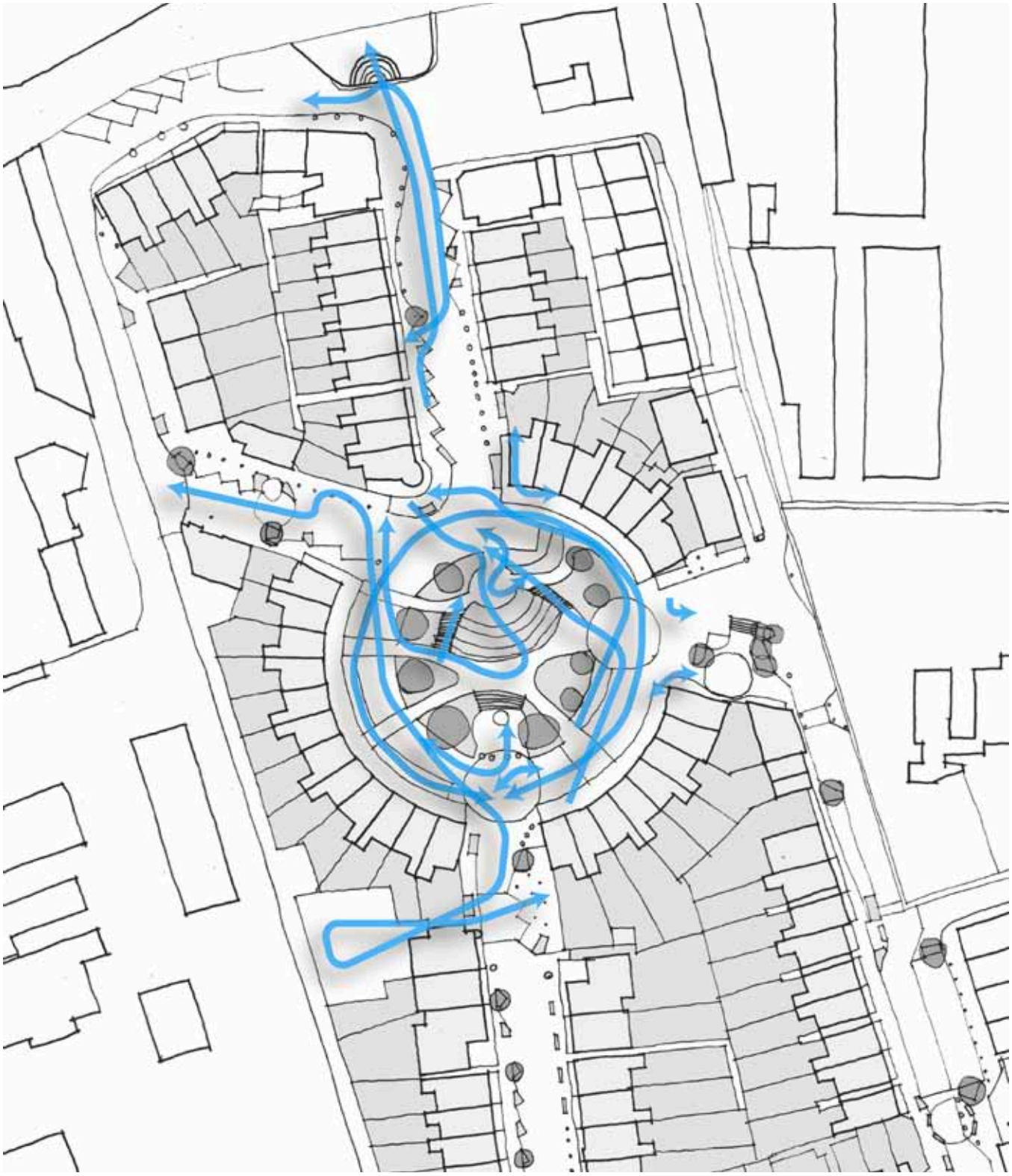

The impact of innovative designs on activity in residential streets

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Introduction

The UK's residential highway guidance, The Manual for Streets (Department for Transport 2007), was written to encourage a more flexible approach to residential street design and to embrace the urban design agenda. By contrast it is thought that previous guidance, Design Bulletin 32: Residential Roads and Footpaths (Department of the Environment and Department for Transport 1992; Department of the Environment and Department of Transport 1977) resulted in a narrow set of acceptable highway solutions, despite the fact that they themselves were written to replace restrictive post-war standards (York et al. 2007).

Residential roads built in the late 1970s onwards reflect traffic based criteria and are typically arranged around cul-de-sacs which serve distributor roads containing no frontage. Many quiet residential streets adopted a 5.5 metre highway, 2 metre pavements and a standard cul-de-sac turning area (Figure 1 top). The use of pattern book housing and on-plot parking led to what some regarded as a new form of placeless development. Such forms typically have not supported a variety of neighbourhood uses and it is thought that the network and environmental needs of pedestrians have been poorly accommodated. The emergence of urban design criteria into central government guidance during the early 1990s was gradually reflected in supplementary guidance for streets (Department for Transport Local Government and the Regions and Commission for Architecture and the Built 2001; Department of the Environment 1998). The Manual for Streets was subsequently written to allow a proper dovetailing of criteria and dimensional thinking.

The Manual for Streets encourages schemes to achieve a wider number of objectives. Schemes should be specific to their context and allow direct connections to and through the surrounding neighbourhoods for pedestrians and cyclists. Housing should be allowed to face its context. There should be more concern for spatial hierarchies reflecting the status of streets within a layout. Designs need to encourage or allow a wide range of potential residential and parking configurations. There should be greater concern for the visual qualities of streets. There is also a need to create designs which might support a greater variety of street users and activities: "streets should be designed to accommodate a range of users, create visual interest and amenity, and encourage social interaction. The place function of streets may equal or outweigh the movement function" (Department for Transport 2007, p. 57). This study aims to explore whether completed new build residential streets which conform to the Manual for Streets criteria are used differently when compared with more established streets which comply with the older guidance. It is particularly interested in whether they encourage a greater variety of street users and activities.

Moving towards shared surface streets

The Manual for Streets was greatly influenced by early findings emerging from the implementation of home zones in the UK during the previous decade. Home zones are shared surface streets in which the form of the street encourages the equal right of access to all users across its width. The result should be a sharing of the street space between pedestrians and vehicles. Woonerfen are the Dutch equivalent to home zones, and they have been possible in the Netherlands since the mid 1970s (Royal Dutch Touring Club 1977), whilst other northern European countries have similar designations. Children and transport pressure groups campaigned

Figure 1.

Different treatments for residential roads. Top: Design Bulletin 32 standard treatment. Middle: traffic calming. Bottom: shared surface

during the late 1990s for home zones to be allowed under UK law. They argued that they would make traffic a less dominant and negative influence in neighbourhoods, improve the aesthetic qualities of street environments, make streets safer for vulnerable users like children or the elderly, and create more opportunity for outdoor play close to the home (Gill 2006). Previously UK highway regulations had always given priority to vehicle users within highway space. Under section 268 of the Transport Act 2000 (England and Wales) (H M Government 2000) and Section 74 of the Transport (Scotland) Act (H M Government 2001) it became possible to designate home zones in the UK. This meant that any driver not meeting their legal obligation to drive with due care and attention would be found liable for any accidents within the designated space. To receive the designation streets need to be designed in such a way that vehicles drive at roughly walking pace. Design guidance and advice emerged explaining how to engage communities in the possible process of redesigning their street to meet the new standards (Biddulph 2001) or providing more specific highway standards for both retrofit and new-build schemes (Institute of Highway and Incorporated Engineers 2002) based on Dutch experiences (CROW 1998).

Towards the end of the 1990s fourteen pilot home zone projects were announced by the national Governments of the UK. Not all schemes were implemented as no money followed the designations, whilst some communities decided not to progress the idea. Particularly successful retrofit schemes were completed in the Northmoor area of Manchester, the Methleys area of Leeds and the Morice Town area of Plymouth (Biddulph 2008; Delap and McMillan 2002). In addition the government of the time committed £30 million to a Home Zones Challenge in England. This saw the development of a further 61 retrofit schemes in 57 local authority areas (Department for Transport 2005). Many of these schemes were not evaluated, but fourteen were and the findings from these reviews are discussed below.

More recently the residential home zone agenda has been conflated with a significantly wider debate about shared surfaces more generally and in particular their application to busier streets higher up the urban street hierarchy. This work has been inspired by the practices of Hans Mondermann in the Netherlands and Scandinavia, but also now in the UK by Ben Hamilton-Baillie and Phil Jones (Hamilton-Baillie 2000, 2008; Hamilton Baillie and Jones 2005). Older treatments such as at Seven Dials in London have been revisited and found to be successful. Recent schemes such as Y Maes in Caernarfon, New Road, Brighton or the innovative work on the inner ring road of Ashford have shown how thinking might be applied to urban squares, streets and even inner ring roads.

Such schemes have, however, been questioned by groups representing partially sighted people who in general have opposed the trend. They note, in particular, the difficulty partially sighted people have orientating themselves within such treatments and that such groups might not use the spaces (JMU Access Partnership 2007; Thomas 2006, No date). Consequently the Department for Transport commissioned research into their performance which concluded that shared space schemes appear to be beneficial in appropriate settings and that from the data available there is no evidence that shared spaces result in more casualties than conventional layouts, or that particular groups, including disabled people, are injured more frequently following their introduction (Reid et al. 2009). In spite of this debate the shared surface concept has also been moderated by professional reactions and reluctance by some engineers to move on from the certainties of Design Bulletin 32 guidance. Recent seminars coordinated by the Design Commission for Wales discussing highway

design found many highway engineers either didn't know about the document or hadn't read it.

More or less radical streets

The term home zone is the UK expression for a particular form of street which is outlined in law and which can be designated with appropriate signs. Not all streets which have been designed with these qualities have sought to have the legal "home zone" status and of course all streets can be more or less radically designed to balance the relationship between vehicle and other street users. At one extreme might be the residential street designed using the Design Bulletin 32 criteria (Department of the Environment and Department for Transport 1992) discussed briefly above (Figure 1 top). Alternatively we could traffic calm this street by introducing "chicanes or humps" (Ewing 1999; Harvey 1992; Hass-Klau 1992; Pharaoh 1992)(Figure 1 middle). Or moving to the more radical approach, and using the new guidance we could introduce shared surface elements (Figure 1 bottom). If we consider the final solution alone we could adopt a radical design in which the whole environment is transformed, or we could possibly choose from the techniques available to us to implement only some features, maybe to save money (see Biddulph 2010; Sustrans No date). Figure 2 illustrates a spectrum of potential street features which can be designed to be indifferent, moderate or good in an attempt to move towards a more radical form of street. In creating a comprehensive scheme it is suggested that the entrance qualities, highway geometry, streetscape and provision of social spaces might be more or less radical in departure from a Design Bulletin 32 compliant treatment, whilst the interface between homes and street can also fall a long some form of spectrum which would encourage a focus or orientation towards the street. This spectrum gives us a sense of the design possibilities associated with streets, highlights the features that we might like to focus on (such as creating a distinctive entrance), but also starts to raise questions about whether more radical forms of street result in more significant changes in street use, or not.

Lessons from previous studies

The aim of this study is to explore whether new build Manual for Streets compliant residential streets encourage a greater variety of street users and activities when compared with more established streets which comply with the less challenging older guidance. Previous research findings help us understand what is already known about this topic.

