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Transport choices - to and from Primary Schools in the Sutherland Shire

Abstract
Private motor vehicle use dominates transport behaviours in Australia, even over traditionally short journeys such as the 'school run' - the journey travelled to or from school. Such trends toward motor vehicle use in preference to active or public transport are widely recognised for their significant environmental, social and economic consequences. Transport trends within the Sutherland Shire, New South Wales, exhibit high and increasing rates of motor vehicle use. However, little is known about the transport behaviours of Sutherland Shire residents for the school run. This thesis explores the transport behaviours of children and their parents/guardians as they undertake the school run within the Sutherland Shire. It also seeks to explore the factors which influence these transport behaviours, and how perceptions of 'community' and environmental knowledge and concerns may influence the modes of transport used for the school run. A self-administered, parental questionnaire was utilised to collect data on transport behaviours and attitudes, whilst a drawing task provided an opportunity for children to express their perceptions of the school run. Data collected within the questionnaire revealed that the majority of journeys to or from school in the Sutherland Shire are made by private motor vehicle, in preference to active or public transport. The key factors influencing these trends include safety concerns, aspects of the physical environment and available infrastructure, as well as practicality or convenience. Investigation into relationships between individuals' perceptions of 'community', environmental concerns and transport behaviours revealed the importance of complex social factors which underlie transport choices, such as the 'culture of the car'. Understanding the influence of each of these factors is critical when recommending how Sutherland Shire Council may promote the use of more sustainable forms of transport for the school run.

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TRANSPORT CHOICES -
TO AND FROM PRIMARY SCHOOLS IN THE SUTHERLAND SHIRE

By

STEPHANIE TOOLE

This research report is submitted in partial fulfilment of the requirements for the award of the degree of

HONOURS BACHELOR OF ENVIRONMENTAL SCIENCE

SCHOOL OF EARTH AND ENVIRONMENTAL SCIENCES

FACULTY OF SCIENCE

UNIVERSITY OF WOLLONGONG

December, 2011

Declaration

This thesis is submitted in accordance with the regulations of the University of Wollongong in partial fulfilment of the degree of Bachelor of Environmental Science (Honours). It does not include any material published by another person except where due reference is made in the text. The experimental work described in this thesis is original work and has not been submitted for a degree or diploma at any other university.

Stephanie Toole

15/12/11

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Abstract

Private motor vehicle use dominates transport behaviours in Australia, even over traditionally short journeys such as the 'school run' - the journey travelled to or from school. Such trends toward motor vehicle use in preference to active or public transport are widely recognised for their significant environmental, social and economic consequences. Transport trends within the Sutherland Shire, New South Wales, exhibit high and increasing rates of motor vehicle use. However, little is known about the transport behaviours of Sutherland Shire residents for the school run. This thesis explores the transport behaviours of children and their parents/guardians as they undertake the school run within the Sutherland Shire. It also seeks to explore the factors which influence these transport behaviours, and how perceptions of 'community' and environmental knowledge and concerns may influence the modes of transport used for the school run. A self-administered, parental questionnaire was utilised to collect data on transport behaviours and attitudes, whilst a drawing task provided an opportunity for children to express their perceptions of the school run. Data collected within the questionnaire revealed that the majority of journeys to or from school in the Sutherland Shire are made by private motor vehicle, in preference to active or public transport. The key factors influencing these trends include safety concerns, aspects of the physical environment and available infrastructure, as well as practicality or convenience. Investigation into relationships between individuals' perceptions of 'community', environmental concerns and transport behaviours revealed the importance of complex social factors which underlie transport choices, such as the 'culture of the car'. Understanding the influence of each of these factors is critical when recommending how Sutherland Shire Council may promote the use of more sustainable forms of transport for the school run.

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1 – Introduction

The transportation sector is widely recognised for imposing significant environmental, economic and social consequences upon societies. In light of growing concerns regarding anthropogenic climate change, the continuation and intensification of fossil-fuel dependent transportation is unsustainable. However, motorised transport use continues to rise in developed and developing countries alike. In Australia, the use of private motor vehicles dominates transport behaviours, even over short journeys. This trend creates a serious challenge for policy makers at all tiers of government, including local councils. This study is primarily concerned with the transport behaviours of adults and primary school children (aged 5-12) in the Sutherland Shire on the 'school run' - the journey travelled to or from school. This introductory chapter substantiates the importance of addressing car 'dependency' in light of its environmental, economic and social consequences, and outlines general transport trends in Australia, before focusing on the school run.

1.1 Background

In recent decades, the prevalence of private motor vehicles and motorised transport has increased dramatically in developed countries, including Australia. Motor vehicle use continues to rise in Australia, with the nation's passenger vehicle fleet growing to a high of 12.5 million vehicles in 2011, after increasing by 12 per cent over the last five years alone (Australian Bureau of Statistics (ABS), 2011). With passenger vehicle ownership standing at 560 vehicles per 1,000 resident population in 2011 (ABS, 2011), escalating motor vehicle use has been paralleled by a declining use of active and public transport. Active transport involves any self-propelled movement, such as walking or cycling, for the purpose of transport (Adams, 2010) whilst public transport involves the use of publically provided services such as buses or trains. Trends away from these transport modes due to the rising hegemony of the motor vehicle have significant consequences for the environment, economy, and social health and wellbeing (Black *et al*., 2001; Rodrigue *et al*., 2009).

The environmental ramifications of motor vehicle use are well known, with air pollution recognised as a substantial by-product of fossil fuel combustion (Bluett *et al*., 2008; Department of Environment, Climate Change and Water New South Wales (DECCW NSW), 2009; Department of the Environment and Heritage (DEH), 2009; Department of Sustainability, Environment, Water, Populations and Communities (DSEWPC), 2010; Fuglestvedt *et al*., 2010). Fossil fuel combustion produces pollutants such as carbon monoxide, carbon dioxide, sulphur dioxide and nitrogen oxides, as well as volatile organic compounds and particulate matter (Bluett *et al*., 2008; DECCW NSW, 2009; DEH, 2009; DSEWPC, 2010; Fuglestvedt *et al*., 2010). The transport sector is the third largest source of greenhouse gas emissions in Australia, responsible for 14.8 per cent of Australia's annual total greenhouse gas emissions, surpassed only by stationary energy and agriculture (Department of Climate Change and Energy Efficiency (DCCEE), 2011). The emissions attributable to the nationwide transport sector grew by approximately 35 per cent between 1990 and 2009 (DCCEE, 2011) whilst transport-related emissions attributed to New South Wales have increased by approximately 20 per cent (DCCEE, 2011).

In addition to the greenhouse gases produced by the active operation of motorised vehicles, the transport sector is also responsible for embodied carbon emissions associated with energy intensive manufacture and infrastructure construction (Chester and Horvath, 2009; Rodrigue *et al*., 2009). For each kilometre travelled in a conventional sedan vehicle, 230g CO_2e (carbon dioxide equivalent emissions) are produced, of which nearly 40 per cent are associated with non-operation components, such as vehicle manufacturing, infrastructure construction and fuel production (Chester and Horvath, 2009).

In light of the mounting evidence surrounding the role of greenhouse gases in inducing climate change (Intergovernmental Panel on Climate Change (IPCC), 2001, 2004; National Academy of Sciences Committee on the Science of Climate Change, 2001; Garnaut, 2008) trends toward increasing motorised transport, and subsequent increases in greenhouse gas emissions and deteriorating air quality, are a major environmental concern associated with transport. When considered alongside additional environmental costs, such as impacts on water and soil quality (Forman and Alexander, 1998; Rodrigue *et al*., 2009) and the direct damage, disturbance and fragmentation of natural environments and biodiversity (Forman and Alexander, 1998; Forman, 2000; Trombulak and Frissell, 2000; Demirel *et al*., 2008;

Kociolek *et al*., 2011), transport trends which exhibit motor vehicle dependence are increasingly environmentally unsustainable (Organisation for Economic Co-operation and Development, 1996).

The negative implications of motor vehicle transport also extend to social and economic environments (Black *et al*., 2001; Diesendorf, 2002; Davis and Fisher, 2005; Garrard, 2009a, 2009b). For example, motorised transport incurs direct economic costs for infrastructure construction and maintenance (Diesendorf, 2002; Davis and Fisher, 2005). The increasing use of motor vehicles in place of active modes, such as walking and cycling, may also result in reduced physical activity and reduced physical and mental health, as well as rising incidences of obesity, especially amongst children (Boreham and Riddoch, 2001; Tudor-Locke *et al*., 2001, 2002; Biddle *et al*., 2004; Flynn *et al*., 2006; Garrard, 2009a, 2009b). The health implications of obesity, such as cardiovascular disease, Type II diabetes and the propensity for obese children to maintain obesity into adulthood and thus exhibit long-term health problems (Australian Institute of Health and Welfare (AIHW), 2004a, 2004b; Gill *et al*., 2009), generate a significant economic burden. In Australia in 2008, the total annual direct and indirect costs of obesity were estimated as $8.3 billion and $2.0 billion, respectively (Access Economics, 2008).

Motor vehicle dependence has also been discussed in the context of deteriorating social conditions, including rising social disconnection within neighbourhoods as people abandon streetscapes and social landscapes in favour of their private vehicles (Kay, 1998). Of further concern are relationships between increased motor vehicle usage and the internalisation of norms that reinforce car-dependent social values (Tranter and Pawson, 2001; Fyhri and Hjorthol, 2009) and the loss of environmental values and environmentally-conscious orientations, especially amongst children (Kong, 2000; Bixler *et al*., 2002; Vadala *et al*., 2007; Larson *et al*., 2011).

Overall, increased motor vehicle dependency for transportation is not only environmentally unsustainable, but also socially and economically disadvantageous (Black *et al*., 2001). In order to better understand how these macro-scale transport patterns and concerns affect unique geographical and jurisdictional contexts, a significant emphasis on transport studies which understand the local contexts of transport trends, and planning strategies which

pursue more sustainable transport solutions at the local-scale, has emerged in recent years (Curtis and Headicar, 1997; Black *et al*., 2001; Collins and Kearns, 2001; Davison *et al*., 2008; Arbour-Nicitopoulos *et al*., 2011).

One geographical region exhibiting a rise in unsustainable transport practices is the Sutherland Shire, a Local Government Area (LGA) located to the south of metropolitan Sydney, Australia. The Sutherland Shire is the second most populous LGA in Sydney and NSW, and the eighth most populous in Australia, hosting a population of approximately 220,000 people (ABS, 2010a). This large, predominantly residential area is of particular research interest due to its high, and increasing, rates of motor vehicle use. Data from the NSW 2007 Household Travel Survey indicated that over three quarters of trips made by Sutherland Shire residents within the Sydney Greater Metropolitan area on an average weekday were made by motor vehicle (Sutherland Shire Council, 2010). Public transport accounted for a lesser 8.5 per cent of trips, whilst active transport (predominantly walking) was used for 14.0 per cent of trips (Sutherland Shire Council, 2010). In comparison to data collected for the Sydney Statistical Division (SSD), which consists of 43 LGAs, the Sutherland Shire exhibited substantially higher rates of motor vehicle use (77.0% compared with 69.5% for the SSD) and lower rates of public and active transport use (8.5% and 14.0% compared with 10.4% and 17.8%, respectively) (Bureau of Transport Statistics, 2011). Data collected annually for the Sutherland Shire between 1991 and 2002 also revealed a growing trend towards increasing motor vehicle use, and a decline in walking and public transport use in the region (Sutherland Shire Council, 2010). In light of the environmental and social consequences of motor vehicle use, Sutherland Shire Council has identified the need to promote more sustainable transport behaviours in the region (Sutherland Shire Council, 2010). In particular, Sutherland Shire Council is interested in investigating a trend toward concentrated vehicle use during certain periods of the morning and afternoon, a phenomenon contemporaneous with primary school start and finishing times.

1.2 Research aims

In consideration of Sutherland Shire Council's research brief, the overarching aim of this thesis is to explore the transport behaviours and attitudes of children and parents/guardians, as they undertake the 'school run'; the journey travelled to or from school by students, and other travel companions, for the purpose of facilitating children's school attendance. This research adopted a social scientific approach toward transport use and was further framed around four research aims:

i. To identify the modes of transport utilised by children and parents/guardians for the school run in the Sutherland Shire.

ii. To examine the factors which influence the transport behaviours of children and parents/guardians for the school run.

iii. To investigate how individuals' perceptions of 'community' influence the modes of transport used for the school run.

iv. To investigate how individuals' environmental knowledge and concerns influence the modes of transport used for the school run.

The following section outlines historical and contemporary trends of travel behaviour for the school run as outlined in international and Australian literature.

1.3 The 'school run'

Over recent decades there have been considerable shifts in the modes of transport used by students in developed countries for the school run. Studies conducted in the United States, United Kingdom and New Zealand have revealed a trend away from active transport and toward increasing motor vehicle use for the school run (Department of Transport, 2005; Pooley *et al*., 2005; McDonald, 2007; Ministry of Transport, 2008; Hinckson *et al*., 2011). Across the United Kingdom, the modes of transport utilised by primary aged children for the school run have shifted considerably, with active transport decreasing from 61 per cent to 53 per cent of trips between 1992/1994 and 2002/2003, whilst motor vehicle use increased

from 30 per cent to 40 per cent of trips over the same period (Department of Transport, 2005). However, the United Kingdom features less car-focused infrastructure than more car-dependent countries like the United States (van der Ploeg *et al*., 2008), where a stronger trend away from active transport is evident. Data from the United States' National Personal Transportation Survey revealed that the use of active transport modes for the school run has declined from 40.7 per cent of all trips in 1969 to 12.9 per cent in 2001 (McDonald, 2007). School bus and public transport use also declined in this period, although not as dramatically (McDonald, 2007). During the same period, motor vehicle use for the school run increased from 17.1 per cent to 55.0 per cent of all trips (McDonald, 2007). In New Zealand, data collected by the Ministry of Transport (2008) indicate that the proportion of primary school aged children driven to or from school increased from 31 per cent in 1989/1990 to 52 per cent in 2003/2006.

Similar trends have been observed in Australia, with a study of children's transport modes for the school run in the County of Cumberland (a large urban area in NSW including much of metropolitan Sydney) between 1971 and 2003 revealing a significant shift from active and public transport to motor vehicle use (van der Ploeg *et al*., 2008). Data showed that the percentage of younger children (aged 5-9 years) who walked to school declined from 57.7 per cent in 1971 to 25.6 per cent in 1999–2003, whilst the use of buses and trains declined from 18.8 per cent to 6.7 per cent over the same period (van der Ploeg *et al*., 2008). Meanwhile, the proportion of children (aged 5–9) who travelled to school by motor vehicle almost tripled from 22.8 per cent to 66.6 per cent (van der Ploeg *et al*., 2008). Similar trends toward decreasing active transport and public transport use and increasing motor vehicle use for the school run were also found for children aged 10–14 (van der Ploeg *et al*., 2008). Comparable trends have been recognised in other New South Wales-based studies (Merom *et al*., 2006) as well as in the travel patterns of Victorian children (Department of Human Services, 2007 as cited by Garrard, 2009a) and those living within capital cities such as Melbourne and Perth (Carlin *et al*., 1997; Roberts *et al*., 1997).

A study of the transport behaviours of primary school students in the inner western suburbs of Sydney found that 41 per cent of students travelled to or from school by motor vehicle throughout the week, whilst 32 per cent of students walked and one per cent cycled (Wen *et al*., 2008). However, that study focused on a region of metropolitan Sydney that is

demographically and geographically distinct from the Sutherland Shire. No similar studies have been conducted in relation to the school run in the Sutherland Shire, and this project is positioned within this knowledge gap. The findings of this research will assist Sutherland Shire Council in promoting the increased uptake of more sustainable forms of transport for the school run, within this highly car-dependent region. The following chapter frames this study by providing a more detailed overview of the existing literature on perceptions, values and constraints that influence transport-related decision-making processes related to the school run.

2. Literature Review

Whilst the school run appears to be a fairly simple, short trip completed out of routine and necessity by households throughout the Sutherland Shire and further afield, this purposeful journey has persistently frustrated transport analysts who seek to encourage a more sustainable transport system with increased active and public transport use (Black *et al*., 2001). Underlying transport choices for the school run is a raft of complex and interconnected factors which extend their influence to individuals, households and the community at large. These factors range from geographical, demographic and economic contexts, through to psychological and sociological determinants of household behaviours – including socially constructed norms and understandings of childhood (Black *et al*., 2001; Barker, 2003, 2011). The purpose of this literature review is to explore current knowledge of how these factors influence the school run.

2.1 The mobility of the 'modern' child in the developed world

Transport and children's geographers have acknowledged that the independent spatial mobility of children has been increasingly restricted over recent decades in Australia, as well as New Zealand, the United States, United Kingdom and Europe (Hillman *et al*., 1990; Barker, 2003; Fyhri *et al*., 2011). Fewer children are participating in active transport for journeys within their own neighbourhoods, particularly the school run; and supervised, vehicular 'chauffeuring' by parents has increased (Hillman *et al*., 1990; Collins and Kearns, 2001, 2005; Salmon *et al*., 2005; Malone, 2007; Garrard, 2009a; Thompson, 2009; Carver *et al*., 2010; Fyhri *et al*., 2011). The diminishing domain of children's play spaces is also indicative of the decreasing mobility of children in the developed world - children are not only spending less time outdoors than previous generations (Tandy, 1999; Karsten, 2005; Malone, 2007; Carver *et al*., 2008) but are also restricted in the locations where they are allowed to play (Tranter and Doyle, 1996; Veitch *et al*., 2006; Malone, 2007; Castonguay and Jutras, 2009; Fyhri and Hjorthol, 2009) and the level of independence (or absence of adult supervision) permitted (Kartsen, 2005; Veitch *et al*., 2006; Thompson, 2009).

In addition to limitations on their mobility, children's roles in travel-related decision-making within the informal realm of the family, as well as the broader, formal realm of transport policy development, are significantly limited (Davis and Jones, 1996; Barker, 2003). Barker (2003) found that the vast majority of travel-related decisions for the school run in the United Kingdom were made exclusively or predominantly by adults, with only 13 per cent of families indicating that their children participated equally. The exclusion of children from decision-making also extends to places that support play and leisure, such as playgrounds (McKendrick *et al.*, 2000). Restrictions on children's independent mobility and autonomy in the developed world stem from pervasive social (rather than biological) constructions of 'childhood' as a sentimentalised period of innocence, vulnerability and dependence on adult control, protection and care (Valentine, 1997; Matthews and Limb, 1999; Malone, 2007; Skelton, 2007). This conceptualisation fails to recognise children as competent social actors and social participants (Skelton, 2007; Barker, 2011), thus restricting the range and types of environments children experience as well as their agency in decision-making processes (Matthews and Limb, 1999). Instead, children's spaces have been institutionalised by adults to enable continuous surveillance and regulation of children (Barker, 2003). According to Barker (2003), the car represents the culmination of such supervision, surveillance and protection of children and is the key contemporary social space of childhood.

