the level of CIM

Parents were asked what mode of travel their child uses to get to various destinations. These results are summarised in Figure 7, which first outlines the results of the total sample and then compares the responses of parents residing in public and privately owned high rise housing. First, reviewing the results of the total sample, it appears that walking and car travel are the most commonly used modes of transport to get to each destination and the difference between the number of children walking or travelling in a car is not too substantial. The obvious exception is here is travel to the park or playground, where 77% of parents indicate that their children generally walk there. Public transport is the third most commonly used mode of transport; however this only appears to be a significant travel mode in children’s journey to and from school and to a shop or shopping centre capturing 18%, 21% and 15% of the sample respectively. Levels of cycling are generally low.

Figure 7: Parent survey responses – the mode of travel generally used by their child to get to various destinations

Although parents were asked to select the mode used for the longest part of the trip, some parents selected more two, three or four modes. These were all considered in the analysis and were given scores of 0.5, 0.3 and 0.25 respectively. All parents that selected “other” identified scooter as the mode of travel.
Turning now to compare the travel modes generally used by children residing in public and privately owned high rise housing, Figure 7 reveals substantial differences between the two samples. First, the travel behaviour of children residing in public high rise housing is dominated by active travel modes, particularly in the journey to and from school and the trip to the park or playground. Moreover, 87.5% and 37.5% of participants from public high rise housing use an active travel mode to get to friends' houses and shops respectively. In comparison, the most common transport mode used by the private high rise housing sample is the car at the expense of active travel modes, with the exception of the park or playground. However, the private high rise sample also utilise a greater variety of travel modes, particularly with their journey to school where at least a quarter of journeys are undertaken by public transport.

The travel diaries offered an opportunity to check parental responses against children's actual travel behaviour and link the travel mode used with who they are travelling with (i.e. if these trips are taken alone, with other children or with adults). These results, which cover all trips recorded in the children's travel diary, have been outlined in Figure 8 and 9. When looking at the total sample, Figure 8 reveals that 65.4% of trips recorded for the entire sample were with adults. Active transport (walking and cycling), regardless of travel partners, comprised 45% of the total sample, and when only considering active transport taken either alone or with other children, this dropped to 28.3% of trips.

When comparing the trips taken by the public and private high rise samples, it appears that children in public high rise housing experience greater levels of CIM as 61.87% of their trips were undertaken either alone or with other children. In comparison, only 17% of trips made by the private high rise sample were undertaken without adult accompaniment. Moreover, reinforcing the findings presented earlier in Figure 7, the car was the most dominant mode of travel used by the participants residing in private high rise housing. In contrast, walking (both alone and with other children), comprising 54.24% of total trips recorded by children residing in public high rise housing. Interestingly, while 28.82% of trips undertaken by children residing in public housing were with other children, only 10.6% of trips by children in the private high rise sample were with other children.

Figure 9 further reinforces the differences in travel behaviour between the two samples as the trips taken alone, with other children and with adults are broken down into different travel modes. Again this highlights the dominance of the car when the children in the private housing sample travels with adults, while for public housing this is not as pronounced as walking and public transport are also significant mode of transport here. Figure 9 also reinforces that when travelling alone or with other children, active travel mode dominates. Interestingly, when travelling with parents, the private high rise sample only travelled by public transport for 9% of trips, yet when travelling with other children, public transport usage captures a greater modal share at 27.8%. In contrast, despite that 20% of trips undertaken with adults were with public transport, when travelling with other children public transport usage drops to 15% of trips (which is almost half that of the private high rise housing).
Figure 8: Travel Diary Analysis – The percentage of trips by travel mode and partner

![Pie charts showing travel mode distribution for Total Sample, Public High Rise, and Private High Rise.](image-url)
Parents were asked who their child generally travelled with to get to particular destinations with the option to select either alone, with other children or with an adult. Their responses have been summarised in the Figure 10. Looking at the sample overall, it appears that travel to the school and to a park or playground are the destinations that children are given the greatest freedom to travel independently.

When comparing the parent’s responses from the two samples, again we see that children residing in public high rise housing generally enjoy a greater level of CIM than their private high rise housing counterparts (with the exception of travelling to a shop or shopping centre or using public transport). The public high rise sample generally travel without an adult to more destinations than the private high rise sample, particularly to school (87.5%), to a friend’s house (71.43%), to a park or playground (87.5%), riding a bicycle on public streets (75%) and crossing a main street (62.5%). The most significant margin of difference here is to a friend’s house, were only 30% of children from the private high rise sample generally travel there independently compared to 71.43% of children in public high rise housing. Moreover, while the journey to

\[\text{Where parents selected numerous options, the most independent travel option was used in the analysis by the researchers as it indicates the greatest level of CIM afforded to the child.}\]
school and to the park or playground are the destinations with the highest rates of CIM for both samples, it appears that a greater proportion of children in public high rise housing have the freedom to undertake these trips alone. In contrast, their counterparts in private high rise housing may be able to travel without adult accompaniment, but a higher proportion of these trips are taken with other children and by themselves.

Again, the travel diaries offered an opportunity to check the results derived from the parent surveys by reviewing which mode of transport was used by children to get to various destinations and who they travelled with. 'Destination categories' were developed including; school; other types of educational activities (comprising religious or language classes); structured activities, including organised sports, music classes and birthday parties; unstructured recreational activities such as informal play; community centres; shopping, which also includes trips to the movies appointments with doctors and hairdressers; and other peoples’ homes such as to a friend or relative. Finally, 'other' captures trips that do not fit into any of these categories, such as dropping a sibling off to school. The results are summarised in Figure 11.