Research looking at the relationship between the built environment and social relations between people can sometimes be accused of falling into a deterministic trap. In practice this means claiming that if we design an environment in a certain way that certain forms of social relationship will ultimately prevail. This is not the view adopted here. Two more moderate positions are more relevant; if we design a built environment in a certain way forms of social relationship become probable or possible. In relation to this work it is hard to judge whether the design of a street might make certain things probable. It is possible to suggest, for example, that in a home zone it is quite probable that people will drive relatively slowly, but it may be less probable that children will, for example, play there as a result, as there is certainly more freedom available to children to play in a wide range of potential settings. When judging this work it is therefore necessary to accept that the findings explore things that are possible if we adopt certain design strategies, but that ultimately people are free to make choices about how they live in and use these environments.

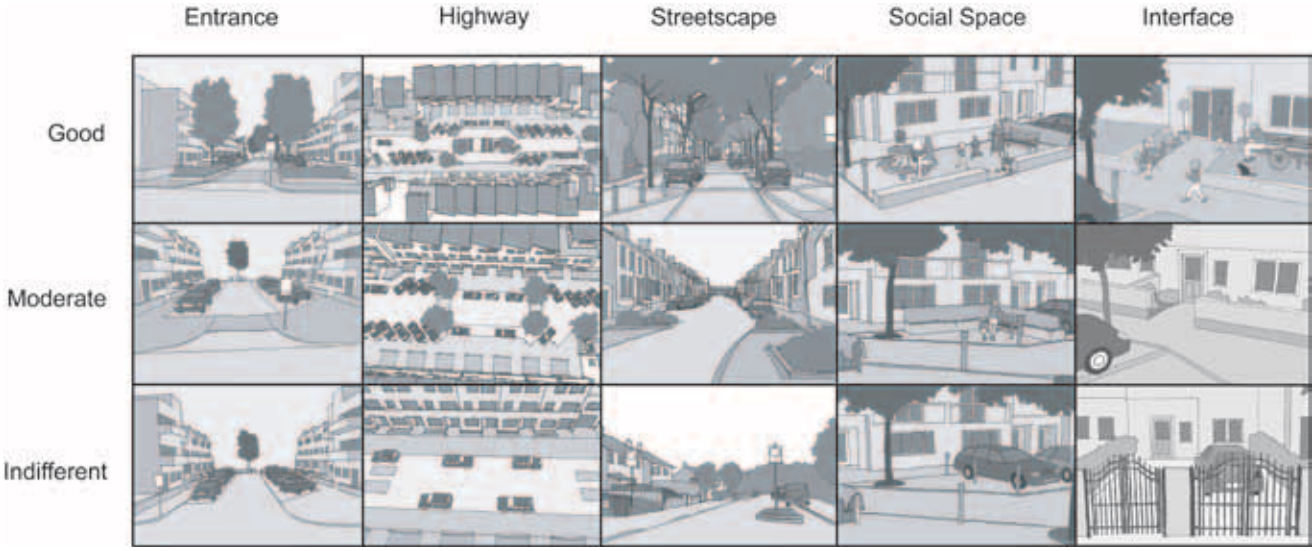


Figure 2

Spectrum of potential street features which can be designed to be indifferent, moderate or good

Studies of street life in residential areas have certainly been less prevalent than work looking at how to affect vehicle movements and, for example, improve road safety. In this respect Ewing and Dumbaugh (2009) provide an excellent summary of international evidence, including the significant role of traffic calming techniques. For the UK York et al (2007) provide evidence from 20 case study areas to show how link widths (lengths of street between junctions) , junction spacing distances, forward visibility and visibility splays can impact on road safety. It is worth summarising the findings from this work here as it provides a context to the new advice in Manual for Streets:

- Lower speeds are associated with reduced road widths and reduced visibility on stretches of street and at junctions.
- Junction and street geometries are the most significant determinants of speed.
- Speed is a key factor in road safety, and evidence here confirms that higher speeds on streets increase the likelihood of both incidences of injury and their severity.
- Complex movements at junctions can result in a higher number of accidents, but highway and junction geometries can lower speeds which will also reduce the likelihood and severity of accidents
- Stopping distances, and therefore visibility, remain safe down to 20 metres, unless other speed reduction measures are introduced which might lower speeds.
- Parking on street and at junctions was found to reduce speeds by 2 – 5 mph due to the perceived danger. The effects of this on road safety were unclear. It was noted that reducing speed increases safety, but parked cars might reduce lines of sight and obscure crossing pedestrians. There was no indication that this resulted in a higher number of casualties from the statistics analysed, although a household survey suggested that reported accidents often related to parked vehicles
- The largest effect on reducing speed was found to be associated

> with reducing lines of sight along a road. A reduction from 120 to 20 metres reduced speeds by about 20 mph on streets and by 11mph at junctions. Sight distances of 40 metres were regarded as most safe as this allowed a margin of error to stop in time should a danger present itself (see York et al. 2007, p. 1).

The thrust of this work is generally clear. To make streets safer it is best to slow down traffic. To slow down traffic it is necessary to work with minimum dimensions and shorter sight lines. There is still some uncertainty about the impact of other traffic calming measures on creating additional safety, although the role of traffic calming generally is not disputed.

In order to look at the relationship between street designs and street activity we need to look at other studies. Most well known is Appleyard's (1981) insight into social relations between residents in his seminal study of 3 streets in San Francisco. This work concluded clearly the residents in quieter streets were better able to develop more meaningful relationships with neighbours and also felt that their neighbourhood was friendlier. Sauter and Huettenmoser (2008) repeated Appleyard's work recently for streets in Basel, Switzerland and found similarly that people who lived in three home zones (called encounter zones) felt more at home, lived there for longer periods, found their streets to be distinctive, and that their streets provided everything that they needed for a happy life when compared with busier streets. Such work focuses on more general quality of life.

Previously cul-de-sacs have been justified as environments in which, for example, children will be allowed to play by parents. Southworth and Ben-Joseph's (2004, p. 31) attitudinal study of 9 California neighbourhoods is broadly representative when they found that:

> "cul-de-sac streets, and especially the lots at the end, perform better than grid or loop patterns in terms of traffic safety, privacy, and safety for play. Residents also preferred the cul-de-sac as a place to live, even if they actually lived on a through or loop street. People said they felt cul-de-sac streets were safer and quieter because there was no through traffic and what traffic there was moved slowly. They also felt they were more likely to know their neighbors. One resident's comment was typical: "Our pets and kids are safer when there is a no-outlet street; you feel kidnapping is less likely—there is more of a sense of neighborhood."

Similarly Handy et al (2008, pp. 172-173) completed an attitudinal study of eight northern California neighbourhoods and also found that cul-de-sacs were:

> "… an important predictor of outdoor play, at least for children between the ages of 6 and 12 years. The significance of cul-de-sacs for children in this age range is consistent both with previous findings that age moderates the effect of the environment on children's play and with previous findings that children living on through streets have fewer opportunities for outdoor play than children living on cul-de-sacs."

The role of cul-de-sacs as an organising devise for the design of

residential areas has been firmly challenged in the new UK guidance, and has evolved as a mantra since the publication of Responsive Environments (Bentley et al. 1985) and ongoing debates about walkability. Cul-de-sacs reduce accessibility and permeability for pedestrians, and people are particularly sensitive to the impact of distance when making travel choices. This has been echoed in the US by similar debate amongst New Urbanists. The possible role of cul-de-sacs cannot be ignored here, although it is thought important to note that we now have a more subtle understanding about how networks for vehicles and pedestrians might overlap but be different. Through routes for pedestrians can easily be closed routes for vehicles, maintaining short routes to key services, encouraging walkability but also keeping certain areas quieter. In addition a through street or cul-de-sac might be part of a wider gridded street network or part of a closed loop which might itself have a significant impact on traffic levels. Even areas within a grid or a cul-de-sac might be more or less busy.

Looking more closely for work related to types of street treatment, in their study of UK 20 mph traffic calmed zones Hodgkinson and Whitehouse (1999, p. 59) went beyond the normal assessment of traffic speed and accident records to discuss whether the traffic calmed streets they studied had resulted in any significant change in terms of how they were used by residents more generally. They concluded: ". . . there has so far been little impact on the function of the streets in the zones." By contrast, in her before and after study of two home zoned streets in Hannover Eubank-Ahrens observed that children (and indirectly, their parents) felt more secure, allowing for a proliferation of types of play. Children gained more contact with adults, which would not have been possible in playgrounds or other isolated play facilities. Play and verbal communication expanded spatially, and involvement with the physical environment generally increased, making the streets livelier. The results were not all good however. For example she also notes that adults in the streets showed little interest in maintaining or enhancing the greenery that had been introduced (Eubank-Ahrens 1985, 1987). More recently Biddulph (2010) in a review of the monitoring of the 14 retrofit home zones in England (referred to above) found that the schemes appear to have made parents more lenient in letting their children out to play, whilst many residents prefer the look of their new streets to traditional layouts. Residents also seem comfortable with the new configurations for parking, and although they may not feel completely safe in shared spaces, they seem to appreciate the greater care that drivers give to using the spaces. He also found that the success of the more affordable schemes suggests that designs do not need to use the most expensive materials to have a good effect. Clayden et al (2006) completed similar opinion surveys on two of the 14 schemes discussed by Biddulph and found very similar results. In addition, however, they also emphasise the very contingent nature of residents' opinions. Noting, for example, how judgements about changes to the streets need to be couched within a broader understanding of the contexts in which they sit, given that some of the projects had also had wider ranging initiatives to deal with anti-social behaviour.

In a slightly more reflective view of the success of London Play's Home Zones Project, Gill (2007, p. 3) also notes that residents discuss that "… home zones make a real difference to children's outdoor play. Children play in the street more, and adults say streets are safer for children's play. What is more, levels of contact and interaction between adults increase, creating a stronger sense of community and making it more likely those parents will feel happy about giving their children greater freedom outside the home as they grow up." He also points out that neighbour willingness

to allow streets to be made more "child friendly" is not universal in situations where streets are being retrofitted. Streets full of quiet parked cars evidently serve some vested interests. He also discusses how a lack of funding has, possibly predictably, curtailed the wider adoption of the concept in established streets. This is due to their cost but also the extent to which this spending clearly benefits only residents in very small areas. He notes the extent to which "watered down" schemes, such as just introducing traffic calming, have therefore been considered more politically expedient, but also wonders if there is adequate evidence that they will change how streets are used (page 25-6), as the previous work has not found evidence that it will.

If we consider the spectrum of street design introduced above, the previous research suggests that it is only really when shared surface home zone qualities are introduced that you see any significant change in how the streets are used by residents, and in particular by children. By contrast a street which is traffic calmed, but which may retain a relatively clear distinction between highway and pavement might perform like a similar but not traffic calmed street. This research uses a range of street types from along this spectrum to explore, from observation work, if this is the case. It also uses a range of through streets and cul-de-sacs to consider what role this attribute might have, in combination with the treatments.

Most of the post-occupancy studies of existing home zones in the UK (or even the cul-de-sac studies from the US) are based on resident opinion surveys. These have involved questionnaires and interviews with residents which explore how they feel about their redeveloped streets. No observation work has been completed of UK schemes, including new build developments, to see whether what people think is actually reflected in how the streets are used. Only Eubank-Ahrens based her research on observation work to explore how two retrofit home zones in Hannover were actually being used after completion. In a similar way, this research has focussed exclusively on observation work to examine how different types of street are used by residents within a UK context.

The Method of Study

The case studies

This study analysed the street life in 10 case study schemes from within England and South Wales. The schemes are being treated as case studies because of the contingent nature of all streets. Streets are typically hard to compare because their social, economic or cultural context vary, because streets will fall at different locations within a network, and of course urban forms or even house types might vary. The areas under consideration also vary in size. Consequently it is not possible to compare directly the findings from these schemes, but it is thought that each case study provides insight into how the different street treatments perform.