The ramifications of such limitations on children's independent mobility and autonomy hold the potential to affect individuals and the wider community and environment. For example, as a result of decreased physical activity children may experience diminished physical health (Boreham and Riddoch, 2001; Tudor-Locke *et al*., 2002; Biddle *et al*., 2004; Flynn *et al*., 2006; Garrard, 2009a), poorly developed motor skills (Davis and Jones, 1996; Brown *et al*., 2008) and inhibited cognitive and psychological development (Collins and Kearns, 2005; Malone, 2007; Brown *et al*., 2008). The restriction of children's experiential geographies may limit their opportunities to gain competence in negotiating their own communities and developing everyday skills such as traffic awareness (Collins and Kearns, 2005; Malone, 2007; Thompson, 2009), as well as their ability to socialise with other children and community members (Holland *et al*., 2007; Malone, 2007; Fyhri *et al*., 2011).

Another concerning consequence of the increasing ubiquity of motor vehicles in children's everyday lives is the internalisation of norms that lead to car-dependent social values in adulthood, and therefore reinforce unsustainable transport habits in the future (Bradshaw, 2001; Tranter and Pawson, 2001; Fyhri and Hjorthol, 2009). Furthermore, the restriction of children's mobility within their surroundings has led to concerns that direct experiences with 'nature' are less readily available for children (Pyle, 1998; Vadala *et al*., 2007). Research suggests exposure to, and informal experiences within, natural environments during childhood stimulates genuine interest and an appreciation and valuing of natural environments in later life (Chawla, 1998; Kong, 2000; Bixler *et al*., 2002; Louv, 2005; Wells and Lekies, 2006; Vadala *et al*., 2007; Larson *et al*., 2011). As such, the ever-decreasing mobility and experiences of children as they travel and interact within their neighbourhoods are of significance not only for the condition of current social and natural environments, but also those of the future.

A range of complex and inter-related factors are responsible for the decline in children's mobility for the school run in Australia and abroad including: perceptions of safety, aspects of physical and social environments and personal factors such as families' lifestyles and attitudes. These factors will be explored in the remainder of this literature review.

2.2 Safety concerns and the school run

A number of studies conducted in Australia, New Zealand, the United States, United Kingdom and Europe, have cited parental concerns about safety as influential in determining the modes of transport children use for the school run (Lam, 2000; Collins and Kearns, 2005; Schlossberg *et al*., 2006; Malone, 2007; McDonald, 2008; Doukas *et al*., 2010; Panter *et al*., 2010; Giles-Corti *et al*., 2011; Lang *et al*., 2011). These concerns are influenced by social constructions that position childhood as a period of innocence, and children as vulnerable and in need of special protection (Matthews and Limb, 1999; Malone, 2007). The foremost safety concern pertains to road safety, with many studies noting concerns about the dangers posed to child pedestrians by traffic volume and speed (DiGuiseppi *et al*, 1998; Collins and Kearns, 2001; Timperio *et al*., 2004, 2006; McMillan, 2007; McDonald, 2008; Panter *et al*., 2010; Giles-Corti *et al*., 2011; Lang *et al*., 2011). Compounding these safety

concerns are the perceived dangers posed by poor driver behaviour and attitudes, traffic congestion around school entrances (Collins and Kearns, 2001; Lang *et al*., 2011) and parked cars, which obscure the visibility of children and obstruct roads and footpaths (Hine, 1996; Collins and Kearns, 2001). Perceptions of insufficient pedestrian crossings, pathways and cycleways en route to school also raise parental concerns about the school run (Collins and Kearns, 2001; Timperio *et al*., 2004, 2006; Panter *et al*., 2010).

Concerns regarding the dangers faced by children due to roads and traffic appear well-founded, with several studies acknowledging that children are often victims of accidents arising in transit (Lam, 2000; Collins and Kearns, 2001, 2005; Doukas *et al*., 2010). In fact, pedestrian accidents are a leading cause of serious injury and death among school-aged children in developed nations, including Australia (Lam, 2000; Collins and Kearns, 2001, 2005; Doukas *et al*., 2010). However, the literature presents mixed positions regarding risks specific to the school run. Research in New Zealand and the United Kingdom has shown that active transport use increases the risk of injury faced by children participating in the school run (Sonkin *et al*., 2006; Schofield *et al*., 2008). Further, studies of accidents involving children have found a correlation between the proportion of car collisions and the times at which school is commencing and ending (Joly *et al*., 1991; Kingham *et al*., 2011). However, other studies from the United States and New Zealand suggest the school run is a relatively safe activity for children as accidents were more common when children were playing outdoors or walking to other places (Posner *et al*., 2002; Schofield *et al*., 2008).

Another highly influential concern amongst parents and children is the threat of crime and 'stranger danger' (DiGuiseppi *et al*, 1998; Collins and Kearns, 2001; Timperio *et al*., 2004, 2006; Schlossberg *et al*., 2006; Malone, 2007; McMillan, 2007; McDonald, 2008; McDonald and Aalbourg, 2009; Lang *et al*., 2011). Whilst concerns about stranger danger, particularly abduction, are often a most influential factor for parents when deciding how their children will travel to and from school, the occurrence of child abduction in Australia is actually very rare (Aldana, 2006). In 2010, 227 children under the age of 15 were abducted or kidnapped in Australia out of a population of approximately 4.2 million (ABS, 2010b). Whilst statistics specifying the relationship between child victims and offenders are unavailable for Australia, data from the United States undermine the stranger danger 'myth' as abductions are usually perpetrated by known family members (Finkelhor and Ormrod, 2000; Barker,

2003; Aldana, 2006). Data from the United States also suggest that other crimes against children, such as assaults or robberies, are more commonly perpetrated by other children than by adults (Finkelhor and Ormrod, 2000). Problematically, as research has traditionally focused on parental concerns around adult 'strangers', the potential risks posed by other youths during the school run, particularly through bullying, remain under-investigated (Carver *et al*., 2005). However rare, it must be acknowledged that the emotional effects endured by families and children in the aftermath of child abduction or assault are severe and far-reaching, affecting not only those directly involved but whole communities. Collins and Kearns (2001: 304) cited early literature on the geographies of fear in which Smith (1987) expressed that "dangerous incidents invariably occur at a point in time and place, yet they generate fields of influence that stretch well beyond their punctiform origins." Qualitative studies have shown that such fields of influence continue to play a considerable role in determining the perceptions of safety, regarding both traffic and 'stranger danger', held by parents (Collins and Kearns, 2001; McDonald, 2008; McDonald and Aalbourg, 2009; Panter *et al*., 2010; Giles-Corti *et al*., 2011; Lang *et al*., 2011) and children (Hine, 1996; Timperio *et al*., 2004, 2006; Panter *et al*., 2010).

Ironically, as perceptions of traffic-related danger cause parents to use their own motor vehicles for the school run, traffic and congestion are exacerbated, thereby forming a self-reinforcing relationship (Collins and Kearns, 2001; Barker, 2003; Malone, 2007; Lang *et al*., 2011). Likewise, parents concerned about the social safety of streets and the threat of 'strangers' adjust by driving their children to school, resulting in fewer parents and children utilising the streetscape and thereby causing streets and neighbourhoods to become deserted and quiet (Tranter and Pawson, 2001), a state which Malone (2007) perceives to be genuinely dangerous. The perceptions and subsequent actions of individuals may exacerbate safety risks within the community, a situation Lang *et al*. (2011) likened to a social trap, whereby drivers are unlikely to change their behaviours until others do so.

2.3 Physical and urban environments and the school run

A growing body of evidence supports a relationship between the design and physical form of urban environments and the transport behaviours of people within those environments

(Black *et al*., 2001; Schlossberg *et al*., 2006; Timperio *et al*., 2006; Panter *et al*., 2010; Giles-Corti *et al*., 2011; Lang *et al*., 2011). The urban environment involves elements of urban structure and infrastructure such as terrain, land use, roadways and pathways (Dieleman *et al*., 2002; Buchanan *et al*., 2006; Schlossberg *et al*., 2006; Timperio *et al*., 2006; Giles-Corti *et al*., 2011). For transport and mobility studies, definitions of the urban environment also encompass dynamic, context-specific, human constructs such as distance to destination, traffic exposure, accessibility and street connectivity (Black *et al*., 2001; Schlossberg *et al*., 2006; Timperio *et al*., 2006; Panter *et al*., 2010; Giles-Corti *et al*., 2011; Lang *et al*., 2011). The influence of physical environmental variables on transport choices thus vary according to individuals' unique personal characteristics and attitudes, as well as their socio-cultural contexts. These factors influence subjective understandings of what is 'too far' for a child to walk to school, or what a 'well-connected' pedestrian network looks like.

Relationships exist between various elements of the physical and urban environment and children's transport behaviours (Schlossberg *et al*., 2006; Timperio *et al*., 2006; Hume *et al*., 2010; Giles-Corti *et al*., 2011). Studies have shown that areas featuring well-connected, intersecting pedestrian networks are associated with a greater prevalence of active transport for the school run than areas which feature low connectivity (Schlossberg *et al*., 2006; Giles-Corti *et al*., 2009, 2011). Qualitative studies have also revealed that children whose parents *perceived* their street networks to be highly connected through the inclusion of alternative routes and sufficient pedestrian crossings were more likely to actively commute (Hume *et al*., 2010). Greater vehicular traffic exposure is also correlated with lower rates of active transport among children for the school run (Timperio *et al*., 2006; McMillan, 2007; Giles-Corti *et al*., 2011). This trend likely stems from parental concerns surrounding traffic and road safety, as discussed in Section 2.2. Given these concerns, traffic-calming measures (which include lowered speed limits such as those in place around Australian schools, street narrowing, speed humps, pedestrian refuges and increased signage) and have been found to be a cost-effective method of reducing pedestrian risk and injury (Engel and Thomsen, 1992; Roberts *et al*., 1994; Kypri *et al*., 2000; Badland and Schofield, 2005).

The distance of the school run also influences modal choice (Olds, 2006; Schlossberg *et al*., 2006; Timperio *et al*., 2006), with studies suggesting that decreased active transport for the

school run over recent decades can be partially attributed to the longer distances children are travelling (McDonald, 2007). However, any relationship between distance and modal choice is sensitive to the individual perceptions and distance thresholds considered 'too far' or 'reasonable' to walk or cycle (Black *et al*., 2001; Timperio *et al*., 2004; Schlossberg *et al*., 2006; McMillan, 2007; Panter *et al*., 2010; Lang *et al*., 2011). Timperio *et al*. (2006) found that Australian students were most likely to actively commute over a distance of 800 metres or less, whilst McDonald (2008) found that 48 per cent of elementary and middle school students (aged 5-13) in the United States walked to school if they lived within a mile (1.6 kilometres) from school, but only three per cent walked over greater distances. In addition, studies have found that active commuting is less common in areas where streets have lower proportions of mixed land uses and lower proportions of windows facing the street (McMillan, 2007), or involve 'steep' or 'hilly' terrain (Timperio *et al*., 2006; Hume *et al*., 2010). Active commuting is also less common in areas where parents perceive there to be inadequate lighting and limited access to public transport (Timperio *et al*., 2006; Hume *et al*., 2010).

2.4 Social environments, community and the school run

Evidence of a potential relationship between the social environment of neighbourhoods and the transport behaviours of individuals, especially children, is limited (McDonald, 2007; Hume *et al*., 2010; McDonald *et al*., 2010). However, the social context of individuals within their communities and neighbourhoods, particularly the concept of social capital, is emerging as a significant area of enquiry in research on school travel and urban sociology (McDonald, 2007; McDonald *et al*., 2010). Social capital describes the social relationships and connections shared between individuals within a community, and includes aspects such as perceived neighbourhood connection and cohesion, generalised trust, participation and cooperation (Fujiwara and Kawachi, 2008; Roux, 2008; Moore *et al*., 2011). The limited evidence available indicates that greater social capital and better social cohesion at the neighbourhood level may be associated with children's increased overall physical activity and active transport behaviours for the school run (McDonald, 2007; Hume *et al*., 2007, 2010; McDonald *et al*., 2010).

Findings of an Australian study indicated that younger children whose parents reported strong social networks, whereby they knew many people in their area, were twice as likely to actively commute to school at least once per week compared to other children (Hume *et al*., 2010). Similar trends were evident in the travel behaviours of adolescents (Hume *et al*., 2010). Perceived community cohesion, whereby parents agreed that people in their area generally got along, was also related to a two-fold increase in the likelihood of active commuting for the school run amongst Australian adolescents (Hume *et al*., 2010). In the United States, parents were more likely to allow their children to walk to school if they trusted their neighbours (McDonald, 2007), or believed other adults in the area would watch out for and monitor children (McDonald *et al*., 2010). The perceived existence of other children within a neighbourhood or interactions between children and neighbours have also proved to be positively correlated with the likelihood of children actively commuting to school (Carver *et al*., 2005; Timperio *et al*., 2006; Panter *et al*., 2010).

The potential for social environments to influence transport behaviours has important policy implications, as programs which focus solely on physical environmental and infrastructure may be insufficient to change behaviours (McDonald *et al*., 2010). Section 4.3 of this thesis explores this issue in the unique context of the Sutherland Shire and attempts to contribute to this nascent field of research.

2.5 Household and personal factors and the school run

The choice of transport made for a child for the school run is part of a household decision-making process (Black *et al*., 2001). As such, the context of the household and family play an important role in transport choices (Davison *et al*., 2008). Pertinent variables include socio-economic and socio-demographic factors such as parental employment, income, family structure (the number and ages of children), as well as subjective factors such as parental attitudes toward physical activity and active and public transport (Black *et al*., 2001; Timperio *et al*., 2004, 2006; Davison *et al*., 2008; Adams, 2010).

Studies have revealed that several of these factors contribute to greater use of active transport for the school run. For instance, children from lower socio-economic backgrounds are more likely to walk or ride to school (DiGuiseppi *et al*, 1998; Braza *et al*., 2004; Harten

and Olds, 2004; McMillan, 2007; Bere *et al*., 2008; Mitra *et al*., 2010; Brophy *et al*., 2011; Hinckson *et al*., 2011). The employment status of parents is also influential, with findings indicating decreased active transport use for the school run if both parents are employed (Ziviani *et al*., 2004) or if active commuting conflicts with parents' work schedules (McMillan, 2007; Davison *et al*., 2008). Children of working parents are also more likely to be driven to school due to the prevalence of trip-chaining, whereby parents drive their children to or from school on the way to or from work or another destination (Black *et al*., 2001; Barker, 2003; Ziviani *et al*., 2004; Schlossberg *et al*., 2006; Davison *et al*., 2008; Fyhri and Hjorthol, 2009). Family structure (particularly the presence of siblings) also influences transport modality. Findings show a correlation between a greater number of children within a household and an increased likelihood of children walking or riding to school (McMillan, 2007). Gender and age characteristics of individual children are also influential, with research showing that males are more likely than females to actively commute to school (Harten and Olds, 2004; Schofield *et al*., 2005; Rosenberg *et al*., 2006; Yeung *et al*., 2008; Hume *et al*., 2010), whilst older children (aged approximately ten and above) are also more likely than younger children to actively commute to school (DiGuiseppi *et al*, 1998; Merom *et al*., 2006; Yeung *et al*., 2008).

Parents' past and present experiences are also important, with research showing children are more likely to commute to school using active methods if their parents actively commuted to school during their own childhoods (Merom *et al*., 2006; Davison *et al*., 2008) and if their parents continue to actively commute to work (Merom *et al*., 2006). Improved parental awareness of school travel programs which encourage active transport, such as the 'Walking School Bus'[1] program, has also been linked to an increased engagement of children in active transport (Arbour-Nicitopoulos *et al*., 2011). Furthermore, children from households that value physical activity (Ziviani *et al*., 2004; Merom *et al*., 2006) and social interaction for the child on the trip to school are more likely to use active transport modes for the school run (McMillan, 2007).

[1] "A 'Walking School Bus' is a group of primary school children who walk to and from school along a safe and enjoyable set route, accompanied by a minimum of two parent driver/supervisors per 'bus'. One parent 'drives' at the front of the bus, while the other parent supervises at the rear… The walking bus picks up 'passengers' along the way at designated 'bus stops'… The process is reversed in the afternoon" (Travelsmart Australia, 2005: p2). Walking School Buses operate in areas across Australia, including several Council areas in New South Wales and more so throughout Victoria.

2.6 Beyond utilitarianism – the culture of the car

Whilst the utility and utilitarian benefits of car use, such as ease, convenience and time-efficiency, are well recognised, the cultural and social meanings of cars and the ways such meanings affect car use are less clear (Maxwell, 2001). It is likely that the motivations behind parents' decisions to drive their children for the school run go beyond utilitarian objectives and practicalities and are intertwined with these social meanings. For example, the use of cars for the primary benefit of immediate family members, as in the case of parents driving their children on the school run, is powerfully influenced by an ethic of care (Maxwell, 2001). The social and emotional meanings of cars and car use must thus be considered side-by-side with their practical significance. Recognition of the journey to and from school as a place where care and caring occurs (Barker, 2011), generates social expectations which associate car use for the school run with ideals of 'good parenting'. For some parents, driving their children to school thus becomes a moral imperative. However, the social importance of vehicle use for the school run is also manifested in more explicit ways. For example, several mothers interviewed within a study by Jain *et al*. (2011) expressed a desire to accompany their primary school-aged children on the school run because of the opportunity for social interaction with their children. Indeed, several studies have found that cars provide a place of interaction and communication between parents and their children, and are often favoured for the school run by parents and children for this very reason (Laurier *et al*., 2008; Barker, 2009; Jain *et al*., 2011).

In light of the social meanings of cars, and the associated ethics of car use, Maxwell (2001) argued that decisions to use cars are often the result of intense negotiations between multiple ethical stances, such as concern and caring for others and environmental concerns. Maxwell (2001) found that it is the conflict between such moralities that leads people to continue using their motor vehicles even when they would like to limit or reduce their personal motor vehicle use (for instance, for environmental reasons). However, very few studies on the transport behaviours of parents and their children for the school run have considered the role environmental concerns may play in transport decisions (Black *et al*., 2001). As such, this thesis aimed to investigate the possible influence of environmental concerns on transport behaviours and explores these results in Chapter 4.