Figure 11 further supports the findings from the parent surveys, as children residing in public high rise housing were found to have greater levels of CIM (with the exception of trips to other education activities and shopping) and a higher use of active modes of transport (walking and cycling). In contrast, only a small proportion of trips undertaken by the private high rise housing sample were taken independently, with the journey to school and to other education generating the highest level of CIM at 37% and 100% respectively. Again, trips to other people’s homes saw a marked difference in CIM between the samples, as 72.8% of children from public high rise housing undertook these trips without adult accompaniment, whereas children from private high rise housing were always accompanied by adults. Another interesting point of difference between the two samples is that while all trips to structured and unstructured activities by public housing participants taken were either alone or with other children, for the private housing sample, these trips are predominately undertaken with adult accompaniment at 87% and 83.33% respectively.
Figure 10: Parent Survey Responses – The percentage of children generally travelling to different destinations alone, with other children and adults

### Total Sample:

<table>
<thead>
<tr>
<th>Destination</th>
<th>Alone</th>
<th>With Other Children</th>
<th>With Adult</th>
<th>Without Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>To School</td>
<td>54.8</td>
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<td>To a Friend’s House</td>
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<td>11.5</td>
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<td>30.4</td>
<td>46.8</td>
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<tr>
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<td>50</td>
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</tr>
<tr>
<td>To Cross a Main Street</td>
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### Public High Rise:

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### Private High Rise:

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<th>With Adult</th>
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</thead>
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<tr>
<td>To Cross a Main Street</td>
<td>48</td>
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Figure 11: Travel Diary Analysis – Rates of CIM and the mode of transport used to get to different destinations

**Total Sample:**

- Total: 100%
- School: 24.2%
- Other Education: 15.9%
- Structured Activities: 26.5%
- Unstructured Activities: 7%
- Community Centres: 29%
- Shopping: 23%
- Other People's Homes: 22%

**Public High Rise Housing:**

- Total: 100%
- School: 15%
- Other Education: 28.5%
- Structured Activities: 25.5%
- Unstructured Activities: 32.3%
- Community Centres: 25%
- Shopping: 23.7%
- Other People's Homes: 18.2%

**Private High Rise Housing:**

- Total: 100%
- School: 2%
- Other Education: 66%
- Structured Activities: 76%
- Unstructured Activities: 16.67%
- Community Centres: 8.7%
- Shopping: 27.8%
- Other People's Homes: 54%

Legend:
- Trips Taken Alone: Walk
- Trips Taken Alone: Bike
- Trips Taken Alone: Scooter
- Trips Taken with Other Children: Public Transport
- Trips Taken with Other Children: Walk
- Trips Taken with Other Children: Bike
- Trips Taken with Adults: Walk
- Trips Taken with Adults: Car
- Trips Taken with Adults: Public Transport
- Trips Taken with Adults: Bike
Finally, a major difference between the parental survey responses and the analysis of the travel diaries is that parents suggested higher rates of CIM to shopping destinations. However the travel diaries revealed that only 8% of these trips were actually undertaken without adult accompaniment (although it should be noted that in this analysis, the category shopping was also broadened to include haircuts and doctors appointments). Moreover, while 30% of parents from private high rise housing indicated that their child generally travels to a friend’s house without an adult, the travel diaries reveal that this may not actually be the case as all of these trips were undertaken with an adult.

3.3 Distance to local open green space and proximity to school

This section seeks to integrate the parent survey responses with the GPS analysis by investigating whether the distance of the school or park from the participant’s home may be a determinant of CIM. First, with regards to distance to school, Figure 12 reveals that for the 14 participants that have a school located within their home zone, 71% generally travel without an adult accompaniment to school, as 50% of participants travel alone with a further 21% travel with other children. In comparison, for the 11 participants that must travel outside their home zone to get to school, children levels of CIM are greatly reduced with 45.5% ferried to school by adults. Moreover, fewer children, equating to 9%, travelled alone to school while the proportion of participants travelling to school with other children increased to 45.5%.

![Figure 12: Distance to school as a determinant of CIM](image)

A similar pattern is observed in Figure 13 which reveals that distance to a park may be a determinant of CIM. In this case, where a park is located within a 300m pedestrian shed, 68% of parents indicated that their child generally travels to a park or playground without an adult. However, again, where the park is located further from the home, CIM levels are reduced as the proportion of children generally travelling without adult supervision drops to 33%.
3.4 Differences between children residing in public and private high rise housing: spatial range

The GPS analysis revealed that the children residing in private high rise housing have a greater travel range than their counterparts in public high rise housing. As explained in Chapter 1.4, a ‘home zone’ was created for each participant, comprising an 800m radius around their home residence. Only two of the seven children residing in high rise housing, or 29% of the sample who wore their GPS devices, were found to venture out of their home zone on both weekdays and weekends. In contrast, of the nine children residing in private high rise housing who wore their GPS devices for three or more days, seven children (or 78%) travelled outside their home zone on weekdays, with the entire sample travelling beyond their home zone on the weekend.

These differences in spatial range are also reinforced by the participants’ photo collages as the collage of children residing in public high rise housing predominately identified destinations located within their home zones, while the children from private high rise housing incorporated a mix of local destinations within their home zone and beyond. This is further discussed in the following two sections, Chapter 3.5 and 3.6.

3.5 Places children like and the destinations frequented

Of the 18 children residing in public high rise housing, the photo collages of 13 participants (or 72% of the sample) suggest that their ‘play geographies’ are dominated by the estate grounds, specifically green open space, basketball courts and play equipment. Adjacent recreation centres (particularly Carlton Baths, which contains an outdoor pool and indoor basketball court) were also popular. Only 4 children from Carlton identified parks beyond the public housing estate, including three eleven year old boys who mentioned a soccer ground in Brunswick East, where they train and play soccer regularly, as one of their favourite destinations. None of the 13 children we interviewed in Carlton housing estate walk 500 metres to Carlton Gardens, with its large and new adventure playground and the Melbourne Museum, both of which are free to children. Instead, they cluster in the rather tired playground equipment on their public housing estates and play in the leftover spaces between residential buildings.
The most common reasons expressed by the public high rise sample (which were cited by 69% of the sample) explaining why they liked these purpose built play spaces related to the facilities (such as pool or play equipment) and that they described how they can have fun or play there. Following this, 53% discussed these spaces in terms of their function as a social space describing how they can ‘hang out’ with friends. Finally, 46% cited proximity of the play space to their home as a factor in their use and enjoyment of these spaces. Some of these responses have been illustrated in Figure 14.