Figure 3 lists the case studies and provides some details about their key characteristics. Each case is introduced in more detail below. Figure 4 categorises the schemes according to the criteria discussed above in Figure 2 to provide a summary of where the schemes are judged to fall along the spectrum of street qualities. This assessment might be debated, but it is used merely to illustrate the extent to which some streets are relatively indifferent in terms of some qualities, whilst in other areas they might be better. The designs of each scheme are also discussed in a more detail below.

The first six schemes are all new build projects which have shared surface (or home zone style) qualities which conform to The Manual for Streets aspirations discussed above. They were selected because they are relatively comprehensive treatments as can be seen from Figure 4. They are typically through streets, but they are all located within relatively discrete closed loop networks which connect to busier roads at a limited number of points. This limits traffic to people living in the area and also visitors. Parking is also typically in a variety of locations, also in line with The Manual for Streets advice. Most of them have parking accessed from the house fronts although two, the Broadclose scheme in Bude and the Limetree Square scheme in Street, have some parking within the residential block or behind gardens. In Bude this is a main organising element of the layout in a relatively large area. In Street it is only in a small part of the scheme. These compliant schemes have been the focus of the study, to determine how they are used, but also to explore if there have been any evident problems with them.

Two schemes, Milestone Close and Page Drive, conform to the older guidance, and therefore tend have a lot of indifferent qualities. Both are cul-de-sacs with highway and pavement, detached homes and on-plot parking. In addition two older streets, Jubilee and Somerset Streets are also included. Jubilee is closed to through traffic and contains half shared surface and half highway and pavement treatment, following the redevelopment of half of the street. Somerset is a through street that has been extensively traffic calmed but retains a distinction between carriageway and pavement. These schemes are included for comparison.

The observations

Previous studies of completed home zone environments in the UK have typically used post-occupancy questionnaires to garner resident opinions about their schemes, whilst also measuring traffic speeds and volumes

	Highway network	Carriageway Type		Parking Location			
		Shared surface	Highway and pavement	On Street	On plot, Front Access	Rear/Side/ Front Front Access	Rear Access
Lidgett Square, Allerton Bywater, Leeds	Through streets on a closed loop	■		■		■	■
Montreal Avenue, Horfield, Bristol	Through streets on a closed loop	■		■	■	■	■
Broadclose, Bude, Cornwall	**Cul-de-sacs and through streets on a closed loop**	■		■		■	■
Cornwall Street, Plymouth	Through streets on a small closed loop	■		■		■	
Simplicity and Rambler's Lane, New Hall, Harlow	Through streets on a closed loop	■		■	■	■	■
Limetree Square, Street, Somerset	Through streets and a cul-de-sac on a small closed loop	■		■		■	■
Page Drive, Cardiff	Cul-de-sac		■		■		
Milestone Close, Cardiff	Cul-de-sac		■		■		
Somerset Street, Cardiff	Through street in a quiet part of a grid		■	■			
Jubilee Street, Cardiff	Cul-de-sac	■	■	■			

Figure 3

The case studies and some details about their key characteristics

	Entrance	Highway	Streetscape	Social Space	Interface
Lidgett Square, Allerton Bywater, Leeds	Good	Good	Good	Moderate	Moderate
Montreal Avenue, Horfield, Bristol	Moderate/ Indifferent	Good	Good	Indifferent	Moderate/ Indifferent
Broadclose, Bude, Cornwall	Moderate	Good	Good	Good	Moderate
Cornwall Street, Plymouth	Good	Good	Good	Good	Moderate
Simplicity and Rambler's Lane, New Hall, Harlow	Good	Good	Good	Moderate	Moderate
Limetree Square, Street, Somerset	Moderate	Moderate/ Good	Good	Good	Good
Page Drive, Cardiff	Indifferent	Indifferent	Indifferent	Indifferent	Moderate
Milestone Close, Cardiff	Indifferent	Indifferent	Indifferent	Indifferent	Moderate
Somerset Street, Cardiff	Moderate	Indifferent	Moderate	Indifferent	Moderate
Jubilee Street, Cardiff untreated	Moderate	Indifferent	Indifferent	Indifferent	Moderate
Jubilee Street, Cardiff home zone	Good	Moderate	Good	Moderate	Moderate

Figure 4

An evaluation of the design qualities of the case studies

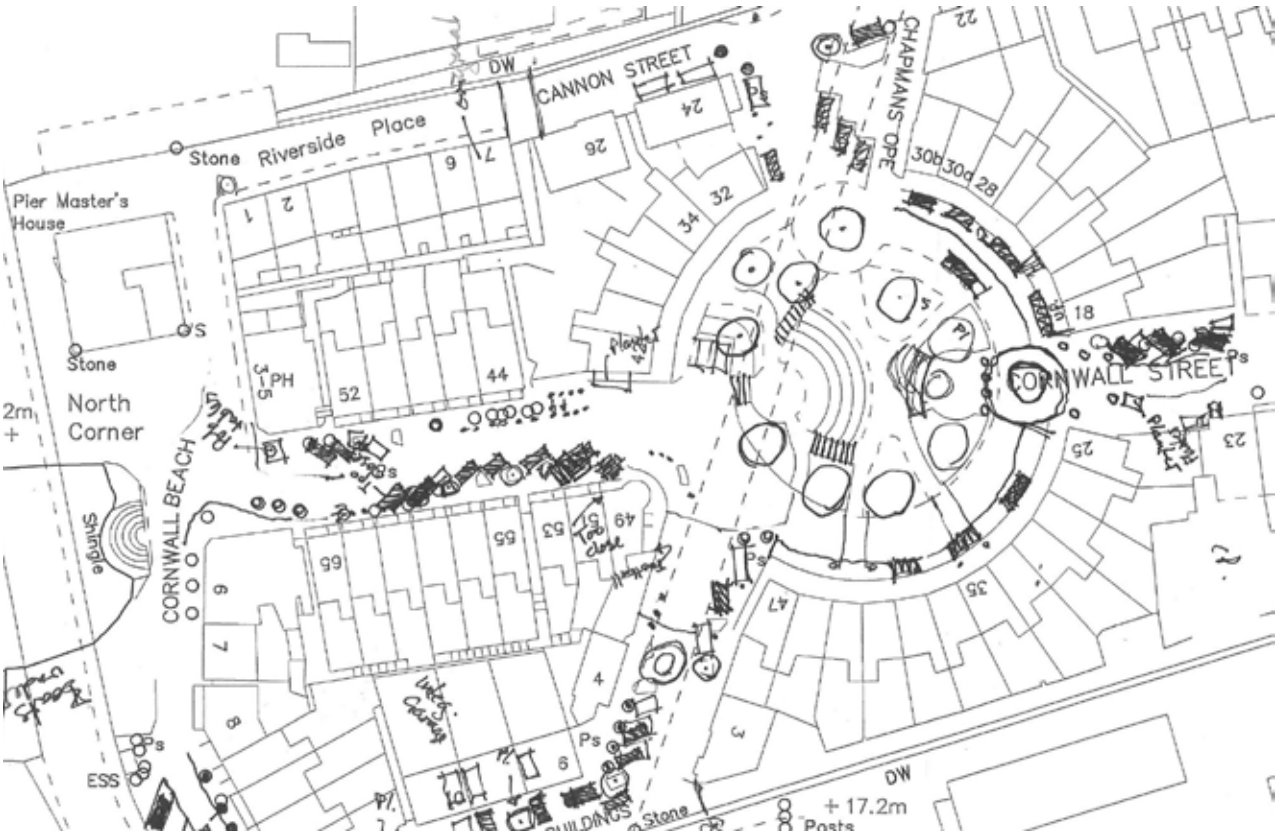


Figure 5

Sketches were made of all of the case study sites to help draw the final scheme diagram

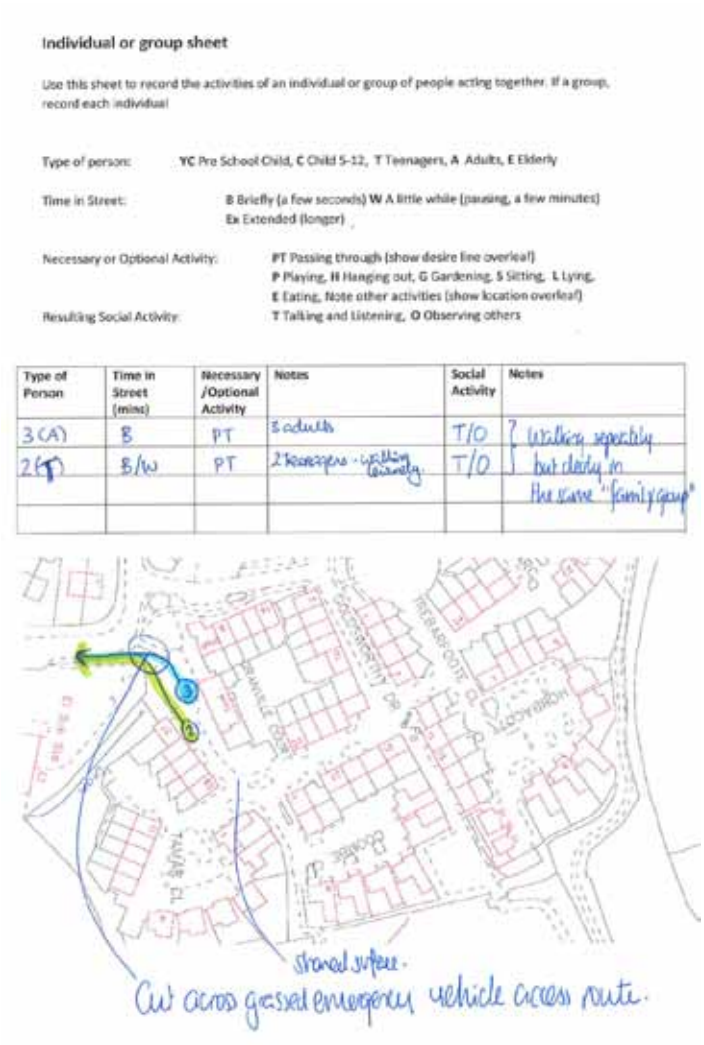
(Biddulph 2010). In this work it was considered interesting to study how the streets were actually used by residents, in a similar way to previous city centre studies (Bobic 2004; Carr et al. 1992; Gehl 2001; Gehl and Gemzoe 1996; Kayden 2000; Project for Public Spaces 2000; Whyte 1980). The work is also in the tradition of, and informed by the wealth of environment and behaviour research related to residential areas which formed the basis of Marcus and Sarkissian's study of "housing as if people mattered"(Cooper Marcus and Sarkissian 1986) and which includes advice on how to design a woonerf. Similar work in residential streets to that completed here was done by Eubank-Ahrens (1985; 1987) in her before and after study of two home zone treatments in Hannover. This work involved observation and mapping work to record people's movements and activities.

Initially scheme drawings were requested from designers and a site visit was made to each scheme to assess its suitability for the work. During the visit the features of the scheme were photographed and sketch mapped (Figure 5) to supplement and often improve on the collected drawings. During the visit vehicular speeds were also measured from some point within the scheme.

The street environments were then each studied for a six hour period during the school summer holidays during fine weather. Observations recorded whether people were pre-school children, children, teenagers, adults or elderly residents. This was in order to determine whether particular categories of person used the street differently. Subsequently counts were made of which people spent how much time in the street according to whether they were there briefly (a few moments), a while (pausing for a few minutes) or longer. This was prepared as a weighted graph to give some indication of the times people were being seen for. The number of people who were seen briefly was merely counted to reflect the minute they were there. The number of people who were seen for a while was multiplied by 3 to reflect the 3 or so minutes they were about.