Overall, the transport choices of parents/guardians and their children are highly individualised as a result of complex interactions between perceptions of safety, aspects of the physical environment, and the individual characteristics of households, as well as the pervasive culture of the car. However, the effects of the social contexts of neighbourhoods and communities, as well as environmental concerns, have received minimal attention in the literature. The following chapter outlines the methods that were used to address the research aims outlined in Section 1.2. These aims were framed around the Sutherland Shire Council's desire to better understand transport behaviours during the highly congested school run period.

3. Methods

This chapter outlines the methods employed within this research to achieve the project aims. Sutherland Shire Council requested that this project be undertaken with the aim of better understanding the transport behaviours of Sutherland Shire school children and parents/guardians for the school run, as well as the factors that influence these transport behaviours. The decision to focus on primary school children was prompted by the comparatively limited independent mobility of these younger children (as discussed in Section 2.1), and the resultant high levels of vehicle use amongst this age group. To address this study's aims, two key research activities were undertaken. First, in order to collect data regarding the transport behaviours and attitudes of Sutherland Shire parents/guardians, a self-administered questionnaire was designed. This questionnaire was chosen as the primary means of data collection to allow for wide coverage, and because of the dominant role parents/guardians play in the transport decisions and behaviours of primary school children (Barker, 2003; McMillan, 2007; Lang *et al*., 2011) and the ethical complexities of working with children (see Section 3.1). Second, to provide an opportunity for children to express their perceptions of travel for the 'school run', a children's drawing task was included in the parental questionnaire. This task is described in more detail in Section 3.3. The following sections of this chapter describe the research process in further detail.

3.1 Ethics

Prior to commencing research, ethics approval was required from the University of Wollongong's Human Research Ethics Committee (HREC). The original ethics application was submitted on April 15th, 2011 and a revised version on May 10th, 2011. This application paid particular attention to the research instruments and design, and the role that schools would play in the distribution of questionnaires to parents/guardians. The application also detailed the limited participation of children, the absence of face-to-face contact between researchers and children (see Section 3.1.1), and the processes used to ensure informed consent was freely and ethically obtained from all participants. The approval of this application on June 1st, 2011 allowed contact to be initiated with specified, non-government

(private and faith) schools within the Sutherland Shire. However, the HREC advised that ethics approval would also be required from the New South Wales' Department of Education and Training (DET) if any research was to be conducted via government (public) schools.

The need to obtain ethics approval from the DET was not anticipated for this project as the research design intentionally avoided research activities being conducted within school grounds or times, or involving contact between school students or teachers and researchers. However, as the research design involved contacting school Principals to organise questionnaire distribution to parents/guardians, the HREC required approval from the DET. When contacted, the DET confirmed that approval was required via the State Education Research Approvals Process (SERAP), despite recognising that this project was a 'borderline' case. A decision was made to lodge a SERAP application, despite the time-consuming nature of this additional process, because the inclusion of public schools would ensure improved demographic and geographic representation of the Sutherland Shire community, and potentially increase the number of respondents. It was also felt that persevering with the planned recruitment method, which involved contacting school Principals to coordinate questionnaire distribution, would be more efficient than using an alternative recruitment method (e.g. a letter-box drop). The SERAP application was submitted on May 25th, 2011, emphasising the minor role school systems and staff would play in participant recruitment and ensuring the confidentiality of all participating schools and individuals. The SERAP application also highlighted the absence of direct contact between children and researchers. Approval of this application was received quickly from the DET on July 7th, 2011, but nearly three months had passed since the initial ethics application was lodged. This delay, which was compounded by the New South Wales school holidays (July 2nd to 18th), forced the re-evaluation of which aspects of the planned research would be possible in the remaining timeframe and presented the need for an extension of the thesis submission deadline from October 26th to December 16th, 2011.

3.1.1 Ethical considerations and research with children

Throughout this project's ethics approval process, a conflict was apparent between the ethical paradigms of university ethics committees and an ethical commitment to engage children in research about their lives. In an effort to protect children's welfare, university ethics committees regulate, and often restrict, the inclusion of children as research participants. In order to conduct research with children (identified as an 'at risk' group) a submission to the full ethics committee is required. This process is difficult to complete within the timeframe of a 34 week Honours project. However, over the last 20 years, children's geographers have emphasised that children are active agents, capable of contributing to decision-making processes and research endeavours (Qvortrup, 1994; James and Prout, 1997; Barker and Weller, 2004). The inclusion of children in research relevant to their lives provides access to perspectives that often differ substantially from those of adults, adding to the richness of data collected and potentially contributing to outcomes which better reflect children's needs and desires (Jones, 2001; Klocker, 2011). Children's geographers have insisted that children's participation in research that affects their lives is not just beneficial for research outcomes – it is an ethical imperative. That is, research concerning children "should be carried out *with* children rather than *on* or *for* children" (Matthews *et al*., 1998; p 312, emphasis in original). The importance of involving children in decision-making processes relevant to their lives is also recognised in international treaties such as the 1989 United Nations Convention on the Rights of the Child. Negotiating the conflict between these two understandings of what it means to do 'ethical research' with children is especially problematic when working within the parameters of an Honours project, where it was necessary to adjust research activities (to avoid contact with children) in order to gain ethics approval within an appropriate timeframe. Such restrictions hindered the capacity for this research to provide a detailed account of children's perspectives, needs and desires, and this is recognised as a key limitation of this study.

3.2 Questionnaire design, distribution and data analysis

3.2.1 Questionnaire design

In order to better understand the transport behaviours of Sutherland Shire residents for the school run and the factors which influence these transport choices, a parental questionnaire involving 52 items was designed (attached as Appendix A, pages 73-86). The questionnaire booklet included a participant information sheet (see Appendix A, page 74) and a combination of closed and open-response question formats. Questions were categorised into five thematic sections: the 'school run'; the household and survey respondent; family perspectives; community; and transport and the environment.

- **The 'School Run'**

Respondents were asked to identify the modes of transport used for the journey to and from school for each primary school child living in their household, and the factors that influence their transport choices. Questions were framed around, but not limited to, the key factors identified in the literature, such as safety and the physical environment (Timperio *et al*., 2004; Collins and Kearns, 2005; McMillan, 2007; McDonald, 2008; Panter *et al*., 2010; Lang *et al*., 2011).

- **The Household and the Survey Respondent**

The questionnaire included items pertaining to households' demographic and socio-economic contexts, which have been shown to influence transport behaviours in similar studies (Ziviani *et al*., 2004; McMillan, 2007; Davison *et al*., 2008; Mitra *et al*., 2010). Questions were asked about family structure and size, parental employment status, vehicle ownership, household income and children's age and gender.

- **Family Perspectives**

The questionnaire asked about respondents' experiences with transport to/from school when they were children to determine whether parents' childhood experiences influence contemporary transport behaviours (Merom *et al*., 2006; Davison *et al*., 2008). Items relevant to the decision-making processes underpinning transport choices, and children's

agency in such mobility choices, were also included to compare with findings on the limited role of children in household transport decisions (Barker, 2003).

- **Community**

In order to explore how 'sense of community' and social capital influence transport choices (Hume *et al*., 2010), the questionnaire asked how connected respondents feel to people in their community, whether they feel their neighbourhood is safe for their children, and whether they feel their child's mode of transport affects how they perceive the community. Respondents were also asked whether their children participate in community activities and play outdoors.

- **Transport and the Environment**

Finally, to gather information on the relationship between respondents' environmental knowledge and concerns and transport behaviours (Minton and Rose, 1997; Roberts and Bacon, 1997), they were asked about the existence of climate change and its causes, whether they were concerned about climate change or pollution, and whether they would consider changing their transport behaviours for the school run for 'environmental reasons'.

3.2.2 Questionnaire distribution

The Principals of nine primary schools located within the Sutherland Shire, including five government (public) schools and four non-government (private and faith) schools, were contacted via an email (attached as Appendix B, page 87) and follow-up phone calls and invited to participate in the study. In total, the Principals of four schools agreed to participate and assist in distributing questionnaires. Due to restrictions placed on the data by the Department of Education and Training, individual schools cannot be identified throughout this project. As such, no photographs of areas surrounding schools are included within this thesis and pseudonyms are used to refer to the participating schools.

The four schools involved in the study are located in diverse suburbs throughout the Sutherland Shire and include three government (public) schools and one non-government (private) school. The four participating schools varied in terms of size, location and characteristics of surrounding suburbs:

- ‘Banksia Public School’ is a medium-sized, government school with approximately 200 students. It is located close to a heavily utilised main road, in a built-up area characterised by ‘urban centre’ and ‘multiple-dwelling’ zoning (Sutherland Shire Local Environment Plan (LEP) 2006). This school is located approximately 300 metres from the nearest train station and bus stop.

- ‘Telopea Public School’ is a medium-sized, government school with approximately 200 students. The area surrounding this school features low density, residential zoning and accompanying residential streets (Sutherland Shire LEP 2006). This school is located approximately 1.3 kilometres from the nearest train station but is adjacent to a public bus stop.

- ‘Grevillea Public School’ is a large, government school with approximately 350 students. It is located in a residential area with ‘local housing’ zoning (Sutherland Shire LEP 2006), near two main vehicular thoroughfares. This school is situated approximately two kilometres from the nearest train station and 250 metres from the nearest public bus stop.

- ‘Acacia Primary School’ is a small, non-government school with approximately 150 students. It is located adjacent to a main road in a predominantly residential area (Sutherland Shire LEP 2006) and is approximately 800 metres from a train station and over one kilometre from the nearest bus stop.

With Principals’ approval, the self-administered questionnaire was distributed via school administration to parents/guardians of primary school children (aged 4-13, from Kindergarten to Year Six). Each of the four schools decided that the most straightforward distribution method would involve giving students a copy of the questionnaire to take home to their parents. There are obvious limitations to this distribution method, and it is quite possible that numerous questionnaires never reached their intended recipients. However, it was neither possible nor appropriate to ask the participating schools to adopt an alternative distribution method (for instance, distribution via an existing school mail-out). A reply-paid envelope was included with each questionnaire.

A total of 470 questionnaires were disseminated in August, 2011. Due to different student population sizes and administrative conditions at each school, the number of questionnaires distributed varied between a minimum of 60 and a maximum of 160, as shown in Table 3.1. A total of 71 questionnaires were returned over the following three months, representing a response rate of 15 per cent.

Table 3.1 – Sample characteristics of four participating Sutherland Shire primary schools

School Name	Banksia Public School	Telopea Public School	Grevillea Public School	Acacia Primary School
Number of Questionnaires Distributed	60	160	100	150
Number of Questionnaires Returned	12	29	9	21
Response Rate	20%	18%	9%	14%
Who Received Questionnaires	Year 4 –Year 6	Kindergarten – Year 6	Kindergarten – Year 6	Kindergarten – Year 6

3.2.3 Data coding and analysis

Statistical analysis of questionnaire data was carried out using the computer package SPSS PASW Statistics (Version 18.0). Statistical analyses were limited to basic frequency distributions, such as the frequency of transport modes used for the school run, and cross tabulations between the transport modes used for the school run and a range of variables, including children's ages, distance, demographics, and community and environmental perspectives. Tests for statistical significance were not conducted due to the relatively small sample size.

3.3 Children's drawing task

The second component of this research project involved a drawing task for children whose parents had completed the questionnaire. This task sought to provide an opportunity for children to express their own perceptions of travel for the school run and to gain a better understanding of how transport may affect their lives in ways not readily understood by

adults. Drawing tasks have been used as a research method with children and young people in previous studies in order to extract useful and meaningful descriptive data (Matthews, 1985; Lim and Barton, 2010; Pain, 2004). This task also provided an opportunity to obtain children's perspectives whilst circumventing some of the ethical complexities associated with research with minors.

Space for this drawing task was included within the parental questionnaire booklet, as was a consent form (attached as Appendix A, pages 84-86). The children of consenting adults were asked to illustrate their response to the stimulus 'What does your journey to school look like?' In total, 16 drawings were returned. However, only eight of these drawings were accompanied by a signed consent form. Whilst the content of all drawings is described in this thesis, only those with explicit consent have been reproduced.

The primary aim of this task was to discern whether children's modes of transport for the school run influenced their representations of the journey to school – not to explore the underlying psychology of these representations. As such, the drawings were analysed using a form of content analysis which involves constructing basic categories of recurring themes and motifs (Barraza, 1999; Cohen and Manion, 2007).

3.4 The planned use of focus groups

Focus group discussions with parents/guardians were also planned in order to obtain additional qualitative insights and triangulate the research findings. The planned focus groups aimed to explore key themes raised in the questionnaire, particularly the potential relationship between transport behaviours and individuals' 'sense of community', as well as their willingness to change transport behaviours. Another aim was to ask parents/guardians to reflect on the children's artworks and to discuss what they may reveal about their transport experiences.

Questionnaire respondents were asked to provide their contact details if they were interested in participating in a focus group discussion (attached as Appendix A, page 83). Ten individuals provided their details and were contacted by email and/or phone (depending on the contact details provided) and invited to participate in a one-hour focus group discussion to be held at the Sutherland Shire Council administration building in late

October, 2011. Two focus group sessions were scheduled, in the afternoon and evening, to enable parents/guardians with young children or work commitments to attend. However, no individuals were able to confirm their attendance prior to the proposed dates. As a result, I was unable to conduct the planned focus groups within the timeframe and scope of this project. The limitations of this omission, and recommendations to address this shortcoming, are described Chapter 5. Irrespective of this constraint, sufficient quantitative and qualitative data were collected via the questionnaire and children's drawings. The following chapter presents and interprets these results and discusses the research findings in the context of the research aims and existing literature.

4. Results and Discussion

This chapter presents the results of the parental questionnaire and children's drawing task, and discusses these research findings in the context of the research aims and existing literature. In total, 71 questionnaires were returned (15% response rate) and 16 children's drawings were returned (23% participation rate). The vast majority of questionnaire respondents (92%) were female, with an average age of 40 years. In total, the questionnaires allowed data to be collected for 111 primary school children, of whom 55 per cent were male and 45 per cent were female. Nearly three-quarters of these children were aged 5-9 years, and the remainder were aged 10-12 years. In comparison to the Sutherland Shire's National Regional Profile 2005-2009 (ABS, 2010c), this sample featured a similar proportion of couple families and one parent families, a slightly lower proportion of families who usually speak a language other than English at home (7.0% compared with 10.8%), and above average vehicle ownership rates (ABS, 2008; ABS, 2010c). The following sections of this chapter frame the research findings around the key research aims; to identify the transport behaviours of Sutherland Shire residents for the school run, and to examine the factors influencing these behaviours.

4.1 Transport trends for the school run in the Sutherland Shire

The first aim of this research was to identify the modes of transport utilised by Sutherland Shire children and parents/guardians for the school run. As such, respondents were asked to indicate the modes used to transport their child/ren to and from primary school on an average, fine weather day. The modes of transport used by each of the 111 children for the journey to and from school were added together to give the total frequency of mode use for the school run. These data indicate that over two-thirds, or 67.1 per cent, of journeys to or from school are made by private motor vehicle, whilst 22.8 per cent of journeys are made by walking (Figure 4.1). Public transport accounted for 9.3 per cent of journeys to or from school, with 6.1 per cent of journeys being made by train, 2.0 per cent by public bus, and 1.2 per cent by school bus. No journeys were made to or from school using a bicycle.

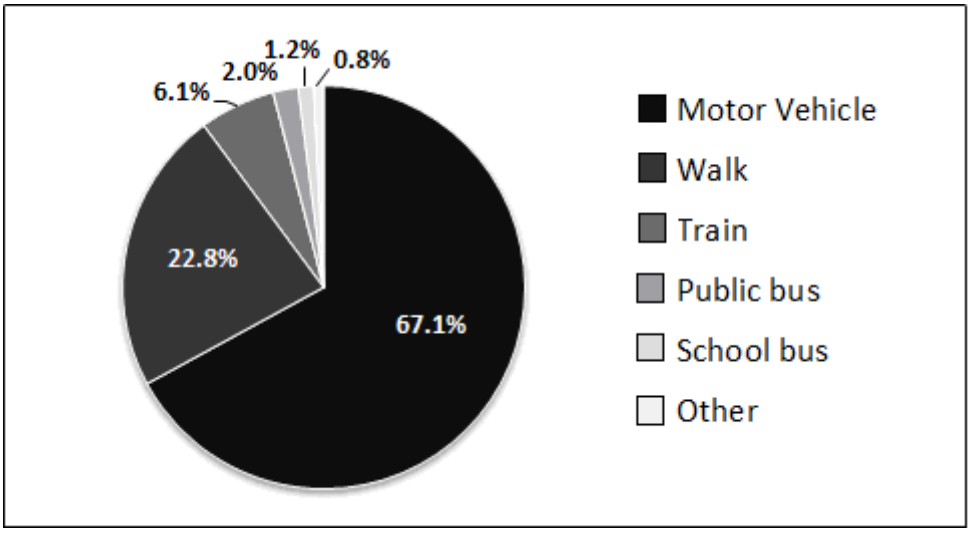

Figure 4.1: Modes of transport used for journeys to and from primary schools in the Sutherland Shire. Source: Data were collected from 71 self-administered questionnaires. Respondents were asked to indicate the mode(s) used to transport each of their child/ren to and from primary school on an average, fine weather day. Modal data for journeys to and from school for 111 children were combined to give the total frequency of mode use for the school run.

Data were also disaggregated for journeys to and from school. Private motor vehicle use is marginally higher for the journey *to* school (68.5% compared with 65.5%), whilst walking is slightly more frequent for the journey *from* school (23.7% compared with 21.7%) (Figure 4.2). Train use is slightly higher for the journey to school, whilst public bus use and school bus use are both minimally higher for the journey from school.