Figure 14: Extracts from photo collages – The favourite play spaces of children residing in public housing

Public spaces other than play spaces and public transport do not figure prominently in the geographies of children living in public housing. This is likely owing to the relationship between legitimate user status and affordability, or may possibly be an issue related to comfort zones. Only eight children residing in public high rise housing, or 44% of the sample, described commercial spaces that they frequent regularly, and none described other nearby public spaces such as Federation Square, the large parks fringing the CBD, or even Swanston Street. The commercial spaces mentioned were local shops (such as milk bars) with only three children identifying larger shopping centres of Lygon Street and Highpoint.
In contrast, only 12 children living in privately owned high rise housing, or 57% of the sample, identified children’s play spaces in their photo collages. In addition to local parks and playgrounds, they also emphasised tennis centres, skate parks, adventure playgrounds and public libraries. Like the public housing sample, despite the wealth of large open green spaces fringing the CBD, only Flagstaff Gardens was explicitly mentioned by one participant from the private high rise sample. When explaining why they preferred particular spaces, they expressed many of the same reasons as the children residing in public high rise sample: The most common responses, cited by 92% and 75% of the private high rise sample respectively, related to the facilities provided at the play space (such as the type of play equipment) and that they can have fun or play here. 42% of the private high rise sample described their favourite places in terms of the easy access and proximity to home (42%) of which 60% explicitly described this in terms of being able to access these spaces independently. Finally 42% discussed these spaces in term of their capacity to function as a social space. Some of these responses have been illustrated in Figure 15.

Figure 15: Extracts from photo collages – The favourite play spaces of children residing in private high rise housing

10 year old boy, private high rise housing, St Kilda Road (Melbourne 3004)

8 year old girl, private housing, Southbank

8 year old girl, private housing, Southbank

10 year old girl, private housing, CBD
In addition to the public play spaces identified by the private high rise sample, seven children commented on the importance of the private spaces or amenities within their apartment complex including communal green spaces, pools, or tennis courts. However, an 11 year old girl in Southbank complained that “there should be more activities in the activity section in your building” while another three children described some form of regulation on their use of these spaces. These were either in the form of formal restrictions based on age or adult supervision, or comments regarding the general culture of the apartment complex, such as residents who complain if children make too much noise or ‘hang out’ in communal courtyard spaces. As an 11 year old girl living in private high rise housing explains:

I don't usually go down to the courtyard because people don’t like it when you play games and be loud. And there aren’t many kids in the building.

In contrast to the limited spatial geography depicted in the photo collages of the children residing in public housing, the private high rise sample generally incorporated a greater variety of public spaces which also covered a larger territorial range. Eighteen of the children (comprising 86% of the private high rise sample) identified commercial spaces that they liked in their photo collages. Of these 18 children, 12 noted local shops (such as milk bars, local fast food outlets, video rental stores and supermarkets) that they frequent regularly, with six children specifically commenting that they like that they are allowed to travel there by themselves or with friends. Twelve participants cited major shopping centres as places they liked because of the range and quality of shops, including Harbour Town, DFO Spencer Street, Melbourne Central, the Art Centre Sunday Market and the CBD laneways and shopping arcades. Some of these comments have been captured in Figure 16.

Moreover, as illustrated in Figure 17, 17 participants residing in private high rise housing (or 81% of the sample) spoke positively on a wide range of public spaces that were not specifically designed for children’s play activities. The response here were varied as some children described in general terms of how they liked the city “because it has more things to do and play” (8 year old girl, private housing, Southbank) while others identified specific destinations such as Federation Square, the Southbank promenade, Degraves Street or pocket spaces between buildings where they can ‘hang out’ with friends. Other children from private housing were impressed with particular features of central and inner city living, such as the architecture, the Melbourne skyline or buskers. Seven of these children noted particular train stations or tram stops that they liked, because it allowed them to get to school or other destinations or because they enjoy the tram or train ride experience because they are able to travel independently or with friends. Interestingly, as children explain why they like these spaces, their reasoning is slightly different to the manner that they describe their favourite play spaces. The most commonly cited factor here is accessibility and proximity (67%), followed by the amenity or design aesthetic of the space (61%). Their capacity to facilitate play or social activity is less important here as these reasons were cited by 39% and 44% respectively.
Figure 16: Extracts from the photo collages – The importance of commercial spaces for children residing in private high rise housing

9 year old girl, private housing, St Kilda

I like how we live down the road from the shops because me and my friend can go down and get dinner when we’re ready.

11 year old boy, private high rise housing, St Kilda Road (Melbourne 3006)

I like the IGA because I can buy food there and drinks and I get to ride down on the bike and I get to rent movies from video cye 3 doors down.

10 year old boy, private high rise housing, St Kilda Road (Melbourne 3004)

The Kwik-e-mart is just a block away. It is really fun because whenever I pick milk and bread up for mum, I can get a lolly for myself too. I usually walk there although sometimes I scooter.

9 year old boy, private housing, Docklands

I like this place because it has lots of stuff we need and it is very close.

11 year old boy, private housing, Southbank

They have the best stores in the town. I go here with my family and friends.
Figure 17: Extracts from the photo collages – Children residing in private high rise housing; beyond purpose built play spaces

11 year old boy, private housing, Southbank

I love the trams cause they take me where I want to go.
I go on them with family and other ppl.

12 year old girl, private housing, Southbank

I like it there because it’s always so quite and beautiful, it’s always been a good place to go for me when I’m upset.

11 year old boy, private housing, St Kilda Road (Melbourne 3006)

This area is ok because I can chill with friends or kick the footy and ride around that area.

8 year old girl, private housing, Southbank

I like these buses because they make music.