The number of people who were there for longer was multiplied by 10 to suggest a time of 10 minutes. It must be acknowledged that longer may significantly underestimate the length of time some people spend in the street, as some people played for much longer periods, but the graph gives a very conservative impression. This problem is overcome by the use of time lines which are discussed below.

Following this a record was made of which types of activity people engaged in. To do this Gehl's (2001) categories of necessary, optional and social activity were used. For necessary activity a count of people passing through was made. This would include walking the dog, which is an activity which could fall into either group. For optional activity counts of active play and hanging out were made (no other categories of activity were seen, apart from one person in the ten schemes who was seen gardening). For social activity records were made of people chatting or observing others in some clear way. If people were seen chatting and observing they were counted only once as chatting. The information observed was recorded on a standard sheet for each individual or group of people. Examples of optional and social activity were sometimes photographed to create an impression of the types of activity seen. On the reverse of the sheet the location of the activity was also mapped (Figure 6). No record was made of people who came and went from/in cars. From these numbers graphs were produced which show the types of activity



Individual or group sheet

Use this sheet to record the activities of an individual or group of people acting together. If a group, record each individual

Type of person: YC Pre School Child, C Child 5-12, T Teenagers, A Adults, E Elderly

Time in Street: B Briefly (a few seconds) W A little while (pausing, a few minutes) Ex Extended (longer)

Necessary or Optional Activity: PT Passing through (show desire line overleaf) P Playing, H Hanging out, G Gardening, S Sitting, L Lying, E Eating, Note other activities (show location overleaf)

Resulting Social Activity: T Talking and Listening, O Observing others

Type of Person	Time in Street (mins)	Necessary /Optional Activity	Notes	Social Activity	Notes
3(A)	B	PT	3 adults	T/O	? walking separately
2(T)	B/W	PT	2 teenagers - walking	T/O	but clearly in the same "family group"

Figure 6

On the reverse of the sheet the location of the activity was also mapped

Figure 7
The time lapse camera is position

different groups of people engaged in and the amount of social activity observed. Graphs were also produced showing the percentage splits of what people were seen doing.

The graphs shown below generally use the same number ranges. Schemes are not comparable, but it was thought interesting to use the same scales because for example, some smaller schemes were used a lot, and it was thought interesting to be able to see this graphically.

Two techniques were used for the observations. The first involved a researcher walking through a scheme for a six hour period recording, mapping and photographing the people and their activities. This approach was used for the six larger schemes outside Cardiff.

The second technique involved experimenting with time-lapse cameras erected on lamp posts. The cameras were hidden in neutrally painted boxes and put up in the remaining four streets for a 24 hour period (Figure 7). Three of the streets had more than one camera put up at the same time. This was necessary due to bends in, or the length of, the streets. The cameras were erected above eye level allowing a full view above parked cars, and set to take images every 7 seconds. This time was selected as it allowed a long battery life, allowed general movements of cars and pedestrians to be recorded, whilst also keeping recordings to a minimum in both length and file size. All cameras had their date and time set so a clock would show the time of day precisely to the second. This allowed a precise mapping of activity in both space and time. Of the 24 hour period of filming six hours were then selected for more detailed analysis. Having looked at films from a number of streets it was noted that late afternoon and early evening tended to be busiest, whilst this time also embraced evening rush hour traffic. The times on the films allowed them to be edited down to the second. Using the recording the

same sheets were then filled out to provide results from the streets, whilst the time lapse cameras also provided still images of the activities observed.

The cameras allowed some additional analysis of the four observed streets. Two time lines were produced. One recorded when vehicles came into the streets. This allowed a count of cars using the street over the period, and therefore also an assessment of the impact of the volume of cars on activity. The second recorded precisely the length of time that the streets were occupied by people, and provides a clearer sense of how long the streets were occupied by people; something that the counts could not do.

Using the map information, summary maps for some schemes were produced to show the areas of the streets used by children playing. From this we can understand how the treatments shape the nature and location of the activities observed.

Discussing the schemes

Allerton Bywater, Leeds

The Design

The first significant phase of development (phase 3A) at the Allerton Bywater Millennium Village resulted from a partnership between the UK's Office of the Deputy Prime Minister, English Partnerships (now the Homes and Communities Agency) and the private developer Miller Homes. Built and assessed around what were seen as stringent sustainability criteria (Department of the Environment Transport and the Regions 2000), the scheme includes a comprehensive shared surface treatment which was heavily promoted to potential buyers. Three shared surface streets provide access to the wider project which focuses on Lidgett Square (Figure 8). Within the scheme a mix of 197 houses and apartments are typically arranged in periphery blocks, with homes sitting on the back of the streets.

The form of the neighbourhood is defined by building frontages with the vast majority of homes facing, and with front doors opening from the streets. The streets are surfaced with block paving, with some variation in material highlighting pinch points and some low ramps (Figure 9). In general traffic calming is enforced by tight dimensions (often requiring cars to give way) and short sight lines. Throughout to scheme trees protected by four robust bollards are planted within the street space (Figure 10). There is no protected route through for pedestrians. There are no play areas within the scheme, and there are no designated seating or social areas, apart from some low walls. Parking is in a mix of configurations, including on street, on plot, in apartment courtyards or integrated garages (Figure 11).

The scheme is located in relative isolation, but in walking distance (200 metres) from some local shops. There is a large play space for children within walking distance containing some fixed play equipment. The main shopping and community services are in Castleford about 2 miles away, which most people here would probably drive to.

In general the overall impression is of a comprehensive highway and streetscape treatment, with an intimate but relatively traditional relationship between home and street. Within the project there are few special features to support meeting, playing and staying which we will see elsewhere. The scheme is currently relatively isolated, but the whole development is at a relatively early phase.

How is it used?

The average traffic speed of 39 vehicles measured within the scheme was 14.45 mph. This is a good slow speed and reflects the success of the combined highway features.

Figure 12 shows the total number of people seen in these streets and what they were doing. The scheme was observed during the last weekend of the school half term holiday. The day was warm and Lidgett Square was in the sun during the afternoon. Many families were seen leaving the site in cars which were not counted. There is a high dependency on car use by people leaving the development.

Figures 13 and 14 give an indication of the amounts of time that different

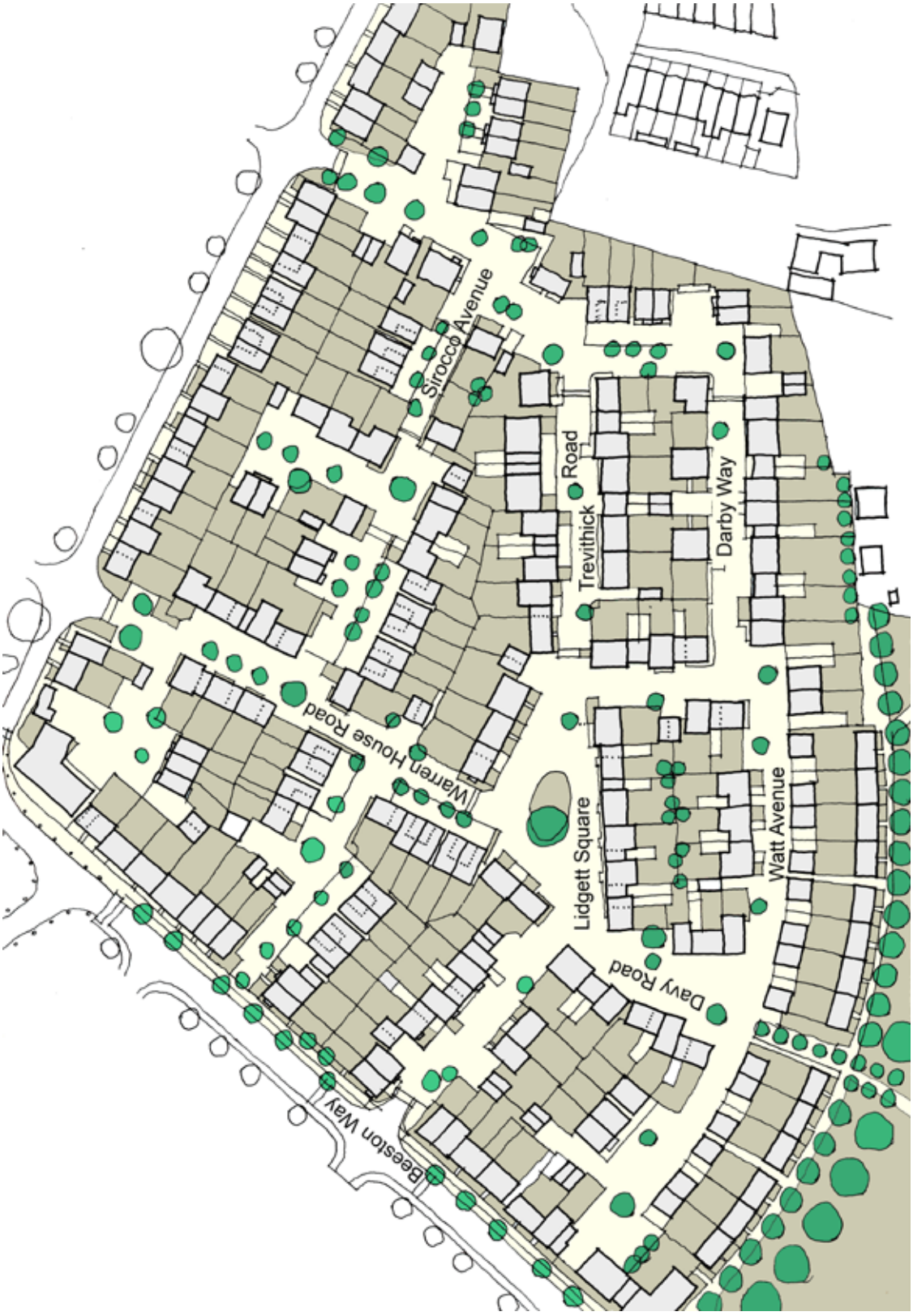


Figure 8
Allerton Bywater Millennium Village Phase 3a

Figure 9

The streets are surfaced with block paving, with some variation in material highlighting pinch points and some low ramps

Figure 10

Throughout to scheme trees protected by four robust bollards are planted within the street space

Figure 11

Parking is in a mix of configurations, including on street, on plot, in apartment courtyards or integrated garages

Allerton Bywater				15.00 – 21.00 Sunny`					
	Time in the Street			Necessary or Optional Activity			Social Activity		
	Briefly	A While	Longer	Passing through	Active Playing	Hanging Out	Talking	Observing	Not socialising
Pre School Children	6	7	1	7	5	2	9	3	2
Children	8	12	21	9	37	-	41	1	-
Teenagers	3	13	-	5	3	8	12	3	1
Adults	26	28	1	34	-	20	38	14	2
Elderly	3	3	-	6	-	-	5	1	-

Figure 12

Table showing the total number of people engaging in activities in the Allerton Bywater scheme