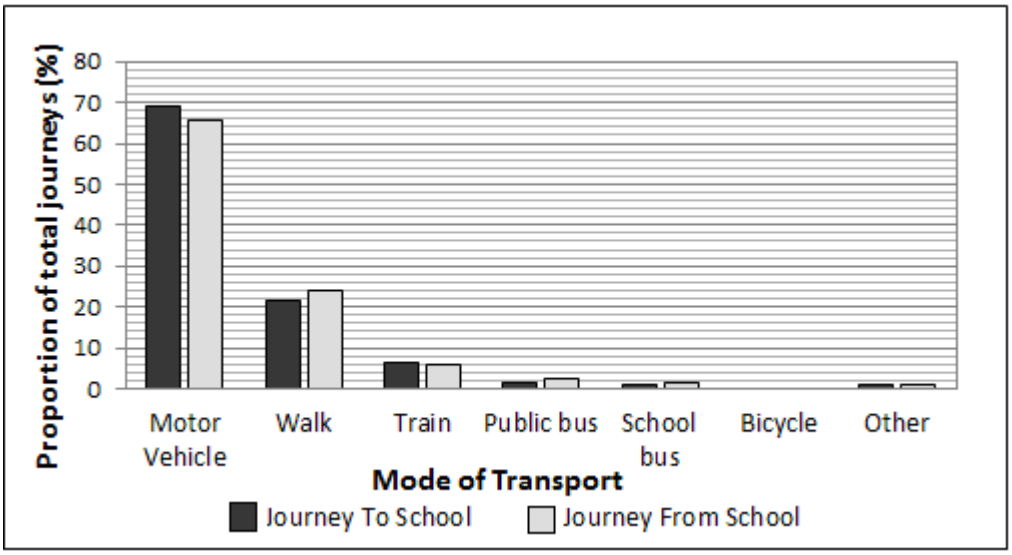

Figure 4.2: A comparison of the modes of transport used for the journey to or from primary schools in the Sutherland Shire. Source: Data were collected from 71 self-administered questionnaires for a total of 111 children. Respondents were asked to indicate the mode(s) of transport used for the journey to and from school for each of their child/ren.

When compared to similar studies conducted across Australia which disaggregated journeys to and from school, the transport behaviours of Sutherland Shire primary school children and their parents/guardians exhibit similar, but slightly more vehicle-dominated, trends. For example, Sutherland Shire children display similar rates of motor vehicle and active transport use as those from a study conducted across metropolitan Sydney (van der Ploeg *et al*., 2008), but exhibit slightly higher rates of motor vehicle usage for the school run than those observed across New South Wales (Merom *et al*., 2006) and Victoria (Department of Human Services, 2007 as cited by Garrard, 2009a). In comparison to modal choices for the school run in urban areas across New South Wales, Sutherland Shire transport trends feature substantially greater rates of motor vehicle usage for the journey to school (68.5% compared with 58.7% of trips) and from school (65.5% compared with 51.9%), and slightly lower rates of bus and walking use (Merom *et al*., 2006). The extent of vehicle dependency in the Sutherland Shire is also evident in the overall number of households and children using motor vehicles for the school run. Whilst 67.1 per cent of overall journeys to and from school utilised private motor vehicles, 78.9 per cent of the 71 households surveyed used a private motor vehicle for at least one part of the school run. Likewise, of the 111 children represented within the questionnaires, 80.1 per cent were driven for at least one part of their school journey, whilst 68.4 per cent were driven both to and from school.

The results of this survey clearly indicate a high degree of motor vehicle use among Sutherland Shire residents for the school run. Given growing concerns about the environmental consequences of car dependency, and an increased awareness of the complexities of people's relationships with, and attachments to, motor vehicles and driving, it is crucial to understand the factors which may motivate the transport choices of Sutherland Shire residents for the school run. The following sections explore a range of such factors in further detail and indicate that car use is a complex and nuanced issue.

4.2 Factors influencing transport behaviours for the school run in the Sutherland Shire

The second aim of this research was to identify and examine the factors which influence the transport behaviours of children and their parents/guardians for the school run. The following subsections detail each of the key factors identified within this research. Quantitative results relevant to each of these factors are integrated alongside qualitative aspects of the questionnaire and are discussed in the context of the existing literature.

4.2.1 Household and family contexts and the school run

Households and family contexts and characteristics play an important role in determining transport behaviours for the school run (Davison *et al*., 2008). For that reason, a number of variables such as family structure, parental employment, household income and vehicle ownership were identified and compared with the proportion of journeys made using motor vehicles, public transport or active transport to determine possible associations.

The number of children within a household appeared to influence transport behaviours (see also McMillan, 2007). Motor vehicles were used for 78 per cent of school run journeys in single-child families, compared with 67 per cent in families with two children, and 66 per cent of journeys in families with three or more children (Table 4.1). Accordingly, the use of public or active transport was higher among families with two or more children. This association may be caused, in part, by the logistical complexities of organising transport to meet the needs of multiple children. For example, when asked for the main reasons their children use active or public transport, respondents noted the "decreased time spent transporting both children to different schools if [one child] catches the train" (Respondent #51) or that "[one child] likes to get to school earlier than [her siblings]"(#52). Alternatively, the presence of more than one child provides the opportunity for 'safety in numbers' as siblings travel together, with respondents noting their children can use active or public transport because they have "a sibling to travel with" (#20) or that children can "go together" (#39, #54) or travel "in a group" (#40).

Family structure also appeared to influence transport choices in this study, with two-parent families displaying higher rates of motor vehicle use (71%) for school run journeys than

single-parent families (46%) (Table 4.1). Active transport was used for a greater proportion of journeys made by children in single-parent families (46%), than two-parent families (19%). This trend may be related, in part, to the socio-economic characteristics of single-parent families, which (in this study) exhibited lower rates of employment, lower income levels and lower rates of vehicle ownership. To explore the influence of these compounding factors each was analysed in isolation (Table 4.1).

Table 4.1 - The demographic and socio-economic characteristics of 71 households in the Sutherland Shire and their transport behaviours for the school run

Family Factors	Total Households (%)	Proportion of Journeys (%)		
		Motor Vehicle	Public Transport	Active Transport
Family Structure				
Two Parent Family	82	71	10	19
Single Parent Family	18	46	8	46
Children in Household				
Single Child	15	78	0	22
Two Children	56	67	11	22
Three Or more Children	28	66	9	25
Two Parent Family Employment				
One Parent Employed	27	63	15	22
Both Parents Employed	55	76	6	18
Single Parent Family Employment				
Single Parent Unemployed	10	43	5	52
Single Parent Employed	8	54	14	32
Mother's Employment				
Mother Employed	71	74	7	18
Mother Unemployed	29	67	12	21
Household Income[a]				
Low	6	38	0	62
Middle	9	30	30	40
Middle-High	46	61	14	25
High	38	67	11	23
Vehicle Ownership				
No car	3	0	50	50
One Car	44	62	4	35
Two or more cars	54	75	13	12
Parent's School Run Transport				
Motor Vehicle	20	70	10	20
Public Transport	27	52	21	26
Active Transport	53	72	7	21

[a] Income levels correlated against ABS, 2009

As shown in Table 4.1, the employment status of parents appeared to be an influential factor in this study, reflecting trends in the literature whereby children were more likely to be driven for the school run if both parents (in two-parent families) or one parent (in single-parent families) are employed (Ziviani *et al*., 2004; Lang *et al*., 2011). A similar trend was noted for children of employed mothers compared with children of unemployed and 'stay-at-home' mothers (Table 4.1). Associations between parental employment and vehicle use for the school run were likely a result of commuting conflicts with parents' work schedules (McMillan 2007; Davison *et al*., 2008) as well as the perceived time efficiency of car travel, which 48 per cent of respondents indicated was a factor influencing their transport behaviours (Table 4.2).

Table 4.2 – Perceptions of convenience and practicality which influence the transport choices of 61 respondents who drive their child/ren for the school run in the Sutherland Shire

Response	Frequency (%)
I drop my child/ren off on the way to another destination (e.g. work)	51
Takes less time	48

Studies have also shown that children of working parents are more likely to be driven to school due to the prevalence of trip-chaining, whereby parents drive their child/ren to or from school on the way to another destination, such as work (Black *et al*., 2001; Barker, 2003; Ziviani *et al*., 2004; Schlossberg *et al*., 2006; Davison *et al*., 2008; Fyhri and Hjorthol, 2009). Within this study, trip-chaining appeared to be a significant factor, with 51 per cent of respondents who drive for the school run indicating that they drop their child/ren off on the way to another destination (usually work) (Table 4.2). This action may explain trends toward slightly higher motor vehicle use in the morning than afternoon (as discussed in Section 4.1), as parents drive their children to school on the way to work but require children to actively or publicly commute home whilst parents are still at work in the afternoon (Schlossberg *et al*., 2006). Whilst a trend towards trip-chaining may maintain high rates of vehicle use and dependency, it is potentially a promising finding from a sustainability perspective, as combining trips through trip-chaining reduces overall driving, fuel use and pollution (Dower *et al*., 1997).

Links between household income, vehicle ownership and transport behaviours were also evident, though these factors are difficult to separate out from parental employment. Active transport was used for nearly two-thirds (62%) of school run journeys made by 'low income' households, compared with only 23 per cent of journeys made by 'high income' households. On the other hand, motor vehicles were used for 67 per cent of journeys made by 'high income' households compared with 38 per cent of journeys made by 'low income' households. This trend may be linked to vehicle ownership and employment, as well as the cost of motorised transport, with several respondents noting that their children actively commute because it is "free" (#15) or "saves petrol money" (#39). These findings support associations found between increased active transport use and lower socio-economic backgrounds in similar studies (DiGuiseppi *et al*, 1998; Braza *et al*., 2004; Harten and Olds, 2004; McMillan, 2007; Bere *et al*., 2008; Mitra *et al*., 2010; Brophy *et al*., 2011; Hinckson *et al*., 2011). These findings also fit with those of studies on household sustainability which have found that "the best way to reduce your environmental impact is to be poor" (Gibson *et al*., 2011a: p 4). That is, economic activity is often strongly associated with a household's 'carbon footprint', and lower socio-economic groups often act in ways that are more environmentally sustainable, in this case through reduced vehicle usage, even if they do not do so out of environmental concern (Gibson *et al*., 2011a; 2011b).

Predictably, vehicle ownership is also an influential factor, with a trend toward motor vehicle use rather than active transport in households with greater access to vehicles. Motor vehicles were used for 75 per cent of journeys in households with two or more vehicles and 62 per cent of journeys in single-vehicle households (Table 4.1). Unsurprisingly, no journeys were made using a motor vehicle in the few households without a car, with respondents indicating that their children use public transport or actively commute because they are "without a car" (#24), have "no licence" (#61) or their "parent does not drive" (#27).

The influence of parents' contemporary transport behaviours and own childhood experiences of the school run on their child/ren's transport behaviours were also explored, as previous studies have found that children are more likely to actively commute to school if their parents actively commute to work (Merom *et al*., 2006), or actively commuted to school during their own childhoods (Merom *et al*., 2006; Davison *et al*., 2008). In this study,

comparisons between children's school travel and parent's contemporary transport behaviours (for example, how they travel to work) did not reveal an appreciable trend for active or public transport modes. However, likely due to the incidence of trip-chaining and vehicle ownership, a high proportion of children whose parents drive to work were driven to school. Despite evidence that many respondents had used active and public transport during their own school days, this did not appear to impact their children's contemporary transport patterns (Table 4.1, Figure 4.3).

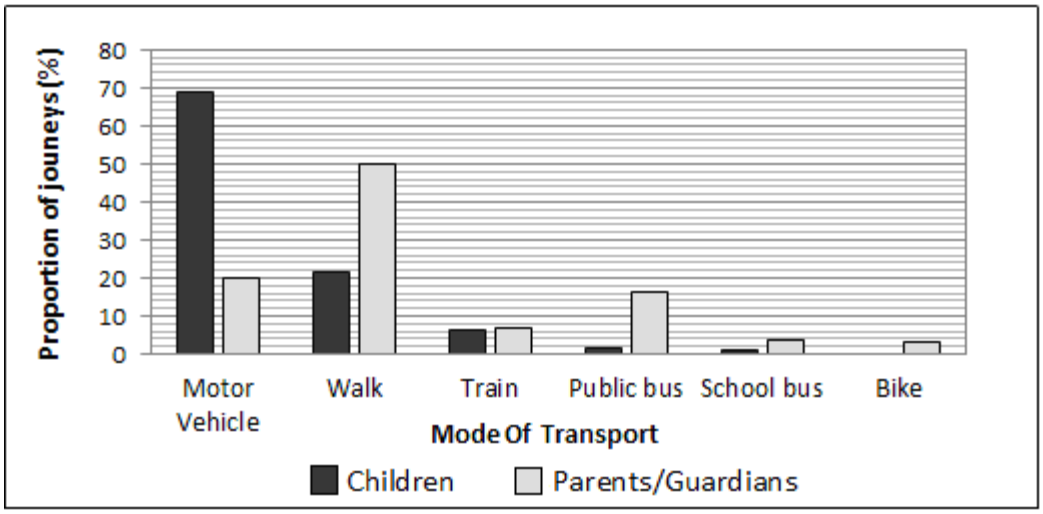

Figure 4.3: A comparison of the modes of transport used for the school run by children in the Sutherland Shire and their parents/guardians when they attended primary school during their own childhood. Source: Useable data were collected from 70 self-administered questionnaires. Respondents were asked to indicate the mode(s) of transport usually used to get to/from primary school when they were a child, and the mode(s) of transport used by their child/ren for the journey to and from school.

This lack of association is likely the result of the different contexts of parents' childhoods compared with those of their children, with several parents noting that they grew up in a different country, or a "small town" (#1, #69) that was "very different from where we now live" (#1). Other respondents noted that it is "a different world now" (#63) and "today's society seems more dangerous" (#17). However, whilst a discernable trend was not present, a small number of parents indicated that their own experiences gave them "the confidence that my [children] could handle getting to and from school without my supervision" (#51).

4.2.2 Safety perceptions and the school run

Parental concerns about safety emerged as a leading factor influencing the modes of transport used by Sutherland Shire children for the school run. Concerns about traffic and road safety were held by 36 per cent of respondents who used a private motor vehicle for the school run, while 46 per cent of respondents were concerned about their child/ren's inexperience in navigating roads and traffic. A third of respondents were concerned about 'stranger danger' (Table 4.3). Concerns about traffic safety have been found to be the most influential safety concern in many studies (Collins and Kearns, 2001; Timperio *et al*., 2004, 2006; McDonald, 2008; Panter *et al*., 2010; Giles-Corti *et al*., 2011; Lang *et al*., 2011) whilst concerns regarding 'stranger danger' are also dominant (Collins and Kearns, 2001; Timperio *et al*., 2004, 2006; Schlossberg *et al*., 2006; McDonald, 2008; McDonald and Aalbourg, 2009; Lang *et al*., 2011). Concerns regarding bullying did not appear to be an influential factor in this study (Table 4.3), however, it is worth noting that parental perceptions (as collected here) may differ from children's bullying concerns – highlighting the importance of including children's perspectives in research.

Table 4.3 – Perceptions of social/physical neighbourhood safety which influence the transport choices of 61 respondents who drive their child/ren for the school run in the Sutherland Shire

Response	Total (%)	Child's Gender (%)		Child's Age (years) (%)	
		Female	Male	5-9	10-12
	(n=61)	(n=41)	(n=55)	(n=74)	(n=22)
Believes child is too young to make their own way safely to school	66	75	73	80	50
Believes child is too inexperienced to navigate roads, traffic, etc	46	53	51	54	41
Concerns about traffic safety	36	40	40	38	45
Concerns about safety around strangers	34	28	44	34	45
Concerns about safety on public transport	20	20	27	26	18
Concerns about safety around other children (i.e. bullying)	3	3	4	1	9

For the most part, a similar proportion of traffic safety concerns were reported by parents of female and male children, whilst a greater proportion of parents of males were concerned about 'stranger danger'. This result, along with the finding that a greater proportion of females used active and public transport (26% and 12%, respectively) compared to males (20% and 7%, respectively), contradicts findings of previous studies which have indicated that 'stranger danger' concerns were more commonly held by parents of females (Hume *et al*., 2010), and that males are more likely than females to actively

commute to school (Harten and Olds, 2004; Schofield *et al*., 2005; Rosenberg *et al*., 2006; Yeung *et al*., 2008; Hume *et al*., 2010). This disparate trend may be explained, in part, by perceptions that girls are more responsible than boys, with several respondents indicating that they felt it was appropriate for girls to travel independently at a younger age than boys as "girls have a greater awareness… boys live in their own world" (#22) or that "girls will follow instructions and accept advice… boys only learn from doing and tend to be less cautious" (#52).

Similar levels of safety concern were expressed by the parents of older children (aged 10-12) and younger children (aged 5-9). However, as expected, a greater proportion of parents believed that their children were too young or inexperienced to make their way to school safely if they were aged below ten. Younger children (aged 5-9) were driven for a greater proportion of journeys for the school run (76%) compared with older children (aged 10-12) (48%), who more frequently use active and public transport modes (Figure 4.4). These findings reaffirm those of previous studies which have found that children begin to acquire travel independence around the age of ten (Matthews, 1992; McDonald *et al*., 2010), and are more likely to use active or public transport if aged over ten (DiGuiseppi *et al*, 1998; Merom *et al*., 2006; Yeung *et al*., 2008). Indeed, several respondents within this study indicated that they would allow, and encourage, their children to use active or public transport for the school run when they are "older" (#4, #10, #16, #38, #44, #65) or "when they grow up" (#60).

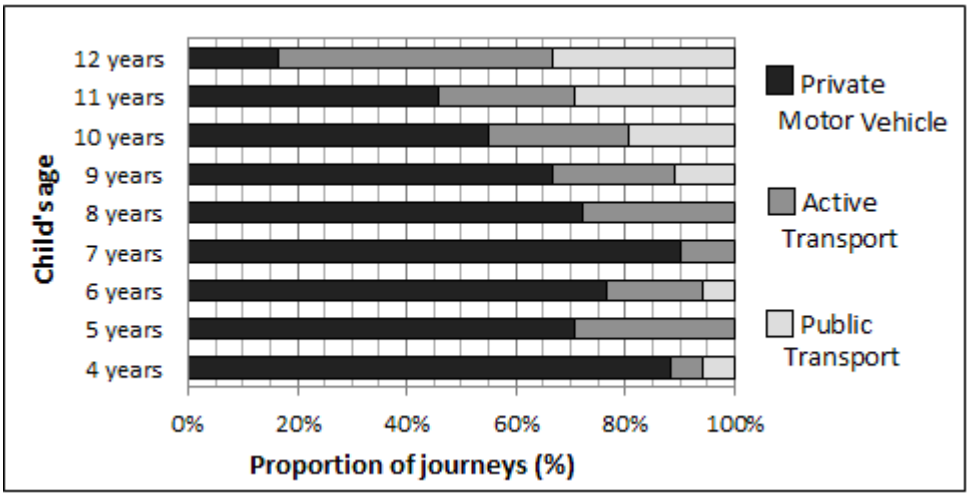

Figure 4.4: The modes of transport used for journeys to or from primary school by children of different ages in the Sutherland Shire. Source: Data were collected from 71 self-administered questionnaires for a total of 111 children. Respondents indicated their child/ren's ages (in years) and the mode(s) of transport used for the school run.