12 year old girl, private housing, St Kilda

I like St. Kilda because everything is close by like: shops, book shops, cafes, parks, Albert Park Lake, the beach and more! 😊
3.6 Concerns that children have regarding their environments

Perhaps reflecting the limited travel range of the public high rise sample and the socio-demographic characteristics of the participants living in public housing, the concerns of participants residing in public housing were focused on the housing estate. As illustrated in Figure 18, safety concerns revolved around personal safety issues related to ‘estate life’. For instance, three children in Flemington were concerned about the “druggies” or “hobos” on the estate and explained that this impacted on their capacity to wander around the estate without an adult accompaniment. The only exception in the public high rise sample to describe safety concerns beyond the estate was a 10 year old boy from North Melbourne housing estate who explained “I don’t like the city when I go by myself because I get lost and I don’t feel safe”. Another concern raised by 5 children residing in public housing (or just over a quarter of the sample), related to lifts of their building either breaking down or that they were covered in graffiti. While for some, this was discussed more in terms as an inconvenience as they would have to climb the stairs instead, for others, they feared that they would get stuck in the lift alone or, possibly, trapped in the lift with a drug addict. Although not strictly a safety concern, two boys living in Carlton public housing complained of finding used condoms at the soccer field that they frequent.

Despite frequent use of the play equipment and other play spaces located on the estate grounds, of the 13 participants who use spaces on their estate, 54% were frustrated with the quality of these spaces. The most common complaint (illustrated in Figure 18), expressed by 75% of those who were dissatisfied, was that the play equipment was boring, lacked facilities for children their age and/or that the equipment provided was broken. Finally, two of the participants in the Flemington housing estate complained about the limited variety of shops in their local area, adding that the major shopping centres were too far from the estate for them to access independently.
Figure 18: Extracts from the photo collages – The concerns of children residing in public housing regarding their local environment

- I wish......
  That there's a shopping centre close to Flemington.
  I want more lifts in the flats because sometimes they get stuck.
  I wish there's no more hose in Flemington it makes me not feel safe.
  I want a cinema close to Flemington.

- I don't like the park because it is boring and there's nothing to do.
  Most of the things in the playground are broken.

- I hate the park because it is for boys.

- This park is kind of fun but kind of boring. Because there's not that much equipment.

- I really love the park but in another way most of the equipment are broken.
In contrast, the sample from private high rise housing expressed multiple issues which were not specifically focused on their immediate surrounds, perhaps reflecting their larger travel range. Two thirds of the sample (or 12 participants) cited public transport and road safety concerns. The road safety concerns raised by 5 of the participants focused on particular roads (particularly, St Kilda Road) or intersections that were difficult for them to cross. However, some were related to amenity issues such as noise from major roads, graffiti or the volume of trucks. Moreover, six participants, or 29% of the sample, (including three that spoke of positively of public transport) expressed concerns about using public transport. These concerns related to: overcrowding at tram stops and train stations during peak hours; the lack of appropriate shelters at tram stops; that stations and tram stops are dirty, “scary” and that they are approached by beggars; and that they had to suffer from cigarette smoke from other passengers at train stations and bus stops. In this light, they see themselves as consumers or citizens, not potential victims, with legitimate concerns about amenity and maintenance.

Six participants (29% of the sample) reported general personal safety concerns pertaining to “scary” or “angry” people in the city or identifying particular spaces that weren’t adequately lit at night or particular destinations (such as the Gatwick in St Kilda and pubs) where they were concerned about the type of people surrounding these areas. Finally some children identified landmark destinations in the city, including the State Library, the Arts Centre (and its accompanying Sunday Market) as well as various shopping centres, arcades or laneways in the city as “boring” or lacking activities or shops for them. The concerns of children living in private high rise housing are captured in Figure 19.
Figure 19: Extracts from the photo collages – The concerns of children residing in private housing regarding their local environment

9 year old boy, private housing, Docklands

I hate this place because it is noisy and the traffic is massive.

I don’t like this place because it is noisy, crowded and smoky.

11 year old girl, private housing, St Kilda Road (Melbourne 3006)

This is the tram stop. I go to school on the number 12 some days from this tram stop and I come back from Flinders St Station as well. A lot of the time I have to really squish onto the tram or just not get on. Sometimes I run across the road when there aren’t any cars. I don’t really like this tram stop because it is really skinny and it is a little bit scary. I tram by myself and with my sister.

I don’t usually like going into the city much because it’s really dirty and crowded and has some scary people in it.
11 year old boy, private housing, Southbank

8 year old girl, private housing, Southbank

8 year old girl, private housing, Docklands

9 year old girl, private housing, Southbank

8 year old girl, private housing, Southbank

12 year old boy, private housing, Southbank

9 year old girl, private housing, St Kilda

12 year old girl, private housing, Southbank
3.7 The importance of social space

The photo collages suggest the importance of and access to social spaces as critical in defining the exploration parameters of all children (see Figure 20). For instance, 69% of the children from the public high rise sample reflected that they liked to use the local purpose built destinations (either on the estate or nearby) because other children on the estate use them too.

Likewise, the children residing in privately owned high rise housing also stress the significance of social spaces, with 76% explicitly citing the appeal of some destinations in terms of being able to ‘hang out’ with friends or siblings. Five children either explicitly described how they liked living in their neighbourhood because friends either in their apartment building or nearby, including 4 children who, when drawing maps of their area pointed out the buildings that their friends reside. Five participants from the private housing sample explained how they liked catching public transport because it gave them an opportunity to socialise with friends or siblings. For instance, two siblings in Southbank (a girl and boy aged 8 and 9 years old respectively) described how they liked catching the train to school together, as the sister explains: “I like it because we can get some alone time on the train”.

Inadequate ‘child density’ results in spaces children do not like. Three children expressed that they felt socially isolated because they do not see other children in their immediate neighbourhood. Moreover, 11 of the children residing in privately-owned housing (52% the sample) do not live within self-defined walking distance of their school, and are likely to have friends residing in different suburbs. Unlike the children from public housing, they can’t develop a social space with their nearby school friends. In a positive sense, this may contribute to their larger areas of exploration; but in a negative sense, it makes them feel like aliens in their own neighbourhood.

3.8 Parental safety concerns and their perceptions of high rise living

Parents were asked open ended questions in the parent survey to determine what their most pressing concerns were about letting their child travel independently and what solutions they would suggest to overcome this concern. Traffic and personal safety concerns dominated parent’s responses; a finding that is generally consistent with the literature which posits parental perceptions of traffic and personal safety as the key determinant influencing the level of CIM.