Figure 13

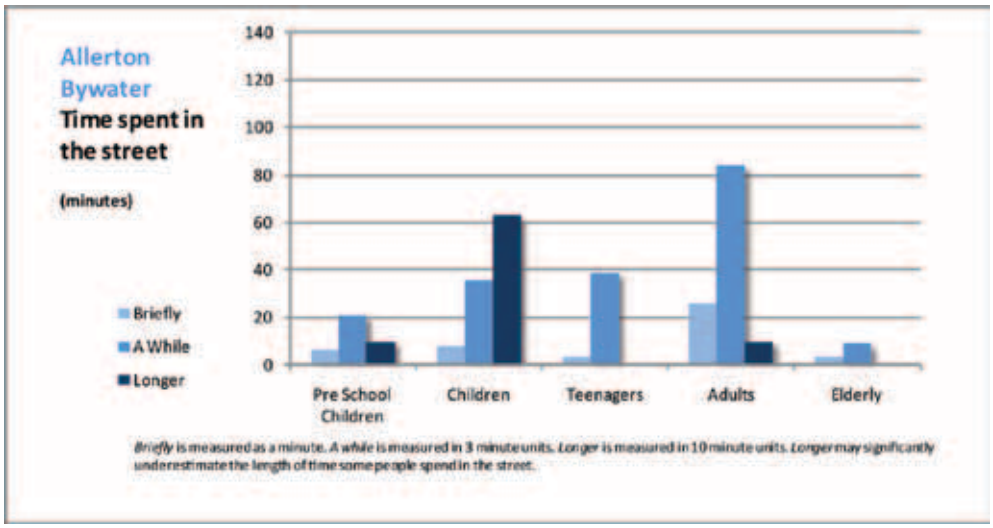
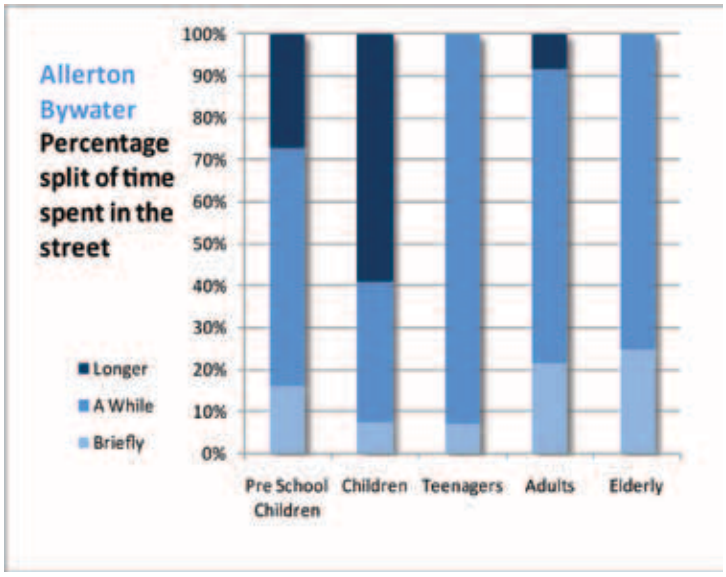


Figure 14



groups spent in the street using the weighted graph. It emphasises the reasonably long time that a group of 21 children were seen playing. Most children seen out were boys playing with scooters, skateboards or footballs. Very few girls were seen.

Compared to other smaller schemes (see below) not that many adults were seen, but of those that were half stayed in the streets for a while, with one staying longer. Compared to other schemes this is also a reasonable proportion and probably reflects the relatively isolated nature of the scheme. In other schemes discussed below teenagers in particular tended to pass through to other locations, whilst here a reasonable proportion hang out and play in the scheme, even if they don't spend long doing it. Figures 15 and 16 confirm that the largest group observed doing one activity is the children playing, whilst a significant proportion of adults also hang out. Figures 17 and 18 looked at together show that the scheme is very social, with the vast majority of people seen involved in some kind of social engagement, as one might expect from the types of activities and durations observed.

Figure 15

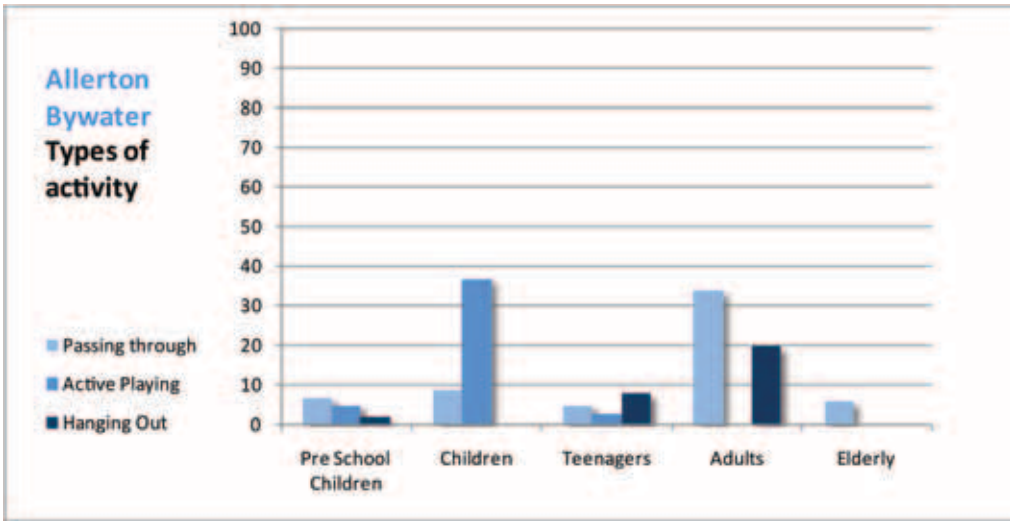


Figure 16

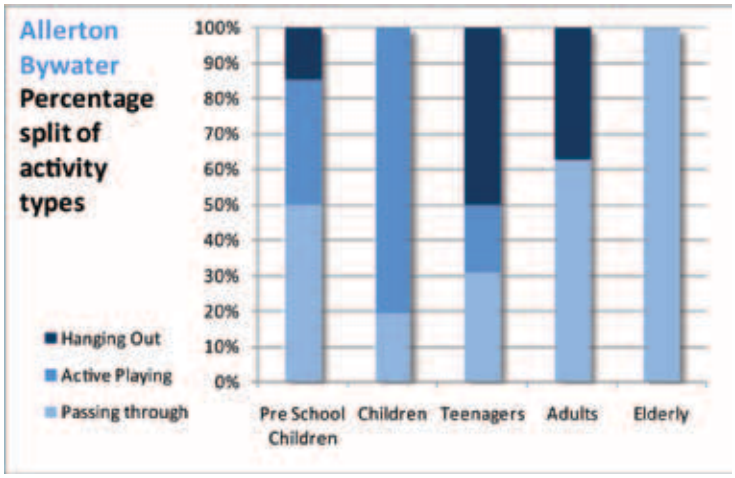


Figure 17

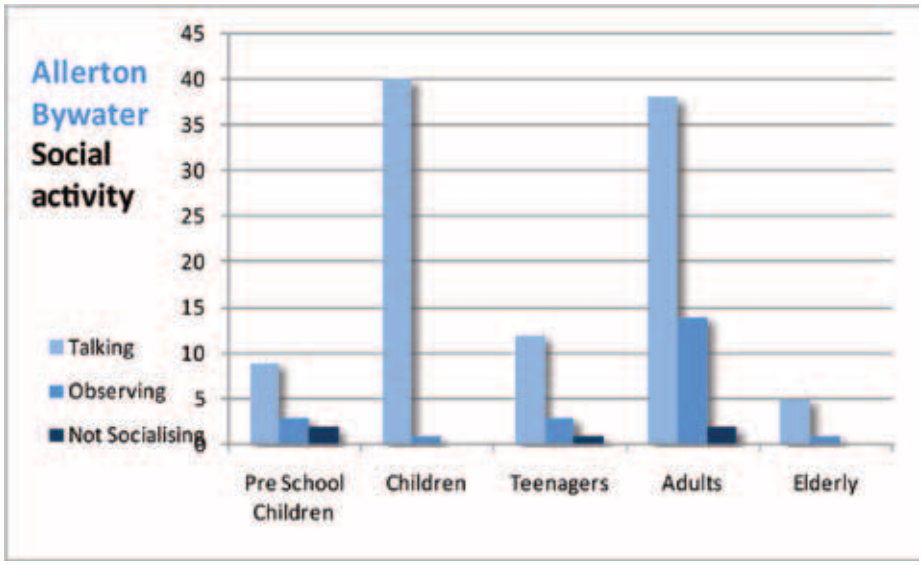
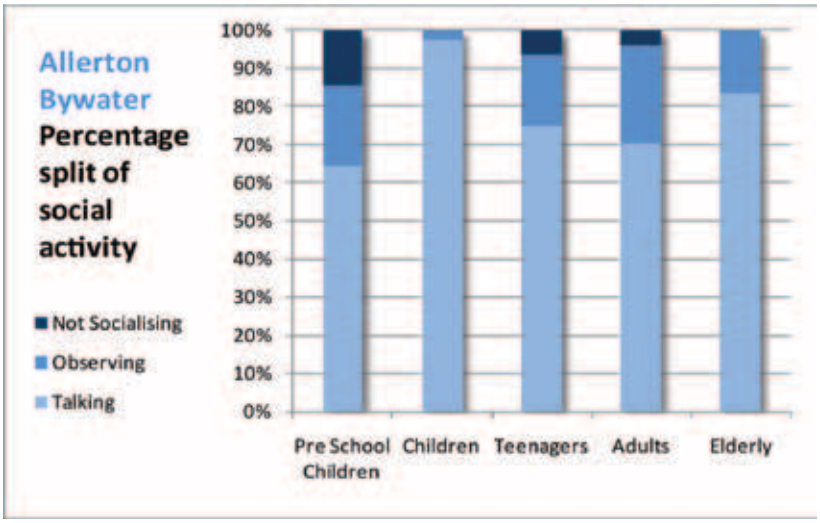


Figure 18



Horfield, Bristol

The Design

This scheme in north Bristol emerged principally due to the commitment of the city council's highway department to the concept of home zone treatments. During the national home zone campaigns discussed above, Bristol employed a dedicated home zone officer, ran a series of seminars to explore how the concept might be implemented locally, and built retrofit schemes in the Dings and Southville areas of the city which have been successful. The site of this new development used to contain the council owned Upper Horfield Estate. Built in 1926, the estate was popular until more recently the homes started to experience serious structural problems and needed to be replaced. As a result the council decided that the home zone concept should be piloted in a new build scenario. The resulting development has been a partnership project involving the private developer Bovis Homes, Bristol Community Housing Foundation and Bristol City Council, with the Housing Foundation managing a social housing element of the final scheme.

This field work focussed on the area of development to the east of Hazel Grove and the west of Filton Avenue (Figure 19). The scheme is within easy walking distance from neighbourhood uses on Filton Avenue. The scheme is built loosely onto the previous street pattern, but introduces a new Auden Mead green space at the junction of Montreal and Hazel Grove, and some grass in the centre of a section of Montreal Avenue (Figure 20). There is some more pedestrian permeability generally through what were larger blocks, and a new shared surface treatment throughout. Shakespeare Avenue (Figure 21) and Hazel Grove connect back to the wider street network, and Montreal Avenue is a significant route which connects the scheme internally. These streets contain a mix of 2 storey family houses with 3 storey apartments at key locations. Other smaller streets typically contain family housing. The built form clearly defines the streets and creates a continuous building frontage. Homes therefore typically face the street with parking on-street and on-plot parking, although the apartments have parking in rear parking courts. All buildings typically have some kind of small front garden and are set slightly back behind hedges and low fences. There is a small group of homes set a little back behind on-plot parking (Figure 22). This creates a relatively traditional relationship between the home and street.

The highway entrances to the scheme are a little understated, with few prominent "gateway" qualities to create a radical change in character (Figure 23). The streetscape, however, is completely transformed and typically uses red and grey brick paving to highlight carriageway, parking and pedestrian areas. Kerbed planting areas and new and established trees green the streets and act as calming. Bollards are used sporadically to protect certain areas. Different sections of the streetscape are dealt with differently reflecting the nature of the neighbouring buildings and how parking has been dealt with, but materials are similar and the treatment is comprehensive throughout, with only a few sections looking a little bleak due to a lack of planting (Figure 24).