A similar trend toward the increasing independence of older children was also found when respondents were asked what age they felt was appropriate for children to make their own way to school. An average age of 12 years for boys and 11 years for girls was reported, with respondents offering a range of different explanations for their age choices including:

> "Children lack judgement and experience related to crossing roads prior to this age [10 years]. They also don't understand 'stranger danger' prior to this age." (#35)
>
> "I believe children are more spatially aware by about 10 years, i.e. can discern speed of car against distance and hence make more accurate decisions on whether [it is] safe to cross roads." (#43)
>
> "I feel once they hit this age [10 years] they are a little bit more responsible and sensible to their surroundings and others". (#45)
>
> "This [12 years] is the legal age for children to be left unsupervised at home, so I would consider it okay in public given correct guidance." (#64)

However, it is likely that the motivations behind parents' decisions to drive their children for the school run go beyond the practicalities of children's abilities, competencies, or maturity. A study on the negotiations of car use in everyday life by Maxwell (2001) found that the social meanings of cars are fundamentally embedded in social relations, with car use often being associated with an expression of help, love, or care. Maxwell (2001) found that the care and love implicit in the use of the car was most evident in trips made for immediate family members. These social meanings of love and care, coupled with parents' apparent concerns about safety, may explain the high proportion of vehicular escort trips carried out by parents, especially mothers (Figure 4.5).

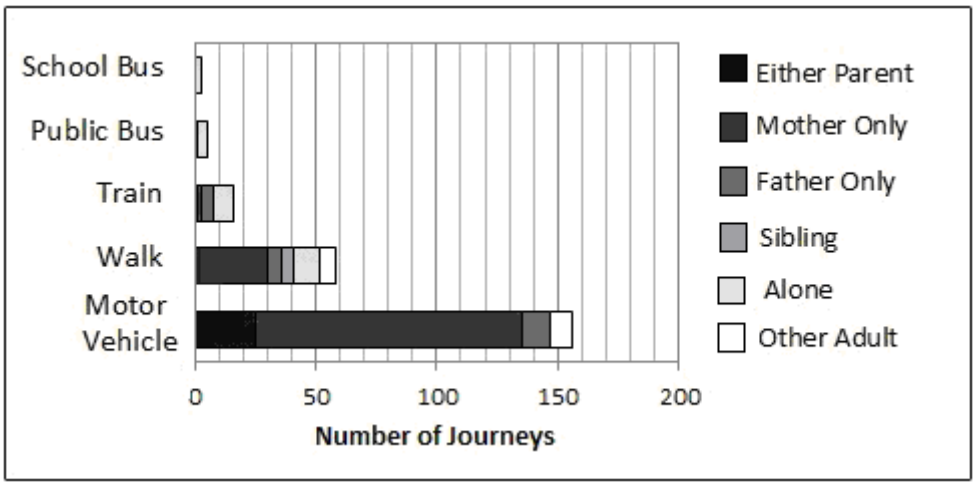

Figure 4.5: A comparison of the travel companions, or lack thereof, who accompany children for the school run in the Sutherland Shire. Data were collected from 71 self-administered questionnaires, within which respondents indicated each child's travel companion (or lack thereof) for the journey to and from school.

4.2.3 The physical environment, infrastructure, and the school run

Aspects of the physical environment such as distance, and the availability of infrastructure and services, such as public transport, also played a key role in influencing the transport behaviours of children and their parents/guardians for the school run in the Sutherland Shire. As shown in Table 4.4, 40 per cent of respondents who used a private motor vehicle for the school run believed the distance to school is too great to use active transport, whilst one-fifth noted the inadequacy of school bus and public transport services in their area. Ten per cent of respondents also believed that pathways or cycle ways are lacking in their area.

Table 4.4 - Perceptions of the physical environment and infrastructure which influence the transport choices of 61 respondents who drive their child/ren for the school run in the Sutherland Shire

Response	Frequency (%)
The school is too far away to walk or ride	40
School bus routes do not include my area	21
Public transport isn't adequate in my area	20
There is a lack of pathways and cycle ways in my area	10
My child is not eligible for a bus pass / travel pass	7
Public transport isn't available in my area	5

As this research involved an anonymous questionnaire, it was not possible to calculate the physical distance between home and school for each household involved in the study. As such, despite the inherent subjectivity, respondents were asked to indicate how far they live from their child/ren's school/s. A comparison between the modes of transport used for the school run and these self-reported distances revealed that private motor vehicles and public transport were used more frequently over greater distances, whilst active transport was most commonly used over shorter distances. For example, over distances of less than one kilometre, motor vehicles were used for 42 per cent of journeys, whilst 54 per cent of journeys were made by active transport and four per cent by public transport (Figure 4.6). In comparison, over distances of two to 4.9 kilometres, motor vehicles were used for 78 per cent of journeys, whilst only nine per cent of journeys were made using active transport, and 13 per cent using public transport (Figure 4.6). These trends are consistent with the literature (Black *et al*., 2001; Schlossberg *et al*., 2006; Timperio *et al*., 2006; Panter *et al*.,

2010). For example, Timperio *et al*. (2006) found that Australian students were most likely to actively commute to school over distances of 800 metres or less. Notably, within this study a small proportion of respondents indicated that their child/ren walk more than five kilometres for their school run. Whilst possible, this result is unexpected, and may be caused by inaccuracies in the distance measurements self-reported by respondents.

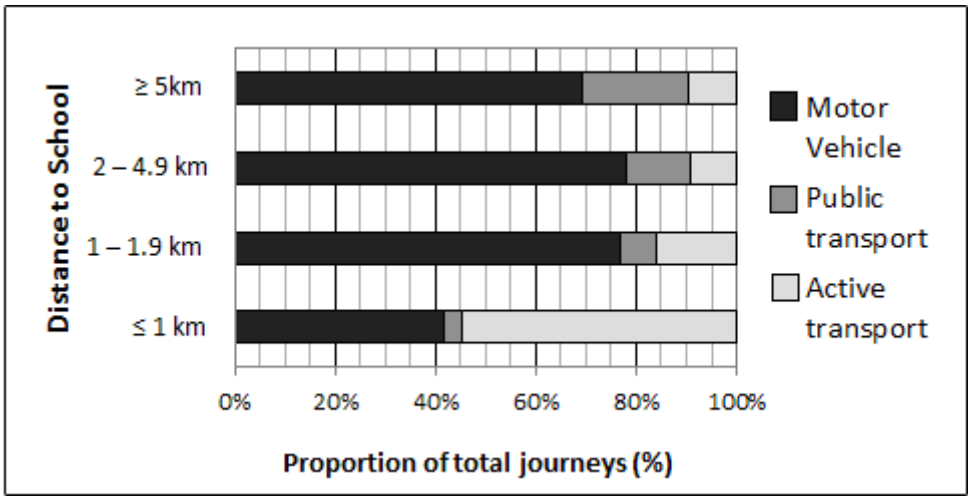

Figure 4.6: A comparison of the main modes of transport used over varying distances for the school run in the Sutherland Shire. Source: Usable data were collected from 66 self-administered questionnaires. Respondents were asked to indicate approximately how far their home is located from their child/ren's primary school/s and the mode(s) of transport used by their children for the journey to and from school.

The provision of public infrastructure also emerged as an influential factor in this study, with approximately one-fifth of all respondents who drive for the school run noting an inadequacy of public transport and school bus services in their area. Indeed, not all of the primary schools that participated in this study are serviced by school or public buses, which was reflected in the modal choices of children attending different schools (Table 4.5). Of those respondents who indicated an inadequacy of school bus services in their area, approximately 85 per cent had children at Telopea Public School and Acacia Primary School, which are not serviced by school buses. The influence of service availability is also evident in public transport use trends, with higher rates of public bus and train usage occurring at Banksia Public School and Acacia Primary School, which are located nearer to train stations and are serviced by public buses. The effects of the (perceived) inadequacy of public bus services, including inadequate bus routes, insufficient bus stops and unsuitable bus timetables, on transport behaviours were noted by several respondents. Several indicated that they would allow their children to use public transport if there were "bus stops near

my house and school" (#28), better "timing of bus schedule [for] morning drop off direct to school" (#20) and "if a bus went near their school they would definitely use it" (#1). This may be a significant issue for Sutherland Shire Council to consider, to the extent that they can influence such services through lobbying the State government and local service providers.

Table 4.5 - The modes of transport used by 111 students attending four Sutherland Shire schools

School	Total households	Proportion of journeys by mode of transport (%)				
		Motor Vehicle	Walk	Train	Public Bus	School Bus
Grevillea Public School	9	72	28	0	0	0
Telopea Public School	29	74	26	0	0	0
Acacia Primary School	21	70	15	10	5	0
Banksia Public School	12	38	28	21	3	10

As noted previously, ten per cent of respondents indicated that their decision to use a motor vehicle for the school run is influenced by an inadequacy of path/cycle ways in their area. Whilst the extent of path/cycle way networks within the Sutherland Shire was not mapped within this study, other studies have revealed a correlation between the provision of pathways and connected pedestrian networks and transport behaviours, with children more likely to actively commute to school in areas perceived to have well-connected pedestrian networks (Schlossberg *et al.*, 2006; Giles-Corti *et al.*, 2011). The perceived or genuine inadequacy of path/cycle ways in the Sutherland Shire may also be linked to parental concerns regarding traffic safety, as discussed in Section 4.2.2, and anecdotal evidence which suggests that certain schools are reluctant to encourage children to cycle to school (and in some cases actively discourage the practice) due to safety concerns. When considered together, it is likely these factors account for the total lack of children cycling to or from school, despite 75 per cent of children owning a bicycle.

4.3 Social and community environments and the school run in the Sutherland Shire

The third aim of this research was to investigate how individuals' perceptions of 'community' influence their transport behaviours for the school run. Examination of this social factor, which is underrepresented in existing literature, provides an opportunity to contribute to current knowledge and to consider transport as a holistic, social process

rather than an independent, utilitarian one. Respondents were asked to indicate how connected they felt to people in their neighbourhood on a five-point scale (from completely disconnected to completely connected). A minority of respondents (8%) felt either completely or slightly disconnected, and 21 per cent felt neither connected nor disconnected. Most respondents (54%) felt slightly connected to people in their neighbourhood, whilst 17 per cent felt completely connected. Public transport users were most likely to feel connected to people in their community, followed by respondents whose children actively commute to school, then those who are driven for the school run (Figure 4.7). Whilst a similar trend was identified by Hume *et al.*, (2010), whereby parents who reported strong social networks were more likely to actively commute to school, the trend between community connection and transport behaviours in this study was not strong.

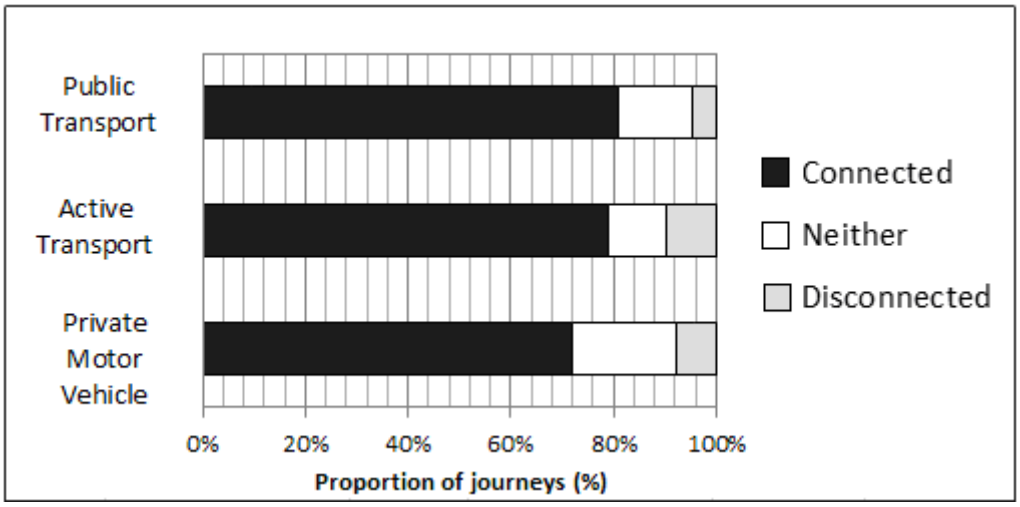

Figure 4.7: A comparison of community connection and the modes of transport used for the school run in the Sutherland Shire. Source: Data were collected from 71 self-administered questionnaires. Respondents indicated how connected they felt to people in their neighbourhood (on a scale of one to five, from completely disconnected to completely connected) and the mode(s) of transport their child/ren used for the journey to and from school.

Notably, active transport users were more likely than any other group to feel disconnected from others in their neighbourhood. This counter-intuitive result may be explained by the event of parental escorts (which occurred for two-thirds of these journeys), as parental company negates the importance of factors associated with community connection, such as perceived neighbourhood safety and trust. Indeed, a preference toward parental escorts and supervision was an important issue for the survey respondents - 58 per cent indicated that they do not feel safe allowing their child/ren to spend time outdoors in their

neighbourhood, during the day, without adult supervision. These responses do not fit neatly with most respondents' claims that they, personally, feel 'connected' to others in their neighbourhood. The limited mobility of Sutherland Shire children within their neighbourhoods was also apparent, with only 49 per cent of respondents indicating that their child/ren are allowed to play or interact with children from neighbouring houses or streets. Such trends, which are likely a derivative of parental perceptions of neighbourhood safety and social constructs which position children as innocent and vulnerable, suggest that children's experiences of spaces and places within their community are often limited.

Investigations of the relationship between 'community' and transport behaviours within this research also aimed to explore whether children's modes of transport for the school run affected how *they* perceived their community. The results of the children's drawing task, implemented in order to address this aim, are discussed in the following sub-section. In addition to this task, parents were asked whether they believed their child/ren's mode of transport for the school run affects how they perceive their community. Only one quarter of respondents believed their child/ren's transport behaviours influenced their experience and perceptions of their community, with respondents explaining:

> "As we walk to/from school most of the days, my daughter has the opportunity to interact with people in the community and also the environment around us." (#39)
>
> "[Walking] gives them the chance to catch up with old school friends and neighbouring children. Local adults get to know them and keep and eye out for them." (#15)
>
> "If the children know you feel confident to allow them to travel alone they feel confident in their community. They perceive their surroundings as safe because you are willing to let them navigate them alone." (#52)

However, 49 per cent of respondents did not believe that their child/ren's mode of transport affects their perceptions of their community:

> "My son, who walks from home to the train station, doesn't perceive our community any differently than my daughter who gets to and from school by car." (#51)
>
> "They participate in community sport and play at playground. They don't associate transport to school with sense of community." (#29)

Council may benefit from further investigating how parents and children's participation in community, faith or sporting groups and activities affects perceptions of community and transport behaviours.

4.3.1 Children's perceptions of the school run

In addition to parental views, it was important to gain a better understanding of how transport may affect children's lives in ways not readily understood by adults. The drawing task, which asked children to respond to the prompt 'what does your journey to school look like?' produced a range of unique data. The following tables (Tables 4.6, 4.7 and 4.8) provide a description of each of the 16 drawings, and are accompanied by scanned copies of eight drawings (Figures 4.8 to 4.15). Scanned copies of drawings were only included where parental consent was given for their publication.

Table 4.6 - Descriptions of drawings by children driven for the school run
DRAWING 1 - Drawn by a four-and-a-half year old child who is driven to and from school by her mother. This drawing depicts a large car, with three occupants waving out the windows. Besides an illustration of the road, no other environmental detail is included.
DRAWING 2 - Drawn by an eight year old child who is driven to and from school, this drawing includes the depiction of a car. No people, details of the child's neighbourhood, or the environmental context of the journey to school are depicted. (Figure 4.8)
DRAWING 3 - Drawn by an eight year old who is driven to and from school by his parents, this drawing includes a plan view of the child's route to school. The child's route is depicted along a series of streets using arrows, which turn corners and bend around round-a-bouts as if the child is within a car, rather than walking alongside the road. The route to school is mapped out in detail, however, no details of the child's neighbourhood are depicted (Figure 4.9).
DRAWING 4 - Drawn by a six year old child who is driven to and from school by her mother, this drawing depicts an area labelled "my school" and features a plan-view of a school ground with office blocks, after-school care and prominent fencing. No other journey details are depicted.
DRAWING 5 – Drawn by a five year old who is driven to and from school by his parents, this drawing includes a plan view of the child's route to school. The child's route is depicted along a simple series of streets with no other details (Figure 4.10).
DRAWING 6 – Drawn by an eight year old child who is predominantly driven to and from school (but, as indicated by the questionnaire respondent, walks "sometimes… if we have time") this drawing shows a young girl walking with her school backpack on a footpath, beside a road. A car is depicted on the road, whilst trees are illustrated beside the footpath and roadside.
DRAWING 7 - Drawn by a seven year old child who is predominantly driven to and from school (but, as indicated by the questionnaire respondent, walks when the "parents are motivated/organised"). This drawing shows three people, a parent and two children, walking to school. The family is pictured walking across a grassed area on a sunny day (Figure 4.11).
DRAWING 8 - Drawn by a child who is predominantly driven to and from school (but, as indicated by the questionnaire respondent, walks when the mother "is home for the day"). This drawing depicts a child walking on a pathway in the foreground. In the background, a building is depicted, whilst in the space between there is a tree, a sun, and pathways.

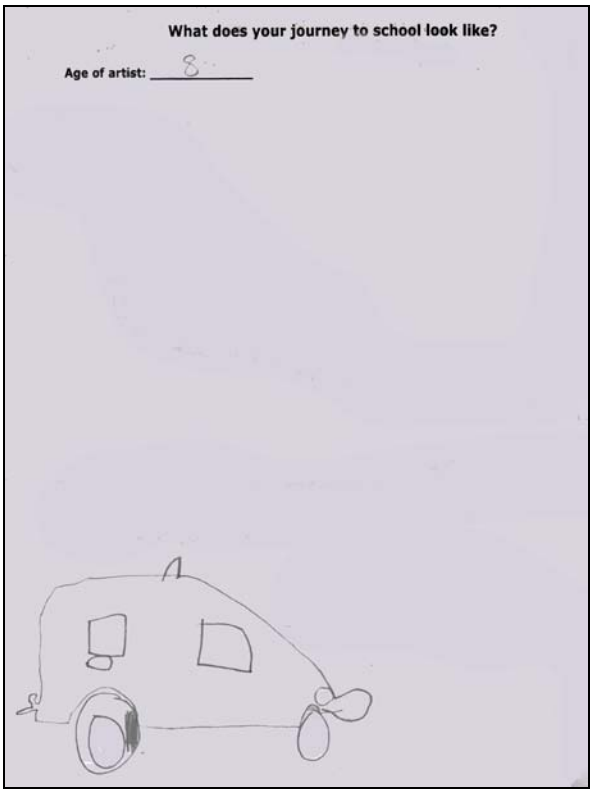

Figure 4.8: Drawing 2 - Drawn by an eight year old child who is driven to and from school.