Of the 54.5% of parents that cited traffic safety concerns, almost 60% were focused on road safety (particularly the speed and volume of car traffic), while 25% were particularly concerned with public transport (specifically in relation to getting on and off trams and the overcrowding at tram stops during peak times). Also not surprisingly, for families residing closer to major thoroughfares, traffic safety concerns are heightened.

Forty one percent of parents raised personal safety concerns. These were primarily related to ‘stranger danger’ or fears that ill intentioned adults would harm their child. As a mother of a 10 year old boy from private high rise housing on St Kilda Road explains: “In rational or not, my biggest concern is that my children will encounter a stranger who is either ill-intentioned or mentally unwell.” A few parents articulated their personal safety concerns around particular destinations or the types of people residing in their neighbourhood. As a parent of a 12 year old girl residing in private high rise housing in St Kilda explains is worried that there is “potential for random outburst of violence from a schizophrenic lodger of the Gatwick (for example)".
Figure 20: Extracts from the photo collages – The importance of social space
Interestingly, 27% of parents were also concerned with what they perceived as their own child's inability to navigate their environment safely. Specifically, that they would get lost, lacked road safety skills or generally lacked the skills to deal with unforeseen problems that may arise.

The most popular solution to these concerns, which was put forward by 45% of respondents, was that they must educate their child on road and personal safety:

Repeated emphasis on safety. Look R, Look L, Look R again. No distractions when getting on or off [the tram]. [Parent of an 11 year old girl residing on St Kilda Road]

Educate her on road safety, rules and regulation. Teach her to be stronger and never follow them [strangers] anywhere. [Parent of a 12 year old girl from Southbank]

Continuing this education theme, 20% of parents proposed that their child should be accompanied with and taught by siblings. Meanwhile, 10% of parents explicitly described this education in terms of ‘graduated licences’, that as they get older they should be given more responsibility:

I need to ‘get a grip’ and allow the children to incrementally become more independent as every other generation did before them. [Parent of a 10 year old boy residing on St Kilda Road].

Only 10% of parents actually suggested changing the physical environment, proposing traffic calming measures to reduce speed limits (particularly on service lanes) and a greater provision of pedestrian crossing with traffic lights to make it easier and safer to cross major roads. Other solutions identified by parents included providing their child with a mobile phone (15%), avoiding identified ‘problem areas’ (5%) and that a parent should accompany the child at all times (5%).

Twenty percent of parents said that nothing could be done to overcome their concerns, with two of these parents suggesting that their child must reach a certain age before they can become a competent pedestrian:

The only time and way [she] would go to school on her own is when she is 12 years old at least … By 12 years I would expect her to have the maturity to stay aware and make the right safety decisions [parent of an 8 year old girl residing in Southbank].

I think they have to be a certain age (like a high school student) to overcome, otherwise, I just don’t think there’s a good way [parent of a 9 year old boy residing in Docklands].

Parents were also asked in the survey to assess the likelihood that a range of both positive and negative impacts would affect their child if they travelled independently in their local neighbourhood. Their responses are summarised in Figure 21. When looking at the total sample, the negative impacts which parents assessed to be very likely or likely were that their child would be exposed to risk of traffic accidents and that they would encounter ill-intentioned adults. Overall, the majority of the population sample believed that independent travel would make their child would become more competent users of public space as it was very likely or likely to make them more responsible, as well as enable them to learn their way around and develop skills to travel alone.
Figure 21: Parental Survey responses – “I believe that my child who goes out alone in the area around my house can…”

**Total Population Sample:**

- Feel disorientated in the area: 15.5% Very Likely, 46% Likely, 38.5% Not Very Likely, 4% Unlikely
- Find someone willing to help him/her in case of trouble: 50.8% Very Likely, 38% Likely, 17.7% Not Very Likely, 11.5% Unlikely
- Become more responsible: 38% Very Likely, 50% Likely, 12% Not Very Likely, 1% Unlikely
- See things that may frighten her/him: 20.7% Very Likely, 58% Likely, 19% Not Very Likely, 4% Unlikely
- Come into contact with drugs or alcohol: 11.6% Very Likely, 44% Likely, 50% Not Very Likely, 4% Unlikely
- Learn his/her way around: 50% Very Likely, 48% Likely, 3% Not Very Likely, 4% Unlikely
- Encounter ill-intentioned adults: 36% Very Likely, 44% Likely, 20% Not Very Likely, 8% Unlikely
- Develop skills to travel alone: 54% Very Likely, 38% Likely, 8% Not Very Likely, 0% Unlikely
- Be exposed to risk of road accidents: 23% Very Likely, 36% Likely, 22% Not Very Likely, 32% Unlikely
- Meet and/or play with other children: 22% Very Likely, 64% Likely, 14% Not Very Likely, 2% Unlikely

**Public High Rise Sample:**

- Feel disorientated in the area: 28.6% Very Likely, 28.6% Likely, 42.8% Not Very Likely, 0% Unlikely
- Find someone willing to help him/her in case of trouble: 28.6% Very Likely, 42.8% Likely, 28.6% Not Very Likely, 0% Unlikely
- Become more responsible: 29% Very Likely, 14% Likely, 43% Not Very Likely, 15% Unlikely
- See things that may frighten her/him: 19% Very Likely, 48% Likely, 33% Not Very Likely, 14% Unlikely
- Come into contact with drugs or alcohol: 19% Very Likely, 57% Likely, 41% Not Very Likely, 29% Unlikely
- Learn his/her way around: 57% Very Likely, 43% Likely, 43% Not Very Likely, 0% Unlikely
- Encounter ill-intentioned adults: 50% Very Likely, 50% Likely, 35% Not Very Likely, 17% Unlikely
- Develop skills to travel alone: 14% Very Likely, 35% Likely, 71% Not Very Likely, 0% Unlikely
- Be exposed to risk of road accidents: 15% Very Likely, 57% Likely, 43% Not Very Likely, 0% Unlikely
- Meet and/or play with other children: 43% Very Likely, 57% Likely, 43% Not Very Likely, 0% Unlikely