Apart from the green space at Auden Mead, there are few social spaces created apart from a bench on Montreal Avenue. So there are no places designed for children's play and few designed for other residents to spend time in.

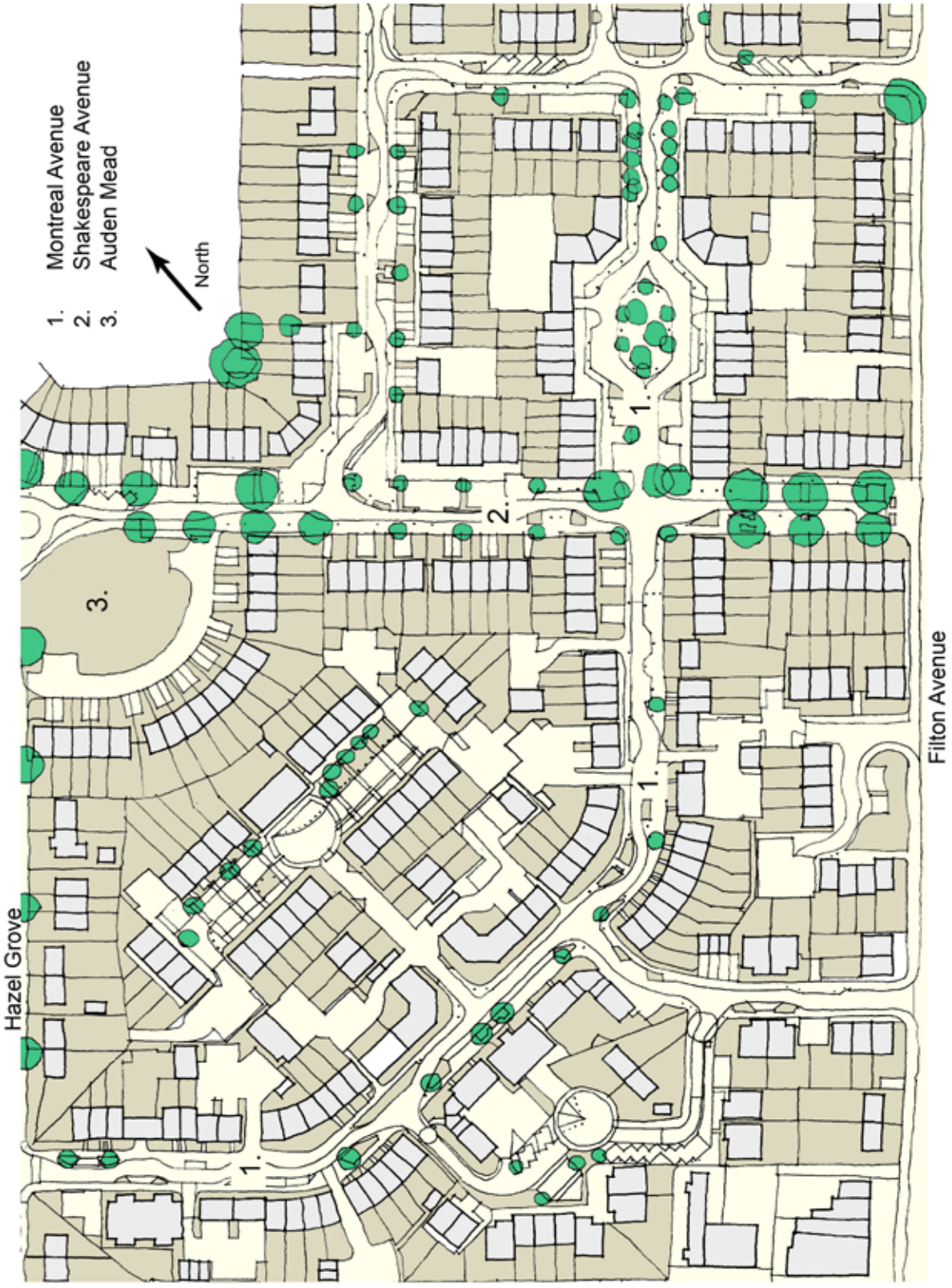


Figure 19 The Horfield home zone area in Bristol

Figure 20 Grass in the centre of a section of Montreal Avenue

Figure 21 Shakespeare Avenue

Figure 22 The small group of homes set a little back behind on-plot parking, also on Shakespeare Avenue

Figure 23
The highway entrances to the scheme are a little understated, with few prominent "gateway" qualities to create a radical change in character

Figure 24
Some areas look a little bleak due to a lack of planting

Horfield				10.00 – 14.00, 15.00 – 18.30, Sunny					
	Time in the Street			Necessary or Optional Activity			Social Activity		
	Briefly	A While	Longer	Passing through	Active Playing	Hanging Out	Talking	Observing	Not socialising
Pre School Children	2	-	1	2	1	-	-	-	3
Children	12	11	8	5	23	2	22	6	3
Teenagers	5	-	-	5	-	-	-	-	5
Adults	47	2	1	47	-	3	10	1	39
Elderly	10	-	-	10	-	-	1	-	9

Figure 25

Table showing the total number of people engaging in activities in the Horfield scheme

How is it used?

The average speed of cars measured passing through this site was just less than 16 mph. This is also a reasonable and safe speed, but faster than walking pace.

Given the size of the area the Horfield scheme was relatively quiet. Figure 25 shows the total number of people seen in these streets and what they were doing. The weighted graph (Figure 26) gives an indication of the amounts of time that different groups spent in the street. It emphasises the reasonably long time that a group of children were seen playing when compared to other users. The site was the scene of playing by groups of children within the street space within specific areas of the scheme for long periods of time. They tended to play within the vicinity of their homes. They played with balls, bikes, hoops and scooters and they played around and on the bollards (Figure 27). One pre-school child played for a long period in their front garden. Adults and a few teenagers tended to pass through the scheme although none stayed for any length of time, apart from one adult who gardened. Figure 28 confirms that the largest group observed doing one activity were adults who passed through, but this is followed by the number of children seen playing. Compared to other schemes discussed below it is worth stressing how few adults passed through this scheme despite its permeability, its vicinity

Figure 26

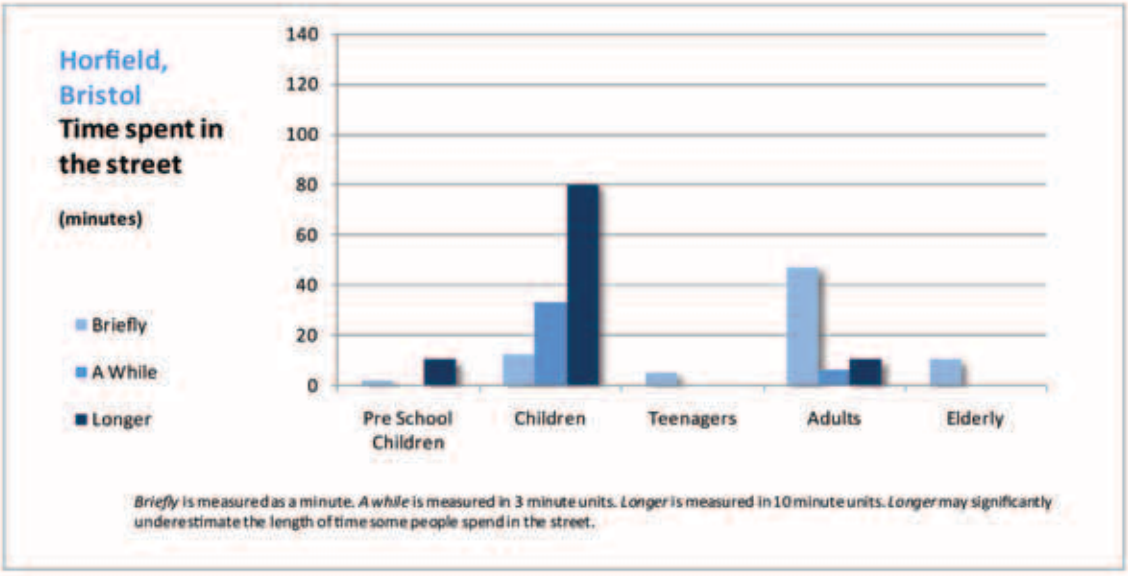
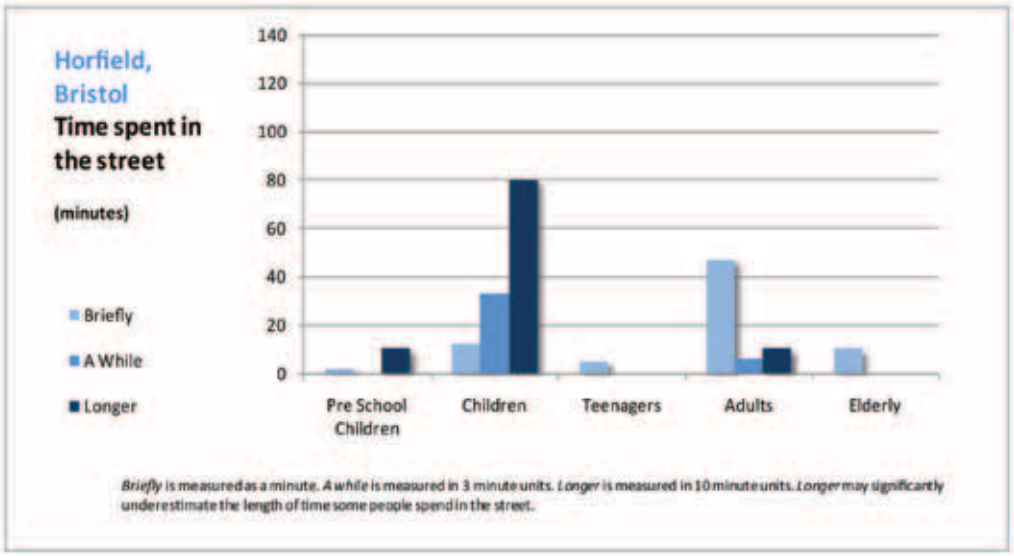


Figure 27
Images of children's activity in the streets (Photos Ruofan Li)

Figure 28



to neighbourhood uses and the size of the area looked at. Figures 29 and 30 looked at together show that apart from the children, few people were seen socialising. The figures show how it is the children who are benefitting from the treatment on this occasion, whilst the observations confirm that they do play freely in the streets between friends' home.