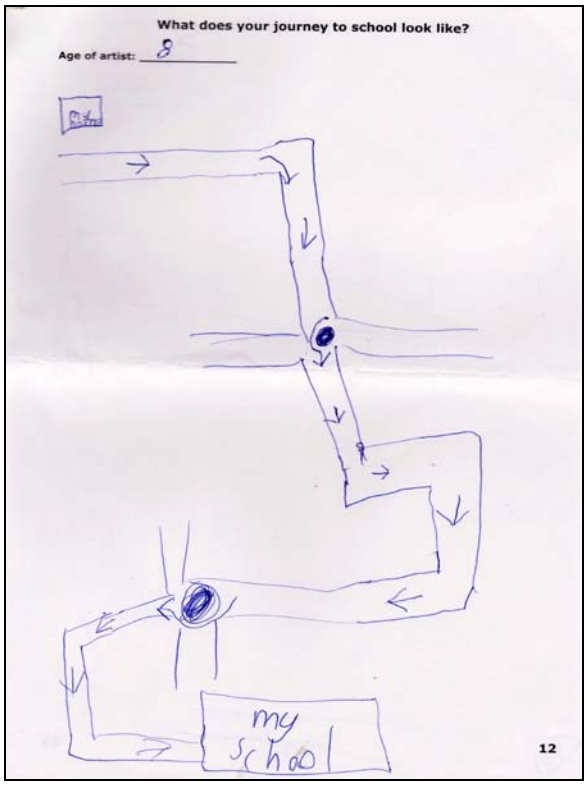

Figure 4.9: Drawing 3 - Drawn by an eight year old who is driven to and from school.

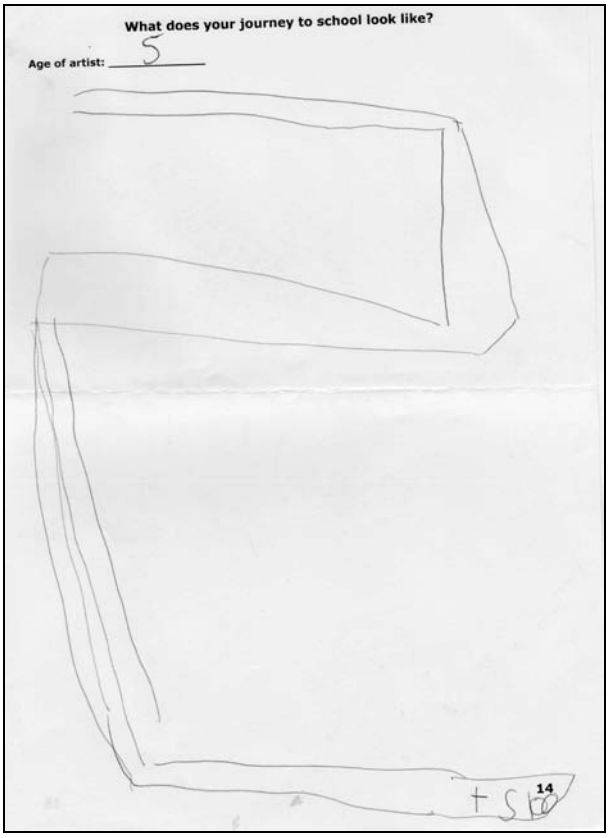

Figure 4.10: Drawing 5 - Drawn by a five year old child who is driven to and from school.

Figure 4.11: Drawing 7 - Drawn by a seven year old child who is predominantly driven to and from school. *(Image edited to preserve anonymity).*

Not surprisingly, the drawings of children who are driven for the school run (as described in Table 4.6) are often orientated around motorised transport, depicting cars, and/or maps of their route to school along a series of roads. The central role of vehicles is particularly apparent in those drawings that focused solely on the depiction of a car, with no external context, or Drawing 3 (Figure 4.9), in which the child's route to school corners around round-a-bouts as if a passenger in a vehicle. Notably, three children whose parents indicated that a motor vehicle was their main mode of transport, but also noted that they "sometimes" walk, depicted themselves actively commuting (Drawings 6, 7 and 8). This peculiarity is discussed in further detail later in this subsection.

Table 4.7 - Descriptions of drawings by children who use public transport for the school run
DRAWING 9 – Drawn by a six year old child who uses a combination of buses, trains and walking for her journeys to and from school, this drawing depicts simple illustrations of a bus, car and train. Each car, bus and train is labelled as such, and is drawn in isolation within separated sections of the page, with no details of the neighbourhood or environmental context in which they exist. No occupants are depicted within the car, whilst four occupants are pictured within the bus windows along with a bus driver. Within the illustration of the train, a train driver is depicted toward one end of a carriage, whilst at the other a tall boyish stick-figure is pictured holding the hand of a small female stick figure. The artist of this drawing travels to and from school with her older brother.
DRAWING 10 - Drawn by a ten year old child who travels alone on trains for his journeys to and from school, this drawing depicts a detailed train station, including the platform and a sign showing the name of the station, platform numbers, and directions for the 'way out'. Four other similar sized people are depicted alongside a stick-figure labelled "Me". On either side of the platform, train tracks are drawn, along with bushes and trees which continue into the distance.
DRAWING 11 - Drawn by a four year old child who uses a combination of buses, trains and walking for her journey to school and a motor vehicle for her journey from school, this drawing depicts a simple illustration of a car, with no occupants or environmental context.

The drawings of children who use public transport for the school run (as described in Table 4.7) depict modes of public transport in all but one drawing (Drawing 11), made by a child who also uses a motor vehicle. The depictions of public transport generally include several other travellers, often smiling and happy, and in the case of Drawing 10, include considerable amounts of detail of the train station and surrounding vegetation. These drawings tend to indicate a greater awareness of the child's physical and social surroundings.

Table 4.8 - Descriptions of drawings by children who walk for the school run
DRAWING 12 - Drawn by a five year old child who walks with his father for the journey to and from school, this drawing depicts a tall, smiling stick-figure person walking alongside, and holding hands with, a smaller, smiling stick-figure person (presumably father and son). This drawing also depicts a large tree.
DRAWING 13 - Drawn by a five year old child who either walks with her mother or is driven by her grandparents for the journey to and from school, this drawing depicts a large block of land with two people walking through it, toward a building and two other people. To one side of the block of land is a car (Figure 4.12).
DRAWING 14 - Drawn by an eleven year old child who walks to and from school alone, this drawing depicts a plan view of the child's neighbourhood, with her route between home and school mapped out along two streets. The artist's house and yard are drawn with great detail, whilst her depiction of the neighbourhood she travels through on the way to school includes only one large tree (Figure 4.13).
DRAWING 15 - Drawn by a six year old child who walks to school with his mother and is driven home from school, this drawing shows a child riding a scooter alongside his mother and two dogs. No details of the child's neighbourhood are depicted (Figure 4.14).
DRAWING 16 - Drawn by an eight year old child who walks to and from school, this drawing depicts a child walking away from the yard of what is, presumably, his home. Plants and features within the garden and home are illustrated, along with an outstretched arm waving goodbye from the house (Figure 4.15).

Overall, the drawings of children who actively commute for the school run (as described in Table 4.8) regularly included depictions of the child traveller (either walking, or as in Drawing 15 (Figure 4.14), scootering alongside their pet dogs) and their travel companions. These travellers are often presented positively, with several figures smiling or waving. Within these drawings there are also numerous representations of children's surroundings, including neighbourhood streets, trees, gardens, fields, and other people within the community.

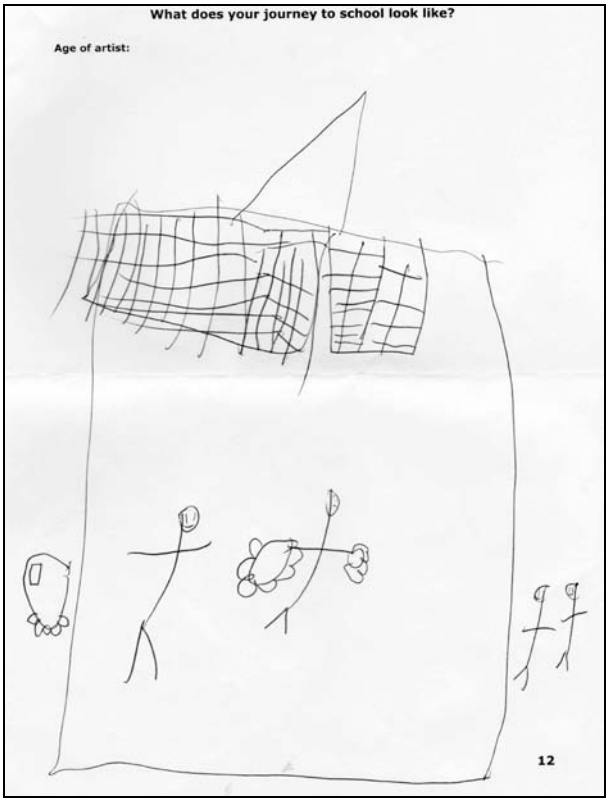

Figure 4.12: Drawing 13 - Drawn by a five year old child who walks or is driven to and from school.

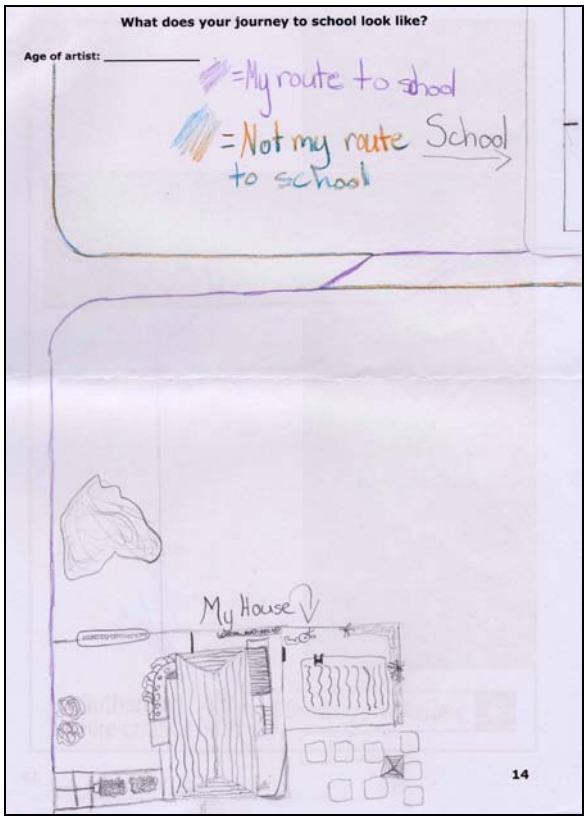

Figure 4.13: Drawing 14 - Drawn by an eleven year old child who walks to and from school.

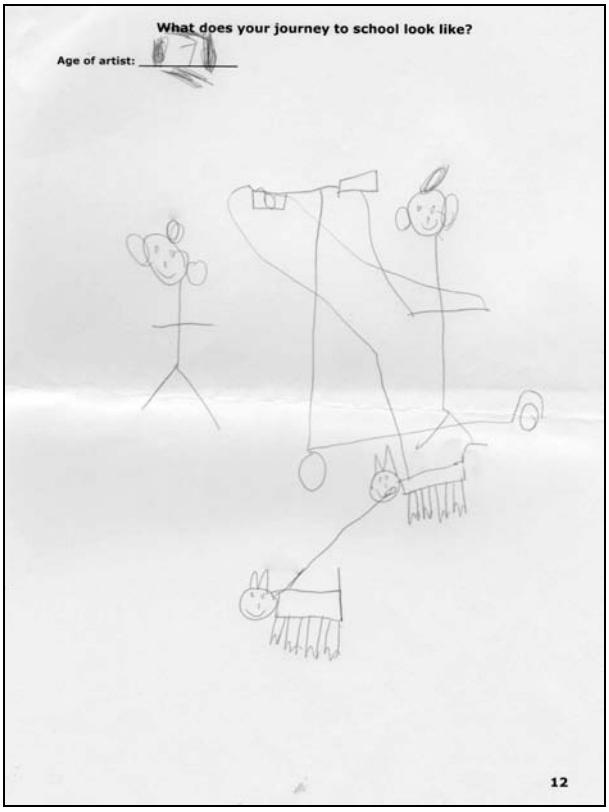

Figure 4.14: Drawing 15 - Drawn by a six year old child who walks to and from school. *(Image edited to preserve anonymity).*

Figure 4.15: Drawing 16 - Drawn by an eight year old child who walks to and from school.

Content analysis of the drawings revealed the following basic thematic categories: the depiction of mode of transport, depiction of external neighbourhood environments and the level of detail used in these depictions, and the inclusion of other people and motifs such as trees, roads, routes and animals (Table 4.9). Drawings made by children who depicted a motor vehicle as their mode of transport concentrated strongly on motifs such as cars and roads and rarely depicted community detail or any external context (Table 4.9). By comparison, children who depicted active or public modes of transport included greater levels of community detail and environmental motifs such as trees, the sun, or animals. In addition, children who depicted active or public modes of transport frequently included people, such as the children themselves, their travel companions, or other community members in their drawings (Table 4.9). However, only one drawing depicting motor vehicle travel included a depiction of the child and her travel companions, with the remaining drawings focusing solely on cars or empty streets.

Table 4.9 - Content analysis of children's drawings of the journey to school

Main Mode of Transport	**Motor Vehicle**								**Public Transport**			**Active Transport**				
Drawing Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Mode of transport depicted-																
Motor vehicle	✓	✓							✓		✓					
Public transport									✓	✓						
Active transport						✓	✓	✓				✓	✓		✓	✓
People depicted -																
Child traveller	✓					✓	✓	✓	✓	✓		✓	✓		✓	✓
Travel companion(s)	✓						✓		✓	✓		✓	✓		✓	
Additional people						✓			✓	✓			✓			✓
Level of community detail-																
None	✓	✓		✓					✓		✓				✓	
Low			✓		✓							✓				
Moderate						✓	✓	✓					✓	✓		✓
High										✓						
Motifs -																
Cars	✓	✓				✓			✓				✓			
Roads, roundabouts	✓		✓		✓	✓		✓						✓		✓
Routes			✓		✓									✓		
Trees, plants, vegetation						✓		✓		✓		✓		✓		✓
Sun, clouds						✓	✓	✓								
Animals															✓	

The drawings made by those children who solely used motor vehicles for the school run were quite dehumanised, depicting deserted streets and empty, passenger-less and driver-less vehicles. On the other hand, those who travelled using active or public transport regularly, if not always, depicted an emotional awareness or attachment to other people in their surrounds, whether it be through the depiction of a father figure holding hands with his son, a smiling bus driver, or a parent waving goodbye from the door. Interestingly, three children whose parents indicated that a motor vehicle was their main mode of transport, but also noted that they "sometimes" walk if they "have time" or if the "mother is home for the day", depicted themselves actively commuting. This trend was not evident amongst those children who solely used motor vehicles for the school run, suggesting that it was not a manifestation of the imagination, but perhaps reflected children's preference for walking for the school run rather than travel by motor vehicle, as found by Collins and Kearns (2001), or an idealisation of their school run experiences. Admittedly, without having the opportunity to speak with children, one can only speculate on children's motives for drawing what they did, which is certainly acknowledged as a limitation of this method.

Data from the parental questionnaires indicated that children's agency is often limited in decisions over transport mode, and their preferences are rarely considered for the school run. When asked who makes the main decisions about their child/ren's transport modes for the school run, only four per cent of respondents indicated that their children participate in this decision-making process, with the vast majority indicating that transport decisions are made solely by one parent (82%) or both parents (12%). Nonetheless, nearly two-thirds of respondents believed that their children share their transport preferences for the school run. However, 11 per cent of respondents acknowledged that their child/ren do not share their preferences, and 24 per cent were not sure or had never asked. This trend towards children's limited role in decision-making and the potential disparity between children's and parents' transport preferences, is reflected in the literature (Collins and Kearns, 2001; Barker, 2003; Giles-Corti *et al*., 2011; Lang *et al*., 2011) and suggests that children's mobility for the school run is not only subject to parental constraints, but is also experienced and perceived differently by children and parents.

4.4 Environmental knowledge and concern and the school run in the Sutherland Shire

The fourth and final aim of this research was to investigate whether individuals' environmental knowledge and concerns influenced modes of transport used for the school run in the Sutherland Shire. Studies have shown that environmental awareness and concerns can influence and motivate sustainable behaviours amongst individuals (Minton and Rose, 1997; Roberts and Bacon, 1997; Schultz and Zelezny, 1998; Poortinga *et al*., 2004), although this has received minimal attention in relation to the school run. Other evidence suggests that, despite positive attitudes toward environmental protection and interests amongst drivers to reduce their vehicle use for environmental reasons, few are likely to change their transport behaviours (Diekmann and Preisendorfer, 1998; Stern, 2000; Stradling *et al*., 2000; Maxwell, 2001; Fujii, 2006). As such, the relationship between environmental concern and transport behaviours is complex. To investigate this issue, data were collected on respondents' climate change beliefs and understandings of climate change and pollution, as well as self-rated levels of environmental concern about these factors. The following subsections explore these results and their relationships with transport behaviours.

4.4.1 Environmental knowledge and the school run

Respondents were asked if they personally believed the world's climate is changing. The vast majority of respondents were climate change believers (83%), whilst less than five per cent did not believe in climate change. In comparison to NSW averages (78%), these figures reflect slightly higher belief rates (DECCW NSW, 2010). Of those respondents who are climate change believers, a majority (84%) acknowledged human activities as a causative factor, with respondents indicating that climate change is caused mostly by human activities (32%) or by a combination of human activities and natural changes in the environment (52%). These findings are similar to those found in a range of Australian studies, which found that approximately 90 per cent of participants believe human activity is at least partially responsible for climate change (Leviston *et al*., 2011).

A comparison of climate change beliefs and transport behaviours for the school run revealed that a larger proportion of active transport journeys were made by children whose parents believed in the existence of climate change (94%), compared with journeys made using private motor vehicle (82%), and public transport (70%) (Figure 4.16).