**Private High Rise Sample:**

- Feel disorientated in the area: 10.23% Very Likely, 52.65% Likely, 36.84% Not Very Likely, 5% Unlikely
- Find someone willing to help him/her in case of trouble: 15.8% Very Likely, 62% Likely, 21% Not Very Likely, 3% Unlikely
- Become more responsible: 22% Very Likely, 63% Likely, 55% Not Very Likely, 5% Unlikely
- See things that may frighten her/him: 21% Very Likely, 63% Likely, 45% Not Very Likely, 16% Unlikely
- Come into contact with drugs or alcohol: 17.4% Very Likely, 64.4% Likely, 17.4% Not Very Likely, 1% Unlikely
- Learn his/her way around: 52.6% Very Likely, 31.6% Likely, 15.8% Not Very Likely, 5% Unlikely
- Encounter ill-intentioned adults: 32% Very Likely, 47% Likely, 32% Not Very Likely, 18% Unlikely
- Develop skills to travel alone: 47.4% Very Likely, 47.4% Likely, 5.2% Not Very Likely, 0% Unlikely
- Be exposed to risk of road accidents: 21.1% Very Likely, 51.6% Likely, 25% Not Very Likely, 0% Unlikely
- Meet and/or play with other children: 44.5% Very Likely, 10.4% Likely, 8% Not Very Likely, 25% Unlikely
Figure 21 reveals that generally, parents from public and private high rise housing samples assessed the impacts of CIM on their child quite differently. With regards to the negative impacts, the public high rise sample gave greater weight to their child would feeling more disorientated in the area, seeing things that would frighten them, coming into contact with drugs or alcohol and encountering ill intentioned adults if they travel around the neighbourhood independently than those living in private housing. On the other hand, exposure to risk of road accidents was considered more likely by the private high rise sample.

With regards to the positive impacts, the results are mixed. Parents from private high rise housing were more optimistic that if their child travelled independently, they would be able to find someone willing to help them in case of trouble and that their child would become more responsible and develop skills to travel alone. Meanwhile, the public high rise sample indicated that their child would be more likely to learn their way around.

Finally, reinforcing the findings from the photo collages related to child density, 86% of parents from the public high rise sample believed it likely or very likely that if their child travelled alone they would be able to meet and play with other children, compared to only 35% of parents from the private high rise sample.
4 CONCLUSIONS

4.1 Differences between public and private housing kids

The first and most obvious conclusion is that the children and parents we interviewed in public housing and in private housing live in different perceptual worlds, for reasons related to both the built and social environments surrounding them. Our findings reinforce an earlier generation of researchers who compared public and private high rise children’s experiences, including travel range (Gould and White 1974; King 1974). According to both parent surveys and diaries, all of the public housing children we interviewed walk and from school to school, 88% of them by themselves or with other children. Only one fifth of private housing children walk to and from school, the same proportion who journey without adult supervision. Seventy percent of total journeys of public housing children are taken alone or with other children, as compared to only a quarter of total journeys of children in private housing. The vast majority of trips taken by children in public housing involve walking as the primary mode of transport, while the majority of trips taken by private housing children involve a car.

For public housing children in Carlton and Flemington, the school is on the estate or immediately adjacent to it. There are a range of formal play spaces (playgrounds, recreation centres) within or adjacent to their estates. There is a critical mass of other children known to them. For children in central city private housing, there are no schools within the CBD, there are few adjacent play spaces, the play amenities provided within the buildings (pools, tennis courts, common areas) may have rules or norms that discourage their play, and they may have few friends in the vicinity. However, private housing children identify a greater range of places to go, including shops and downtown landmarks (however ‘boring’ they may be). Seven of the nine private school children who wore their GPS devices long enough for their readings to be usable strayed out of an 800 metre ‘home zone’ on a weekday or weekend. Only two of the nine public school children whose GPS readings were usable strayed out of their ‘home zones’. Public housing children had access, more independent mobility and more active travel. Private housing children had a greater territorial range, partly due to access to cars (only 43% of parents sampled from public high rise housing own a car, as opposed to all of the private housing parents), and sense of symbolic ownership over central city spaces and services such as public transport.

Both situations are problematic, with public housing children in what Marketta Kytta (2004) would call a ‘wasteland’, where high levels of independent mobility reveal only the dullness of the immediate environment, and private housing children in a ‘glasshouse’ where a wonderland of potential affordances is not fully accessible because of mobility restrictions. To state the obvious again, it is a problem when a society builds certain kinds of communities for low income people and other kinds of communities for high income people. Why should public housing kids in our study have to contend with boring and inappropriate playgrounds on their estates? Why should private housing kids have to do without schools and playgrounds adjacent to their new buildings, and with car traffic threatening their independent access to shops and other destinations? Why was it assumed that while high rise housing was acceptable for low income people living in public housing, that private high rise housing would never be acceptable for middle class families? More importantly, despite moves to diversify the range of incomes living in Carlton, North Melbourne, and Flemington Estates, and at least the possibility of new affordable housing in Melbourne’s CBD and St. Kilda, why are governments still allowing income-segregated communities to be developed?
4.2 Children’s Environmental Likes and Dislikes

Our findings went beyond what is often somewhat binary research on CIM (travel alone/ travel with parents) to uncover relatively rich and complex experiences of children living in central city high rise housing. Relatively high rates of children’s independent mobility were uncovered, at least in relation to other recent Anglo-American studies. Eighty five percent of parents in our admittedly small sample of 28 parents (20 of whom lived in private housing) responded that their children were allowed to travel without a parent to school, and 59% allowed to travel to a park or playground by the age of 12, which compares favourably to the 59% of girls and 65% of boys aged 8 to 12 who walked or cycled to school, and 40% of girls and 48% of boys aged 8 to 12 who walked or cycled to parks, ovals, and playgrounds in one recent Melbourne suburban study (Timperio et al 2004: 42). The ‘week with a camera’ photo collage activity suggested a range of spaces that children liked. While public housing children focused on nearby play spaces, private housing children included private and public play spaces, shops, and landmarks such as the buskers at Flinders Street Station.