Figure 29

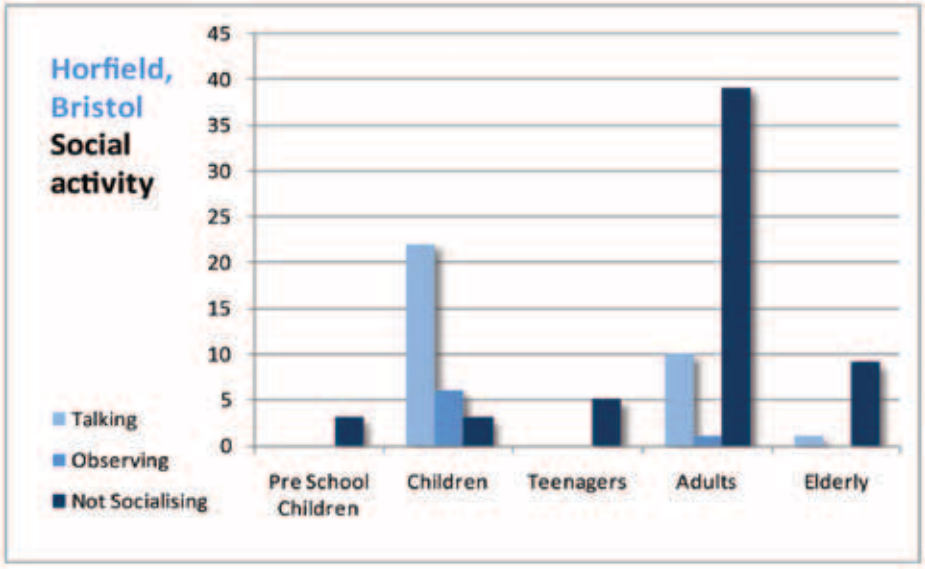
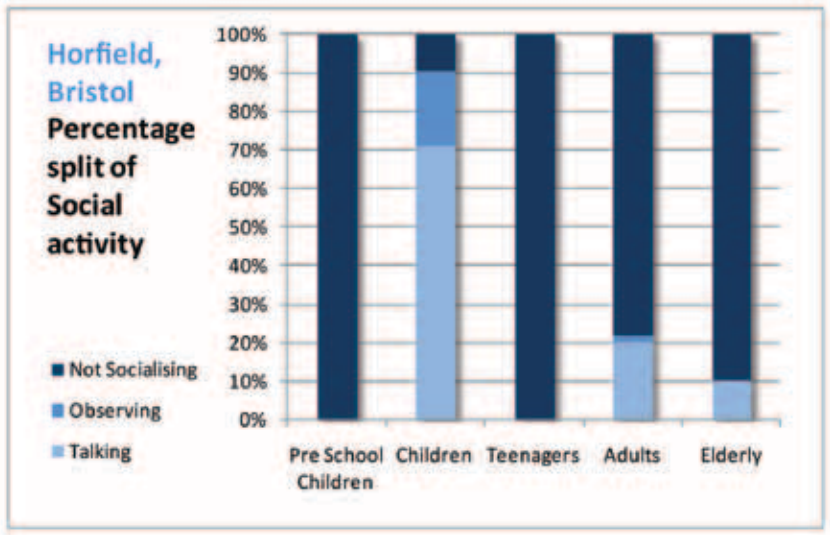


Figure 30



Broadclose, Bude, Cornwall

The Design

Somewhat distant from much of the UK is the Broadclose development in Bude which through its public realm design also encompasses the vision of the Manual for Streets. The scheme is on land that was owned by North Cornwall District Council. They employed ECD architects and LDA Design to develop a masterplan that was awarded outline planning consent. The final scheme was designed by the Trewin Design Partnership for the Guinness Trust, Westcountry Housing Association, private developers Midas Homes and the Council. The scheme contains 127 terraced houses, 26 courtyard houses and 20 apartments. The finished scheme was shortlisted for a Housing Design Award in 2007.

The scheme is built on the edge of Bude, but also happens to be in comfortable walking distance of a large out-of-town supermarket. Despite being relatively indirect by car, it is also about 600 metres to the edge of the town centre by foot or bike.

The scheme (Figure 31) is designed around a large green space at its entrance which creates a relatively prominent focus to the development, but also makes an attractive transition for neighbouring homes. The space has good frontage, is overlooked by homes and is well landscaped for incidental use (Figure 32). The scheme has one reasonably busy highway entrance, which after a short stretch splits into two access roads which serve a distinctive series of shared surface parking courts. Most urban designers will balk at the extensive use of parking courts which sometimes are reasonably large, backed onto by many properties, accessible to all and which sometimes have little surveillance (Figure 33). In contrast they will enjoy the mix of house types and some of the smaller and very intimate landscaped courtyards which have frontage from both sides (Figure 34). Parking is nearly all in either rear or front parking courts, with a few odd spaces in between in the shared surface areas.

The layout is full of diversity and intricacy with an intimate "village" character, and some tight streets dimensions, which judging from the evidence of accidents involving street furniture have tested some residents' driving and parking skills (Figure 35). The houses are particularly carefully designed in a contemporary vernacular style that picks up loosely on local styles, materials and colours. Most define some form of space, be it the main open space, a short street or a home zoned courtyard. Many also, however, have a rear boundary to a parking area or through way (Figure 36). These boundaries are often interesting and well detailed with a mix of stone, timber and white rendering combining well (Figure 37).

The use of landscaped courtyards is really much like a cul-de-sac layout, although the courtyards are all connected together for pedestrians, and in particular children who can move very freely around the scheme. The lack of connectivity to a wider community, however, makes the courtyards relatively isolated and quiet.

The main access road has an asphalt highway and pavement (Figure 38); but with speed humps and short distances to junctions it is not designed for speed. Into the scheme the shared surfaces are all block paved, but with asphalt used to define the parking spaces (Figure 39). The varied building line and varied alignment of boundary treatments adds to the variety discussed above which is also reinforced by an interesting mix of very well planted borders, low brick and stone walls and seats, stone and

Figure 31 Broadclose, Bude, Cornwall

Figure 32 The scheme is designed around a large open space at its entrance

Figure 33 Parking court

Figure 34 A residential shared surface courtyard

Figure 35
There is evidence of accidents involving street furniture

Figure 36 Rear boundaries often front a public space

Figure 37
Boundaries are often interesting and well detailed with a mix of stone, timber and white rendering.

Figure 38 The main access road

Figure 39
Into the scheme the shared surfaces are all block paved, but with asphalt used to define the parking spaces

Figure 40

The landscaping is characterised by very well planted borders, low brick and stone walls and seats, stone and wooden planters and robust wooden bollards

wooden planters and robust wooden bollards (Figure 40). The main space is the obvious social focus for the scheme, but there are incidental places to sit on walls throughout the scheme.

How is it used?

The average speeds recorded here were just below 14 mph, although measurements were taken from vehicles accessing the scheme on the calmed stretches of highway. Given the layout of the scheme it would have been hard to catch cars moving in the courtyards, but their speeds would have been lower. This speed compares well with the other home zone treatments.

Figure 41

Table showing the total number of people engaging in activities in the Bude scheme

Broadclose, Bude	13.15 – 14.00, 18.30 – 19.30, 9.30 – 12.30, Overcast								
	Time in the Street			**Necessary or Optional Activity**			**Social Activity**		
	Briefly	**A While**	**Longer**	**Passing through**	**Active Playing**	**Hanging Out**	**Talking**	**Observing**	**Not socialising**
Pre School Children	11	6	2	13	12	-	6	2	11
Children	18	20	11	22	31	16	33	16	-
Teenagers	40	18	-	48	-	11	39	16	3
Adults	100	48	5	132	-	8	61	27	65
Elderly	11	6	-	17	-	1	5	5	7

Figure 41 shows the total number of people seen in these streets and what they were doing. Figures 42 and 43 illustrate together that the majority of activity is a combination of adults staying briefly and a while and passing through, in combination with children playing for a longer period or a while. The vicinity to the larger store really supports the coming and going and the incidental meeting of adults which mean that they stop for a while. Many of the children who stayed for longer made use of skateboards and bikes, and sometimes made circuits of the estate. Compared to the total number of people using the scheme, the group of children playing for longer is relatively small, but as with other home zones they are in the space for quite a time. More children were observed for longer periods on either the access road highway or pavements. Interestingly, compared to other schemes the home zone courtyards tended to be relatively quiet with the majority of the activity occurring in and around the main open space which children tended to use as a meeting and hanging out space. It is possibly the case that the shared surface courtyards here are too intimate, or that children from different parts of the estate seek out more neutral territories to come together. Pre-school children were also seen with adults passing through on the way to the shops, but they would also linger a while and play on the walls and steps.

Figure 44 illustrates that a reasonable proportion of people are socialising, with about half of the adults and elderly and a very significant majority of teenagers passing though and engaging in some kind of social activity. Children are again doing nothing but socialising in one form or another. The scheme performs particularly well for teenagers and children in this respect.

Figure 42

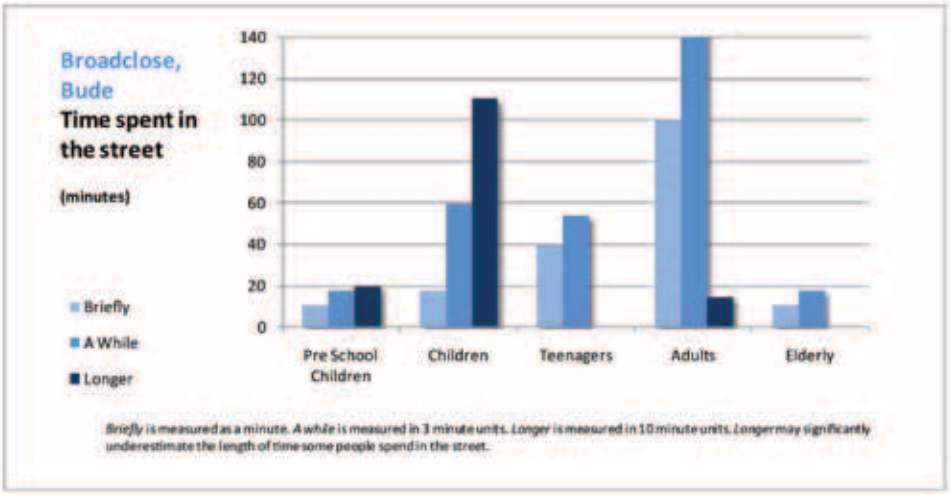


Figure 43

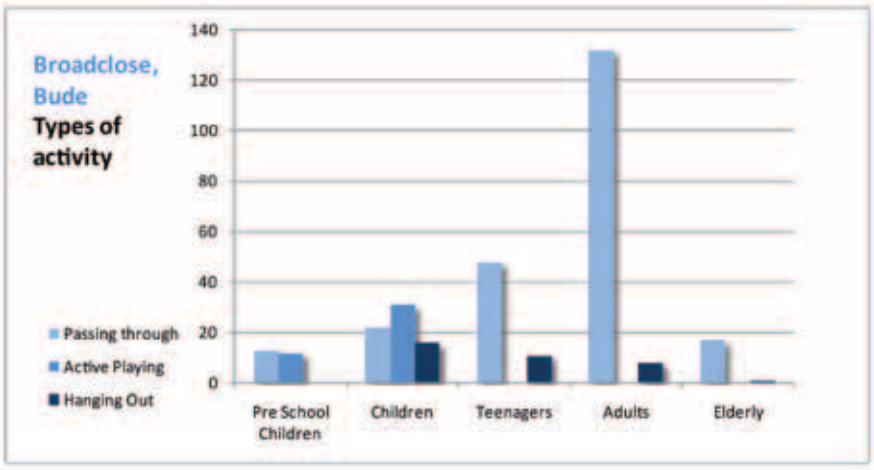
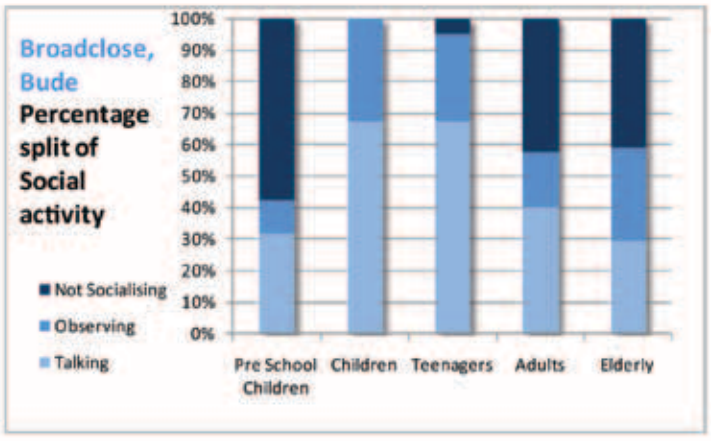


Figure 44



Gun Wharf, Plymouth

The Design

This scheme in Plymouth, like the Horfield project in Bristol, replaces previous social housing owned by the city council. It is commonly known as Gun Wharf (Figure 45) and includes Cannon and Cornwall Streets. It was a CABE Building for Life award winner in 2006 where it is celebrated for the quality of its streetscape. The scheme was designed by Plymouth based architects and urban designers Lacey, Hickie Caley and is in the Devonport area of Plymouth. It was developed by Midas Homes who also developed Broadclose in Bude. The scheme contains 99 dwellings in mixed forms of ownership, including a range of small apartments and maisonettes and a range of 2, 3 and 4 bedroom family houses. 46 of the homes in the project are managed by Devon and Cornwall Housing Association. It is wedged in between Ministry of Defence dockyards, and is an early phase of a wider renewal initiative in the Devonport area. The scheme was finished in 2006, and has set a benchmark for schemes in the wider area.