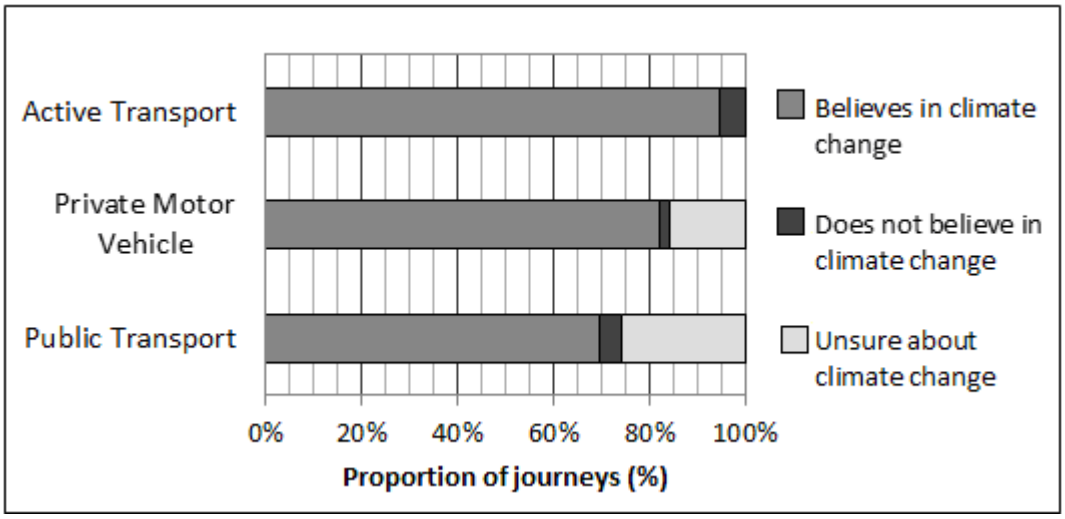

Figure 4.16: A comparison of individuals' climate change beliefs and the modes of transport used for the school run. Source: Data were collected from 71 self-administered questionnaires. Respondents indicated their beliefs about the existence of climate change, and the mode(s) of transport used for their child/ren's journey to and from school.

Respondents were also asked to indicate whether they believed motor vehicle use contributes to climate change or pollution. In total, 69 per cent of respondents believed motor vehicle use contributes to climate change, and 97 per cent of respondents believed motor vehicle use contributes to pollution. A greater proportion of active transport journeys were made by children whose parents believed motor vehicle use contributes to climate change (89%), than children who use public transport (68%) and private motor vehicles (69%) for their school run journeys (Figure 4.17). The mode of transport used was not similarly related to respondents' belief that cars contribute to pollution (Figure 4.18).

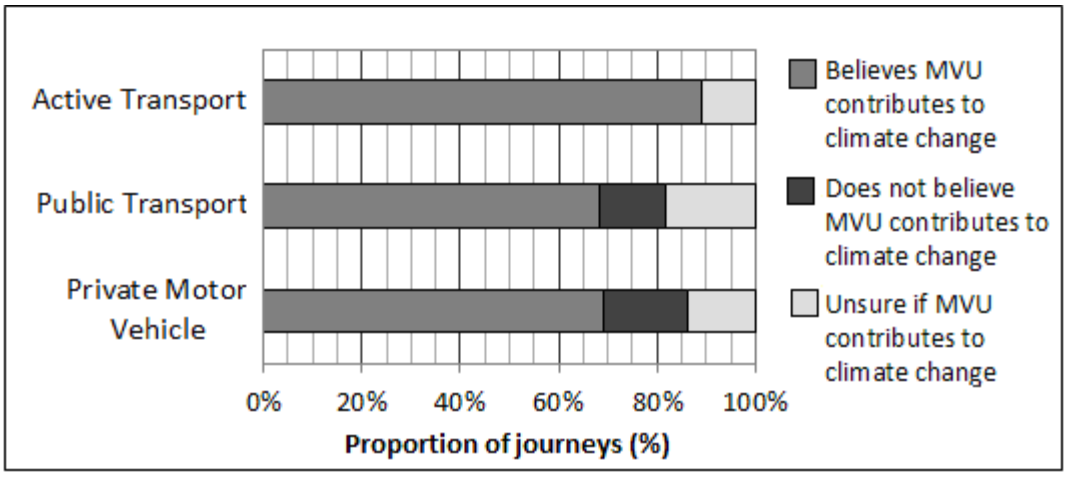

Figure 4.17: A comparison of individuals' beliefs about the contribution of motor vehicle use (MVU) to climate change and the modes of transport used for the school run. Source: Data were collected from 71 self-administered questionnaires. Respondents indicated their views on motor vehicles' contribution to climate change, and the mode(s) of transport used for their child/ren's journey to and from school.

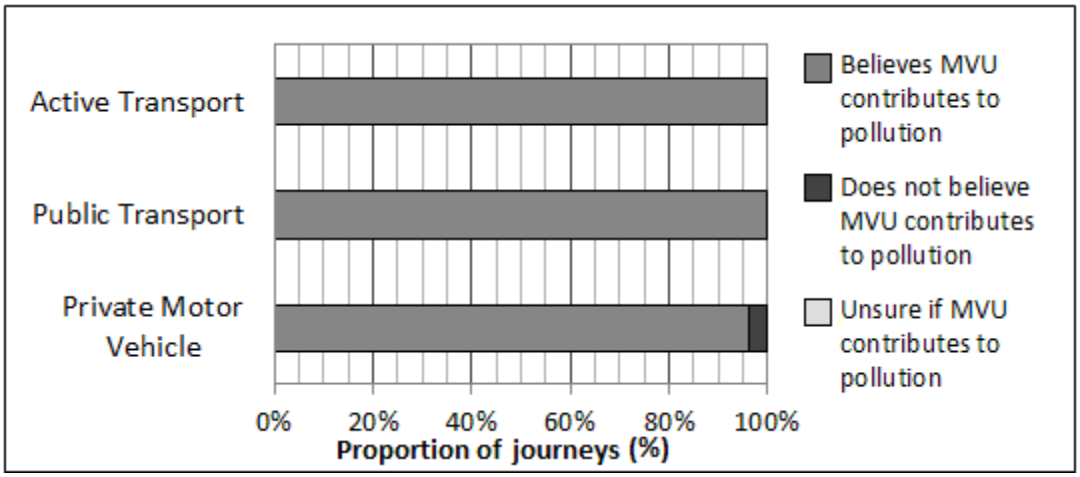

Figure 4.18: A comparison of individuals' beliefs about the contribution of motor vehicle use (MVU) to pollution and the modes of transport used for the school run. Source: Data were collected from 71 self-administered questionnaires. Respondents indicated their views on motor vehicles' contribution to pollution, and the mode(s) of transport used for their child/ren's school journey to and from school.

Taken together, these results indicate that parents who allow their children to use active transport for the school run are more likely to believe in climate change and understand the environmental impacts of motor vehicles than those who use public transport or a private motor vehicle. However, a vast majority of respondents who believe in climate change and the environmental impacts of motor vehicles continue to drive for the school run. These mixed trends are indicative of the complex relationships between environmental attitudes, knowledge and behaviours, and resonates with findings which suggest that environmental knowledge and consciousness are often insufficient to change behaviour (Diekmann and

Preisendorfer, 1998; Nilsson and Küller, 2000; Stradling *et al*., 2000). Accordingly, strategies that seek to address motor vehicle use by raising environmental awareness are unlikely to be highly effective in fostering transport behaviour changes, unless appropriate alternatives are also provided.

4.4.2 Environmental concerns and the school run

In addition to environmental knowledge and awareness, this study sought to explore the impact of environmental *concern* on transport behaviours for the school run in the Sutherland Shire. Respondents were asked to indicate their level of concern regarding both climate change and pollution. Overall, most respondents identified a 'moderate' level of concern about climate change (49%), followed by 'high' levels of concern (16%) and 'very high' levels of concern (14%). Approximately 21 per cent of respondents felt 'low' to 'no concern' about climate change. A greater proportion of public transport journeys were made by children whose parents held 'very high' climate change concerns, compared to other modes (Figure 4.19). However, this relationship was weak and many individuals concerned about climate change continued to use motor vehicles for their child/ren's school run.

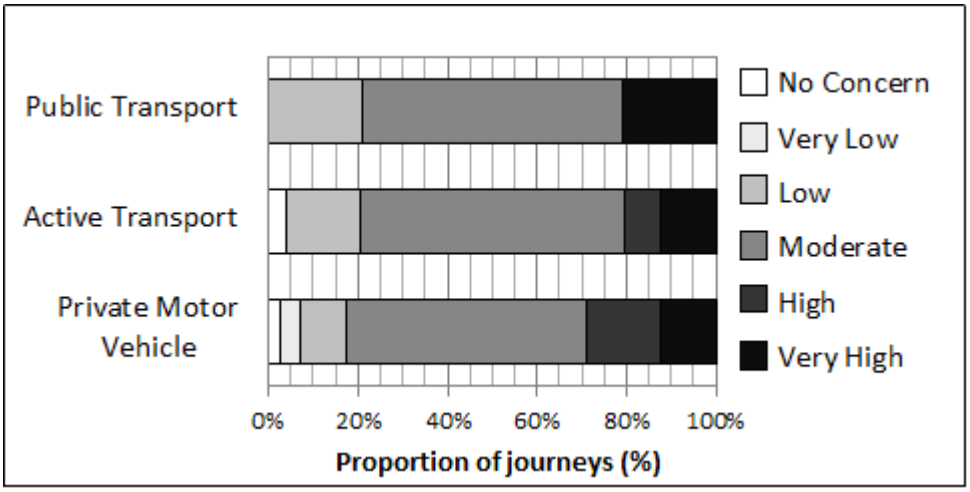

Figure 4.19: A comparison of individuals' level of concern about climate change and the modes of transport used for the school run. Source: Useable data were collected from 69 self-administered questionnaires. Respondents indicated their level of concern about climate change (on a 6-point scale from no concern to very high concern), and the mode(s) of transport used for their child/ren's journey to and from school.

Similarly, when asked to indicate their level of concern about 'pollution' – a generic category open to interpretation, but linked more specifically, tangibly and immediately to issues of local air quality and health – a greater proportion of public transport journeys were made by children whose parents expressed a higher level of concern about pollution, followed by those using active transport and private motor vehicles (Figure 4.20). However, once again, many respondents who were concerned about pollution chose to use a motor vehicle for their child/ren's school run.

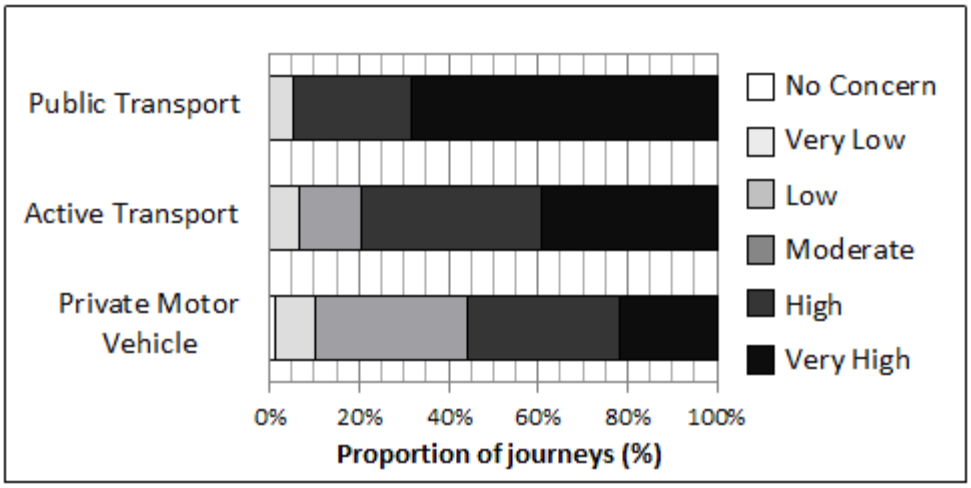

Figure 4.20: A comparison of individuals' level of concern about pollution and the modes of transport used for the school run. Source: Data were collected from 71 self-administered questionnaires. Respondents indicated their level of concern about pollution, (on a 6-point scale from no concern to very high concern), and the mode(s) of transport used for their child/ren's journey to and from school.

These findings suggest that climate change and pollution concerns are not straightforwardly connected to transport decision-making processes. Whilst a large proportion of respondents hold 'very high' environmental concerns regarding climate change and pollution, and a few even state that they use active or public transport because it is "more environmentally friendly" (#19) and has a "reduced environmental impact … versus driving" (#51) it is unlikely that environmental concerns alone are sufficiently influential to change transport behaviours (Diekmann and Preisendorfer, 1998; Maxwell, 2001; Stradling *et al.*, 2000; Lang *et al.*, 2011). Particularly in the case of the school run, other moralities (such as those concerning children's safety and ideals of good parenting) 'trump' concerns for the environment (Lang *et al.*, 2011).

In spite of the complex relationship between environmental concerns and behaviours, over half of respondents who regularly use a private motor vehicle for the school run alleged that they would consider changing their child/ren's transport mode for the school run for 'environmental reasons'. However, as discussed within previous sections, many complex and interconnected factors influence individuals' transport behaviours, beyond their interests in environmentally sustainable transport. Nonetheless, of those who indicated they would consider changing their modes of transport, nearly three quarters indicated they would consider a change to walking, whilst a third would consider school buses and a quarter would consider public buses or trains. Respondents were also asked whether they would consider allowing their children to participate in a 'walking school bus' program, whereby at least two adults escort a walking group of children to school along a set route. Although only a quarter of respondents had heard of 'walking school buses', once an explanation of the concept was given, 89 per cent indicated they would consider allowing their child to participate. Of the 11 per cent of respondents who indicated they would not allow participation, half lived over five kilometres from school, so it likely that distance considerations were influential. The apparent willingness of Sutherland Shire residents to alter their transport behaviours is an encouraging indication in light of the need to shift toward more sustainable transport trends in the region. In particular, the promotion of walking school bus initiatives within the Sutherland Shire is a promising option Council could pursue, especially in light of the success of such programs in reducing car use and building social interactions in Victoria (VicHealth, 2006), New Zealand (Kearns *et al*., 2003; Collins and Kearns, 2005, 2010; Kingham and Ussher, 2007) and the United Kingdom (Mackett *et al*., 2005).

Overall, this chapter has drawn attention to the complex range of social, economic, structural and environmental factors that influence parents' decisions surrounding the modes of transport used for the school run in the Sutherland Shire. The transport decisions made by parents for the school run are never simple – they are guided by a range of practicalities around work and family responsibilities, competing moralities (such as care and concern for safety and environmental concerns) as well as limitations imposed by the physical environment and available services. It is important that strategies designed to influence the transport choices of parents for the school run negotiate these competing

influences, whilst also avoiding moral judgements surrounding car dependency. Approaches that induce 'eco-guilt' around the environmental consequences of certain behaviours, in this case car use, are often ineffective in changing behaviours (Swim *et al.*, 2010; Moser, 2007), and are likely to alienate parents whilst also failing to address the numerous constraints that impact transport choices, particularly the care and responsibility parents feel for their children's wellbeing. The concluding chapter provides recommendations for Sutherland Shire Council on the basis of these research findings.

5. Conclusions and Recommendations

5.1 Conclusions

The results of the questionnaire support Sutherland Shire Council's concerns that residents are highly dependent on private vehicles, with more than two-thirds of all journeys to and from primary schools in the Sutherland Shire utilising private motor vehicles. Less than one quarter of school run journeys were made using active transport and only one-tenth used public transport. As indicated throughout the results chapter, modal choices for the school run are complex and nuanced. However, it must be acknowledged that this study encountered several limitations, including a relatively small sample size (despite an average response rate), the limited collection of qualitative insights into modal choices due to the inability to conduct focus groups, and the restricted opportunity to include children's perspectives, needs and desires due to ethics constraints. Nonetheless, efforts to decrease vehicle dependence must account for a multitude of interrelated and competing factors, practicalities, and moralities that have been found within this research to shape transport behaviours if they are to successfully support more environmentally and socially sustainable transport habits.

Amongst the influential factors identified within this research, parental concerns regarding safety were paramount. Concerns about children's safety when navigating roads and traffic motivated many parents to drive their children to and from school, which in itself exacerbates the real and perceived dangers other children face when negotiating the school run. These safety concerns were connected with aspects of the physical environment, including the perceived inadequacy of infrastructure supporting active transport and pedestrian activity, such as well-connected pathway networks and pedestrian crossings. Children were also likely to be driven for the school run due to parental concerns regarding 'stranger danger'. These concerns may be linked, in part, to the social environments of communities and neighbourhoods, whereby low levels of perceived community safety and trust bring about greater motor vehicle use. This association, whilst only slight within this study, is underrepresented in the literature and this study has attempted to contribute to this knowledge gap. Parental concerns regarding safety within their communities were also

associated with low public transport use. Another key barrier to public transport use in the Sutherland Shire is the perceived inadequacy of public and school bus services in certain suburbs and surrounding certain schools. This limits the transport options available for children, especially when they live at distances from their schools over which walking is impracticable.

The results of this study also indicated that respondents who used active or public transport modes for the school run were more knowledgeable and concerned about environmental issues, such as climate change, than those who used a motor vehicle. However, this was not a particularly strong relationship and environmental concerns did not appear to be a key motivating factor behind transport choices. Nonetheless, over a third of respondents who regularly use a private motor vehicle for the school run claimed they would consider changing to active or public transport modes for environmental reasons. A further encouraging outcome of this research was the apparent willingness and interest amongst the vast majority of parents to allow their children to participate in 'walking school bus' programs. Analysis from the children's drawing task also indicated that children may hold favourable perceptions and preferences for active commuting, suggesting that 'walking school bus' programs would also address the preferences of children.

Understanding the influence of each of these factors alongside the needs of children and parents is critical when recommending how Sutherland Shire Council may promote more sustainable transport behaviours for the school run in the Sutherland Shire, where high rates of vehicle ownership, income, and employment all contribute to the accessibility and convenience of motor vehicle use for the school run.

5.2 Recommendations

In order to better understand children's and parents' transport behaviours and needs for the school run, it is recommended that Sutherland Shire Council expand on the research conducted within this project by completing further data collection – in particular using qualitative methods. This action would increase sample sizes and representativeness over several regions of the Sutherland Shire, and would allow Council to tailor plans to the

specific needs of children and parents attending schools in unique physical and social environments.