While both children and their parents discussed the sort of safety concerns often raised as an excuse for declines in independent mobility and active travel, the public housing residents were more likely to raise personal safety concerns such as “hoboes” and drug dealing on estates, while the private housing residents stressed traffic safety issues ranging from heavy car traffic to congestion in public transport, as much or more than personal safety (although licensed premises were a concern, particularly in St. Kilda, and smokers in public places occasioned some concern). Public housing children were far more likely to raise maintenance issues with equipment or the boring nature of formal play spaces, while private housing children complained about lack of other children to play with, as well as boring adult centric spaces, such as the State Library or the Arts Centre.

4.3 Social Space and a Hierarchy of Play Spaces

A recurrent theme of the children we spoke with was the importance of a critical mass of children (child density) and the importance of all spaces (not only playgrounds) as ‘social space’. This was important to both public and private housing children. Sixty nine percent of the children living in public housing reflected they liked certain destinations because other children on the estate use them too, while 76% of private housing children explicitly cited the appeal of some destinations in relation to being able to ‘hang out’ with friends or siblings. Children often described going to a playground to meet friends and listen to music or just talk, as opposed to using the equipment. They also described enjoying time with friends on public transport, enjoying going to food, shops, and movies with friends, and just knowing that friends lived nearby. Once again, this links the literature review, and in particular, the need for a range of spaces where children can socialize.

The children we spoke to also reinforced the need for a hierarchy of play spaces, from adjacent outdoor spaces that can be informally overlooked by parents (“I can only go where my mum can see me”, as one 11 year old public housing girl wrote and drew), to the need for more adventurous places and destinations that aren’t for “babies”, as one 11 year old public housing boy wrote.
4.4 Policy Implications: Promoting Child-friendly central city high rise environments

The Vertical Living Kids research project emerged as a response to the recent development of high rise residential neighbourhoods, planned to be child-free but in fact populated by children and their parents. Despite high rises being seen as unhealthy and inappropriate for children, Australian metropolitan planning strategies continue to encourage a high density urban form, which, in turn, is likely to increase the number of vertical living kids in Australian cities. Our ultimate aim is to encourage the recognition of children as citizens, with equal rights to appropriate housing and public space. Planners have the responsibility to take their views, and their needs, into account in our brave new cities.

Specifically, an approach based on the Singapore and Vancouver examples discussed in Chapter 2.4 should be followed in Melbourne and other Australian cities. Both cities promote a range of apartment sizes, including three and four bedroom apartments, in high rise accommodation. They also promote a range of household income types living in neighbourhoods, through inclusionary zoning for affordable housing, interspersing public housing in new private developments, and specific affordable housing allocations for families with young children. Then they support these families through a hierarchy of play spaces, from child-safe balconies to courtyard play spaces overlooked by housing, through larger playgrounds and recreation centres with good walking (low car traffic) access. They plan for schools, maternal and child health centres, and other child-friendly social infrastructure, in all new developments, including high rise developments. They also recognize the importance of a range of other ground-level destinations, such as corner shops and markets, which serve adults as well as children. Finally, at least in the case of Vancouver, they consult with children about all aspects of their communities, not only play spaces.

A new planning approach is required in metropolitan Melbourne – and not only in central city high rises - which recognises children's needs for "social space – the demand of the city's children to be a part of the city's life" (Ward 1977, 31). Unfortunately, the current planning policy for children in Australia and New Zealand is one of "setting aside child spaces” such as parks, fenced playgrounds or skate parks (Freeman 2006, 76). Our findings suggest that this does not accurately reflect children's actual likes and dislikes, which encompass a much wider range spaces than purpose built 'cages'. Fincher and Iveson contend that planning responses that concentrate solely on developing child or youth specific spaces do not create child friendly environments; they merely become an “archipelago of ‘safe’ spaces in a sea of adult centric space” (Fincher and Iveson 2008, 107). As Fincher and Iveson argue (2008, 112), the shift to a citizenship approach to planning that acknowledges children's rights to the city generally “is not to deny the importance of play to children and young people”; rather, it seeks to broaden the concept of play space to “think of the city and the urban realm in particular as a space of play rather than restricting play to designated spaces".
4.5 Further Research

As discussed in the introduction, there are very few Australian studies that focus on children living in either high rise housing or living in central cities. There are also surprisingly little Australian research on environmental influences that focuses on the perspectives of children (but see the work of Timperio et al 2004a and Hume et al 2005). The combination of quantitative methods such as GPS and accelerometers, and qualitative methods such as surveys and weeks with a camera are beginning to become more common due to interdisciplinary collaborations, and as mentioned in the introduction, these methods will be replicated (more successfully, we hope, than this very exploratory research) in a forthcoming nation-wide study funded by the Australian Research Council.

The public housing communities from which we drew children, particularly Carlton and Flemington, are undergoing massive redevelopment, including new private housing (both townhouses and apartments) and some new social infrastructure (including new playgrounds). Similarly, both the Cities of Melbourne and Port Phillip are investing in social infrastructure (in many cases, with funding from state and federal governments) to improve services, spaces, and amenities for children and adults. It is hoped that the findings of this research will be used by the advisory committee, which includes the Victorian Health Promotion Foundation (the funder), the Heart Foundation, the Cities of Melbourne and Port Phillip and the State of Victoria’s Department of Human Services, to advocate for more child-friendly spaces. It would be worth including children in any evaluation of the changes that eventuate from these new planning programs.

Several of the researchers involved in this project (both the Chief Investigator Carolyn Whitzman and several of her colleagues) are interested in developing child-friendly land use planning policies that can encourage all kinds of urban and suburban communities to become more child-friendly. Planning practitioners, including 50 people who came to the inaugural meeting of the Victorian Chapter of the Child-Friendly Cities Asia-Pacific Network in November 2009, are certainly interested in developing these sorts of policies.

Last but certainly not least, this research points to the need to develop a slightly more complex conceptualization of children’s independent mobility and then plan cities that can enable rich and complex public lives for children. As described in this report, we found public housing children with high levels of independent mobility but a small territorial range, and private housing children with low to average levels of independent mobility, but lacking in the critical mass of other children and social infrastructure that would make them feel part of their new high rise communities. This is not a problem of high rise housing in central cities. This is a failure of planning to consider the needs of children and families. As a society, we can and must do better.
## APPENDIX A: SAMPLE TRAVEL DIARY (ONE WEEKDAY)

<table>
<thead>
<tr>
<th>Location</th>
<th>Today is</th>
<th>What did you do there?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I began the day at: Home ☐ Somewhere else ☐ If somewhere else, please say where:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I put my sensors on at: ______________ AM

I left at: ______________

Then I went to:

I got there at: ______________

I traveled by:

I traveled: By myself ☐ With an adult ☐ With brothers/sisters/cousins ☐ With other children ☐

I left at: ______________

Then I went to:

I got there at: ______________

I traveled by:

I traveled: By myself ☐ With an adult ☐ With brothers/sisters/cousins ☐ With other children ☐

I left at: ______________

Then I went to:

I got there at: ______________

I traveled by:

I traveled: By myself ☐ With an adult ☐ With brothers/sisters/cousins ☐ With other children ☐

I left at: ______________
<table>
<thead>
<tr>
<th>Location</th>
<th>What did you do there?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Then I went to:</strong></td>
<td>I got there at [ ] : [ ]</td>
</tr>
<tr>
<td></td>
<td>I traveled by [ ]</td>
</tr>
<tr>
<td></td>
<td>I traveled: [ ] By myself [ ]</td>
</tr>
<tr>
<td></td>
<td>With an adult [ ]</td>
</tr>
<tr>
<td></td>
<td>With brothers/sisters/cousins [ ]</td>
</tr>
<tr>
<td></td>
<td>With other children [ ]</td>
</tr>
<tr>
<td></td>
<td>I left at [ ] : [ ]</td>
</tr>
</tbody>
</table>

| **Then I went to:** | I got there at [ ] : [ ] |
| | I traveled by [ ] |
| | I traveled: [ ] By myself [ ] |
| | With an adult [ ] |
| | With brothers/sisters/cousins [ ] |
| | With other children [ ] |
| | I left at [ ] : [ ] |

| **Then I went to:** | I got there at [ ] : [ ] |
| | I traveled by [ ] |
| | I traveled: [ ] By myself [ ] |
| | With an adult [ ] |
| | With brothers/sisters/cousins [ ] |
| | With other children [ ] |
| | I left at [ ] : [ ] |

| **I ended the day at:** | I got there at [ ] : [ ] |
| | Home [ ] |
| | Somewhere else [ ] |
| | If somewhere else, please say where [ ] |
| | I took my sensors off at [ ] : [ ] PM |

**END OF WEEK DAY 1**

**Reflections**
APPENDIX B: PARENT SURVEY QUESTIONS

1. At what age did you allow your child to travel without an adult:

<table>
<thead>
<tr>
<th></th>
<th>Not allowed</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>to school</td>
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<tr>
<td>from school</td>
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<tr>
<td>to a friend’s house</td>
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<tr>
<td>to a park or playground</td>
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<tr>
<td>to a shop or shopping centre</td>
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<td>on public transport</td>
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<td>on a bicycle on public streets</td>
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<tr>
<td>to cross a main street</td>
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</tr>
</tbody>
</table>

2. How does your child generally travel (if more than one mode is used, choose the mode used for the longest part of the trip):

<table>
<thead>
<tr>
<th></th>
<th>Car</th>
<th>Public transport</th>
<th>Bicycle</th>
<th>Walk</th>
<th>Other (please list)</th>
</tr>
</thead>
<tbody>
<tr>
<td>to school</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from school</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>to a friend’s house</td>
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<tr>
<td>to a park or playground</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to a shop or shopping centre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. With whom does your child generally travel (circle all that apply):

<table>
<thead>
<tr>
<th>To school</th>
<th>Alone</th>
<th>Other children</th>
<th>Family members who are not adults</th>
<th>Adults</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>From school</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To a friend’s house</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To a park or playground</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To a shop or shopping centre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On public transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When riding a bicycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When crossing a main street</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. I believe that my child who goes out alone in the area around my house can:

<table>
<thead>
<tr>
<th></th>
<th>Very Likely</th>
<th>Likely</th>
<th>Not very Likely</th>
<th>Unlikely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meet and/or play with other children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Be exposed to the risk of road accidents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop skills to travel alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encounter ill-intentioned adults</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learn his/her way around</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Come into contact with drugs or alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>See things that may frighten her/him</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Become more responsible</td>
<td>Very Likely</td>
<td>Likely</td>
<td>Not very Likely</td>
<td>Unlikely</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------</td>
<td>--------</td>
<td>----------------</td>
<td>---------</td>
</tr>
<tr>
<td>Find some-one willing to help him/her in case of trouble</td>
<td>Very Likely</td>
<td>Likely</td>
<td>Not very Likely</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Feel disoriented in the area</td>
<td>Very Likely</td>
<td>Likely</td>
<td>Not very Likely</td>
<td>Unlikely</td>
</tr>
</tbody>
</table>

5. **What is the most pressing concern you have about allowing your child to travel independently?**

6. **What can be done to overcome this barrier?**

7. **Please list the places where your child goes to play;**
   - Of this list,
   - 1). Circle the places where your child travels alone.
   - 2). Place a * by the places where your child travels with his/her peers or siblings but without an adult.

8. **Please indicate the farthest distance your child is allowed to travel:**
   - By him/her self
   - With peers or siblings but without adult supervision

9. **How do you generally feel about your child’s use of the neighbourhood?**

10. **Please answer the following:**

<table>
<thead>
<tr>
<th>What is your gender?</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many cars does your household have?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>How many bicycles does your household have?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>What suburb do you live in?</td>
<td>Carlton</td>
<td>Kensington</td>
</tr>
<tr>
<td>Do you live in a building with five or more storeys?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>How old is the child that brought home this survey?</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>What is the gender of the child that brought home this survey?</td>
<td>Female</td>
<td>Male</td>
</tr>
</tbody>
</table>

**If there are other children living in the house, please provide the age and gender:**
REFERENCES


Trost, SG., Pate, RR., Freedson PS., Sallis, JF. &Taylor WC. (2000). Using Objective Physical Activity
Measures with Youth: How many days of monitoring are needed? *Journal of Medicine & Science in Sport and Exercise*, 32(2), 426-431.