In order to promote more environmentally and socially sustainable transport behaviours for the school run in the Sutherland Shire, it is also recommended that Sutherland Shire Council investigate the feasibility and cost-effectiveness of implementing physical and social infrastructure to support active/public transport use. Such infrastructure may include pedestrian pathways and crossings, more adequate public and school bus services, as well as more specific management options to address road safety, such as traffic calming measures – school zones with reduced speeds (40km/h) already exist, but additional measures such as speed-bumps and designated drop-off zones are worth exploring. As it is realistic to expect that many parents will continue to drive their children to and from school due to work commitments and trip-chaining, traffic calming measures may play a particularly important role in improving the real and perceived safety of those who choose to utilise active/public transport modes.

It is also strongly recommended that Sutherland Shire Council investigate the viability and logistics involved in the implementation of 'walking school buses' in the area, as these programs not only reduce car congestion, but are also more environmentally friendly, foster community participation and physical activity, and address both parents' preferences for supervised transport and children's apparent preferences towards active transport.

It is also recommended that further research be conducted into the social factors underlying transport choices for the school run, such as community connection, cohesion, trust and engagement. A focused and qualitative investigation into this issue through the use of focus groups (as planned in this project) could aid in the collection of qualitative data and assist Council in developing plans (such as community events or activities) to address low community connection. Such initiatives provide a potentially less expensive alternative, or complementary approach, to implementing physical infrastructure, by emphasising and addressing the role complex social processes play in influencing transport and community behaviours.

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Appendices

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Transport Choices – to and from primary schools in the Sutherland Shire

A joint project of the

University of Wollongong

and

Sutherland Shire Council

2011

Sutherland Shire COUNCIL

University of Wollongong

What is this project about?

The focus of this project is to determine which forms of transport are preferred by parents and guardians in the Sutherland Shire when transporting their children to and from primary school, and the factors which influence these transport choices.

The project is being conducted by the University of Wollongong, in collaboration with Sutherland Shire Council. The results may be used by Sutherland Shire Council when planning transport initiatives to support the demands of school students and their parents/guardians. The results will also be used to produce an Honours thesis by Stephanie Toole, and other academic publications and presentations.

Why should I participate?

This survey is designed to give voice to parents and guardians within the Sutherland Shire about transport issues that are important to them, as well as their children. Whilst the opinions of each individual are important to us, your responses will be treated as confidential, and your personal information will not be reproduced in any publications or reports resulting from this research. Information identifying individual schools will also be kept confidential.

How can I help?

We would greatly appreciate if a parent or guardian of a primary school-aged child could answer the following questions. This questionnaire should take approximately **15-20 minutes to complete.**

If you are interested, the questionnaire also provides blank pages on which your child/ren can draw a picture in response to the question: *'What does your journey to school look like?'*

Once complete, simply enclose the questionnaire in the reply-paid envelope and drop it in a post box **within four weeks** of receiving the questionnaire**.**

Who can I contact about this project?

If you have any questions about this study please contact the research supervisor: Dr Natascha Klocker at natascha@uow.edu.au or phone 4298 1331

If you have any concerns or complaints regarding the way the research is or has been conducted please contact the Ethics Manager at the University of Wollongong at 02 4221 4457 or rso-ethics@uow.edu.au

You may tear off this page to keep if you wish.

Your Household

To begin with we'd like to get a good understanding of your household.

1) Which of the following best describes your household? *(Please tick one response)*

- ○ Couple with child/ren
- ○ Single parent/guardian with child/ren
- ○ Other, please specify: _____

2) How many adults and children live in your household? *(Please answer below)*

Adults: _____ Children (under 18 years): _____

3) For each child in your household who attends primary school, please indicate their age and circle their gender:

Child 1	Age:	Gender: Male Female
Child 2	Age:	Gender: Male Female
Child 3	Age:	Gender: Male Female
Child 4	Age:	Gender: Male Female
Child 5	Age:	Gender: Male Female

4) Which primary school/s do your child/ren attend?

_____

_____

5) Which suburb do you live in?

_____

6) What is your postcode? _____

7) Approximately how far is your home located from your child/ren's primary school?
(If your children attend different primary schools, tick as many as apply)

- ○ Less than 1km
- ○ 1 – 1.9 km
- ○ 2 – 4.9 km
- ○ 5 – 9.9 km
- ○ 10 – 19.9 km
- ○ More than 20 km

8) How many vehicles are registered to your household? _____

9) What is the main language spoken within your household? (*Please tick one response)*

- ○ English
- ○ Language other than English.

Please Specify: _____

The 'School Run'

This section asks about your opinions and transport choices.

10) In the table below, please:

a) Indicate which mode of transport is used to transport your child/ren **TO** primary school on an average, fine weather day? (e.g. car, school bus, public bus, bike, walking)

b) Indicate who, if anybody, usually accompanies your child/ren on this journey **TO** school. (e.g. travels independently, mother, father, siblings, friends, other adult etc)

	Age	Mode of transport	Accompanying person
Example	*11*	*Walking*	*Travels independently*
Child 1			
Child 2			
Child 3			
Child 4			
Child 5			

11) In the table below, please repeat the above process for the journey FROM school to home on an average fine weather day.

	Age	Mode of transport	Accompanying person
Example	*8*	*Car*	*Mother*
Child 1			
Child 2			
Child 3			
Child 4			
Child 5			

If you NEVER use a private motor vehicle to transport your child/ren to school, skip to Question 18.

12) What is the make/model of the vehicle/s you usually use to transport your child/ren to and from school? (*List more than one if relevant)*

Vehicle Number	Vehicle Make	Vehicle Model
Example	*Toyota*	*Corolla*
1		
2		
3		

13) a) Which of the following factors influence your decision to drive your child/ren to and/or from school? *(Please tick all that apply)*

- ○ Takes less time
- ○ I drop my child/ren off on the way to another destination (e.g. work)
- ○ The school is too far away to walk or ride
- ○ I'm concerned about my child's safety around traffic
- ○ I'm concerned about my child's safety around strangers
- ○ I'm concerned about bullying
- ○ I'm concerned about my child's safety on public transport
- ○ Public transport isn't available in my area
- ○ Public transport isn't adequate in my area
- ○ School bus routes do not include my area
- ○ My child is not eligible for a bus pass / travel pass
- ○ There is a lack of pathways and cycle ways in my area
- ○ My child is too young to make their own way safely to school
- ○ My child is too inexperienced to navigate roads, traffic, public transport etc
- ○ Public transport is too expensive
- ○ My child has health concerns or a disability
- ○ School bags are too heavy for children to carry
- ○ Other:_____

b) Please identify up to three (3) factors, from the above list, that have the BIGGEST influence on your decision to drive your child/ren to/from school.

1._____

2._____

3._____

14) What would you do if you did not have a private motor vehicle to transport your child/ren to or from school for a few days?

_____

_____

_____

15) What factors, if any, would motivate you to allow your child/ren to use public transport to get to/from school?

_____

_____

_____

16) What factors, if any, would motivate you to allow your child/ren to walk or ride to and/or from school?

_____

_____

_____

17) Would you feel more comfortable in allowing your child/ren to use any of the following transport modes to get to and from school if you knew other parents in your local community were allowing their children to do so? *(Please tick all that apply)*

- ○ School Bus
- ○ Public Bus
- ○ Train
- ○ Bicycle
- ○ Walking
- ○ Skateboard/Scooter
- ○ Other:_____

If your child/ren never use public transport or active transport (such as walking or riding a bike) to travel to or from school, skip to Question 19.

18) What are the main reasons why your child/ren use public transport or active transport (e.g. walking or riding a bike) methods when travelling to or from school? (*Please list up to three reasons in the space provided.)*

1. _____
2. _____
3. _____

19) At what age, if any, do you think it is appropriate for children to make their own way to school? *(Please provide an age for boys and girls and the main reason behind your choice. You may indicate the same age for boys and girls if desired)*

Boys: _____ years **Girls:** _____ years

Explanation:_____

_____

_____

_____

20) Have you heard of the 'walking school bus' initiative? *(Please tick one response)*

- ○ Yes
- ○ No

If not*, a "Walking School Bus is a group of primary school children who walk to and from school along a safe and enjoyable set route, accompanied by a minimum of two parent supervisors per 'bus'. One parent 'drives' at the front of the bus, while the other parent supervises at the rear. The walking bus picks up 'passengers' along the way at designated 'bus stops'" – TravelSmart Australia, 2005.*

21) If a 'walking school bus' operated in your neighbourhood, would you allow your child to participate? (*Please tick one response)*

- ○ Yes, I would allow participation
- ○ Yes, my child already participates
- ○ Maybe
- ○ No

Family Perspectives

22) At what age, if any, did you learn to ride a bike? _____

23) When you were a child, how did you usually get to/from primary school? *(You may tick more than one response)*

- ○ Car
- ○ School Bus
- ○ Walking
- ○ Motorbike
- ○ Public Bus
- ○ Skateboard/Scooter
- ○ Bicycle
- ○ Train
- ○ Other:_____

24) To what extent have your childhood experiences of travelling to and from school impacted on the transport decisions you make for your child/ren? *(Please tick one response and provide a brief explanation of your answer)*

○ Not at all ○ To a moderate extent ○ To a great extent

Explain:_____

_____

_____

25) Who makes the main decisions about your child/ren's mode of transport when travelling to and from primary school? *(Please tick all that apply)*

- ○ Yourself
- ○ Child/ren
- ○ Partner
- ○ Other (please specify):_____

26) Do you think that your child/ren share your transport preferences for their journey to and from school? *(Please tick one response)*

○ Yes ○ No ○ Not sure/have not asked

27) Please indicate the mode of transport YOU usually use for each of the following purposes. *(Please place a tick in the appropriate box. You can tick more than one box per destination if this applies)*

	Car	**Motorbike / motor scooter**	**Bus**	**Train**	**Bicycle**	**Walk**	**Other** *(please specify)*
Work or study							
Grocery shopping							
Recreational activities							
Social activities							

28) How often do YOU undertake physical activity for the purpose of exercise? *(Please circle the most appropriate answer)*

Never	A few times each year	A few times each month	One or two times a week	Most days of the week	Everyday

Community

Now we would like to ask some questions about your sense of community, or the interactions, networks and shared values you feel exist within your community.

29) How connected do you feel to other people in your neighbourhood? *(Please circle the most appropriate answer)*

Completely Disconnected	Slightly Disconnected	Neither Connected or Disconnected	Slightly Connected	Completely Connected
1	**2**	**3**	**4**	**5**

30) Would you like to build greater connections with other people living in your neighbourhood? *(Please tick one response)*

○ Yes ○ No ○ Not sure

31) Do you feel your child/ren's mode of transport for the school run affects how they perceive their community? *(Please tick one answer below, and explain your response)*

○ Yes ○ No ○ Not sure

Explanation:_____

_____

_____

_____

32) What types of community groups (e.g. sports clubs, religious groups, community gardens) do your child/ren regularly participate in? *(Please list below)*

_____

_____

33) In an average week do your child/ren play or interact with children from neighbouring houses or streets? *(Please tick one response)*

○ Yes ○ No ○ Not sure

34) Do you feel safe allowing your child/ren to spend time outdoors during the day, in your neighbourhood, without adult supervision? *(Please tick one response)*

○ Yes ○ No ○ Not sure

35) Do your child/ren own and use any of the following around your neighbourhood? *(Please tick all that apply)*

○ Bicycle ○ Scooter ○ Skateboard
○ Roller blades/skates ○ Other:_____

Transport and the Environment

36) There has been a lot of discussion of late about climate change. Do you personally believe that the world's climate is changing? *(Please tick one response)*

○ Yes ○ No (Skip to Question 38) ○ Not sure

37) Do you believe that climate change is... *(Please tick one response)*

○ Caused mostly by human activities
○ Caused mostly by natural changes in the environment
○ Caused by human activities and natural changes in the environment
○ Don't know/Not sure

38) How would you rate YOUR level of concern about the following? *(Please tick one response for each row)*

	No Concern	Very Low	Low	Moderate	High	Very High
Climate change						
Pollution						

39) Do you feel there is anything you can do as an individual to make a positive difference regarding the following? *(Please tick one response for each row)*

	Yes	No	Not sure	Don't Care
Climate change				
Pollution				

40) Do you think motor vehicle use contributes to either of the following? *(Please tick one response for each row)*

	Yes	No	Not sure
Climate change			
Pollution			

If you DO NOT use a motor vehicle for the school run, skip to Question 44.

41) If you regularly drive your child/ren to or from school, do you think that changing your transport mode for the school run would make a difference to either of the following? *(Please tick one response for each)*

	Yes	No	Not sure	Don't Care
Climate change				
Pollution				

42) Would you ever consider changing your child/ren's transport mode for the school run to public transport or active transport (e.g. walking or bike riding) for environmental reasons? *(Please tick one response)*

○ Yes ○ No (Skip to Question 44) ○ Maybe

43) If you answered YES or MAYBE in Question 42, what mode of transport do you think you would be most likely to change to? *(Please tick all that apply)*

○ Motorbike ○ Bicycle ○ School Bus
○ Public Bus ○ Train ○ Walking
○ Skateboard/Scooter ○ Other:_____

The Survey Respondent

Finally, we would like to know a little more about you.

44) What is your age? _____

45) What is your gender? ○ Female ○ Male

46) What is the highest level of education you have achieved? *(Please tick one response)*

○ Primary school ○ Secondary school ○ Diploma
○ Trade/apprenticeship ○ Bachelors degree ○ Postgraduate degree

47) Which of the following categories best describes your current employment status? *(Please tick all that apply)*

○ Employed full time ○ Employed part time ○ Self employed
○ Retired/pensioner ○ Home duties ○ Unemployed
○ Full time student ○ Part time student ○ Other:_____

48) If you live with a partner, please indicate which of the following categories best describes your partner's current employment status? *(Please tick all that apply)* If you do not live with a partner, skip to Question 49.

○ Employed full time ○ Employed part time ○ Self employed
○ Retired/pensioner ○ Home duties ○ Unemployed
○ Full time student ○ Part time student ○ Other:_____

49) If either you or your partner are in paid employment, how many hours do you work in an average week?

Myself: _____ Partner: _____

50) If either you or your partner are in paid employment, in which suburb(s) do you work?

Myself: _____ Partner: _____

51) How often do YOU feel rushed or pressed for time? *(Please circle the most appropriate answer)*

Never	Rarely	Sometimes	Frequently	Always

52) Which of the following categories best describes your household's total weekly income (after tax and including pensions if applicable)? *(Please tick one response)*

○ $0 - $249 ○ $250 - $499 ○ $500 - $799
○ $800 - $999 ○ $1000 - $1299 ○ $1300 - $1499
○ $1500 - $1699 ○ $1700 - $2499 ○ $2500+

Thank you for completing this survey!

Future Research Plans

We are interested in learning more about your views and behaviours regarding transport and the 'school run.'

If you would like to participate in a short, informal group discussion where parents and guardians can reflect on the concepts raised within this project, or would like to be provided with more information, please complete the following section.

If you provide your contact information or personal details this page will be detached from the survey to ensure your questionnaire responses remain confidential.

NAME: _____

TELEPHONE: _____

EMAIL: _____

DATE: ____/_____/_____

If you would like your child/ren to participate in the drawing component of this study, please continue to the following page.

If not, then please return this survey to the researcher using the envelope provided.

Reference: Travelsmart Australia (2005) '*Walking School Bus: A Guide for Parents and Teachers'* Australian Greenhouse Office, Department of Environment and Heritage, Commonwealth of Australia.

The authors of this questionnaire would also like to acknowledge the following organisations whose survey questions have been used or adapted for this survey;

- CSIRO, Australia
- University of Wollongong, Australia

Part 2: Children's drawings

The following pages contain two blank pages for your child/ren to draw pictures in response to the question: *'What does your journey to school look like?'* This activity will allow us to get an insight into the way children experience their school journey.

If you would like your child/ren to participate in this activity, then please read the following information and sign at the end of this page. By signing below, you will be indicating your consent for us to use your child/ren's drawing/s in this research.

Before giving your consent please ensure:

- Your child/ren is/are aware of the project and their involvement to an extent which you deem reasonable.
- You understand that your child/ren's participation in this drawing task is completely voluntary and refusal to participate will have no consequence for you or them.
- You understand that the drawing/s may be used in an honours thesis, focus group discussions and academic presentations/publications.
- You understand that any reproductions of these drawing/s will not contain any identifiable information regarding your child or family to ensure your privacy is maintained.
- You understand that no contact will be made between researchers and your child/ren.
- If you have more than two primary school children who wish to participate in this task, feel free to include extra pieces of paper.

Please tick ONE of the boxes below and sign at the bottom of this page.

☐ I consent to the use of my child/ren's drawing in publications/presentations
☐ I do not consent to the use of my child/ren's drawing in publications /presentations

By signing below I am indicating my consent to my child/ren's participation in the project through the submission of a drawing. I am also indicating that I understand the information contained in this form.

Signature: _____ Date: / /2011

What does your journey to school look like?

Age of artist: _____

What does your journey to school look like?

Age of artist: _____

Appendix B – School Invitation Email

To ……..,

I would like to invite you and parents/guardians in your school community to participate in an Honours research project I am conducting at the University of Wollongong in collaboration with Sutherland Shire Council. This project has received approval from the Department of Education and Training via the State Education Research Approval Process (SERAP). Documentation of this approval is attached to this email along with a support letter from the Council.

Entitled *"Transport Choices – to and from schools in the Sutherland Shire",* the focus of this project is to determine what drives the transport decisions residents make for the 'school run'. Each school and its surrounding community is unique, and we would very much value insights into the needs of parents/guardians in your local area. The results from this study will assist Sutherland Shire Council in planning transport initiatives to better support the demands of school students and their parents/guardians.

Parents/guardians who agree to participate in this research will be asked to complete a confidential questionnaire. No individual participants or schools will be named within reported findings. Of course, we are committed to sharing the research findings with participating schools at the conclusion of the project.

I would like to emphasise that **no research activities will be conducted within your school grounds**. As such, there will be no disruption to classes or teaching staff. We would, however, like to seek your advice on how best to distribute the questionnaires to parents/guardians in your school community.

I would appreciate an opportunity to meet with you, or to discuss this research further over the phone. Please contact either Stephanie Toole (Honours student) or Dr Natascha Klocker (Research supervisor) on the details listed at the end of this email.

We thank you for your time and hope that you will be keen to support this project.

Yours Faithfully,

Stephanie Toole

Stephanie Toole - email: …… ; telephone: …….

Dr Natascha Klocker – email: …….; telephone: …….