Although quite self-contained the scheme is within easy walking distance of neighbourhood facilities on Marlborough Street and bus routes to the city centre. The northern and southern boundaries are high dockyard walls. The western boundary drops away and opens out to spectacular views of the water, with access provided by old steps to a small beach (Figure 46). At the bottom of Cornwall Street an established pub, with seating outside, fronts a small space with older buildings retained and built into the new scheme (Figure 47). The lower end of Cannon Street also contains older homes that survived the redevelopment.

The new scheme forms a continuous street frontage along both sides of Cornwall Street and one side of Queen and Cannon Streets (Figure 48). The aim was to create a relatively sharp distinction between public and private space. Most distinctively the scheme has a circus at its centre which contains seating, a piece of public art and is extensively landscaped in terraces. This space is overlooked by 3 storey homes which have reasonably extensive glazing (Figure 49). There are some other 3-storey buildings at the entrance to Cornwall Street which combine with the streetscape to create a distinctive entrance to the area (Figure 50). Homes typically sit behind small setbacks, but with doors opening onto the street spaces. Parking is generally on-street, but with a small parking court provided in one area. Parking doesn't seem to be designated. In one instance parking was a little uncontrolled due to a lack of frontage protection and anti-social parking (Figure 51). The architecture and style embrace a contemporary vernacular which combines with the unusual streetscape to good effect. Bay windows, in particular, allow living rooms in the houses to project into the street, giving them some view along the streets and down to the water.

The streetscape itself is confidently designed with a comprehensive and attractive shared surface treatment throughout. The scheme contains concrete and stone paviours combining to define highway, parking and pedestrian areas, with a simple use of circle patterns to emphasise junctions (Figure 52). Low stone walls and well stocked planters also create seating areas within the streets, protect pedestrian areas and define angled parking (Figure 53). Bollards and spherical concrete balls protect some building entrances and corners.

Figure 45 Gun Wharf scheme in Devonport, Plymouth

Figure 46
Views through the scheme and down to the water (Photo Ruofan Li)

Figure 47
Existing buildings integrated into the development

Figure 48
The scheme forms a continuous street frontage along both sides of Cornwall Street

Figure 49
The central circus

Figure 50
The entrance to Cornwall Street

Figure 51
Anti-social parking

Figure 52

The scheme contains concrete and stone paviours combining to define highway, parking and pedestrian areas, with a simple use of circle patterns to emphasise junctions

Figure 53

Low stone walls and well stocked planters also create seating areas within the streets, protect pedestrian areas and define angled parking

How is it used?

The average vehicular speed here was 14.45 mph measured along the top section of Cannon Street. This speed is comparable to the other home zones.

Figure 54 shows the total number of people seen in these streets and what they were doing. Figure 55 illustrates graphically the significant use of this scheme by a large number of children for long periods of time. This use clearly overshadows the amount of time other people spend here. They played in the street for longer or a while, typically with wheeled toys, but also other props like a ball or even water pistols. Features of the streetscape such as bollards, steps and bins were also played with or on (Figure 56). They tended to use the central area for longer periods, although when their areas of play were mapped (Figure 57) it is clear to see their range was quite wide within the scheme. Pre-school children tended to play in groups with the other children, with only two passing through with adults. As a proportion of the totals there were a few more

pre-school children seen here when compared to other schemes, which possibly reflects the perception of how safe the environment is.

The majority of adults passed through briefly, but sometimes in pairs talking. Some chatted outside their homes for a while or longer. Figure 58 illustrates that when compared to many other schemes a reasonable proportion of the adults seen also spend longer here. Figure 59 illustrates that most of the people seen here were children playing in the streets, although a reasonable number of adults also come and go and hang out. As with other schemes the younger people are all socialising, whilst a majority of adults also engage with others as well.

Figure 54

Table showing the total number of people engaging in activities in the Plymouth scheme

Gun Wharf, Plymouth	13.00 – 19.00. Grey and a little windy and cold, but no rain.								
	Time in the Street			Necessary or Optional Activity			Social Activity		
	Briefly	A While	Longer	Passing through	Active Playing	Hanging Out	Talking	Observing	Not socialising
Pre School Children	2	-	6	2	6	-	7	1	-
Children	10	10	27	8	41		44	3	-
Teenagers	3	-	-	3	-	-	-	-	3
Adults	24	8	3	24	-	11	16	5	14
Elderly	-	-	-	-	-	-	-	-	-

Figure 55

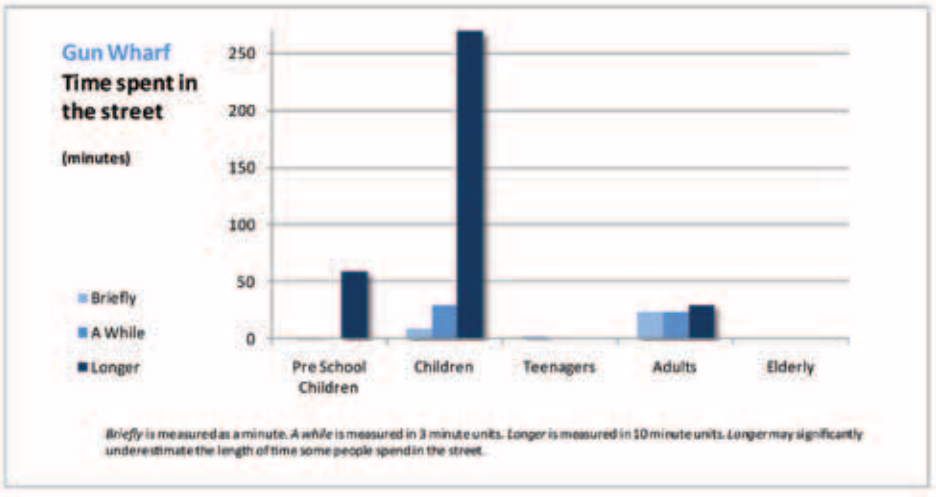


Figure 56
Examples of observed play
(Photos Ruofan Li)

Figure 57
Mapping of patterns of play

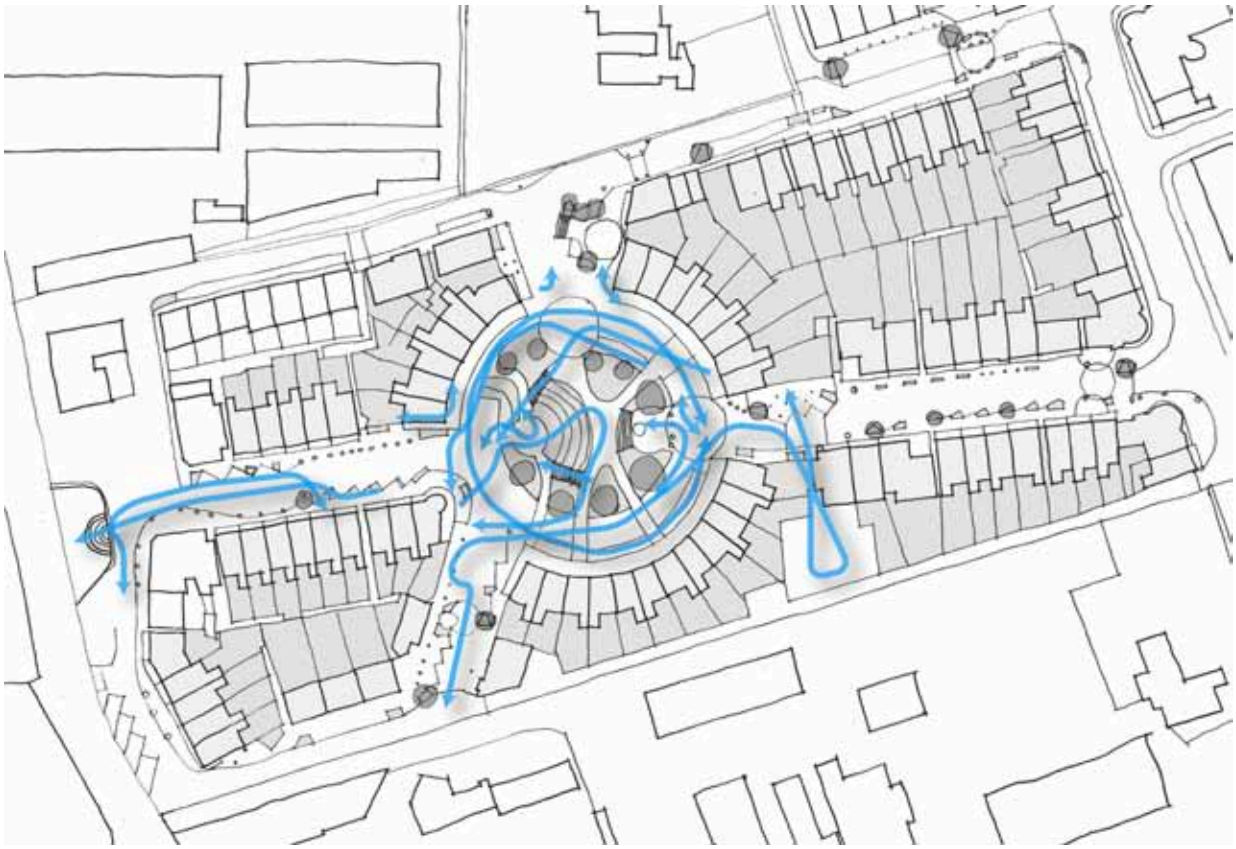


Figure 58

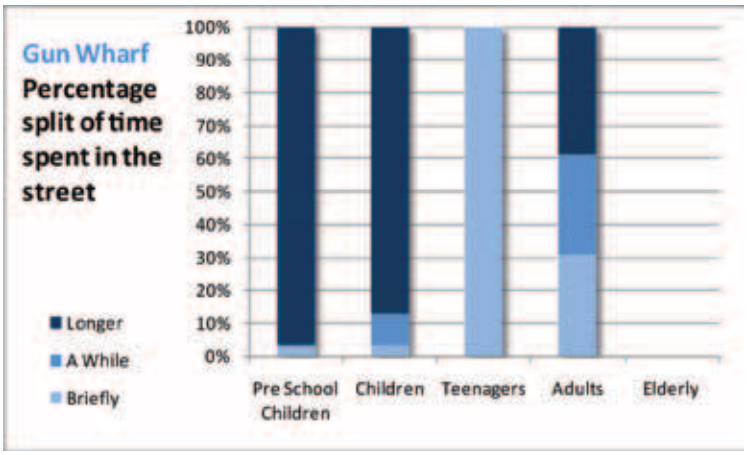
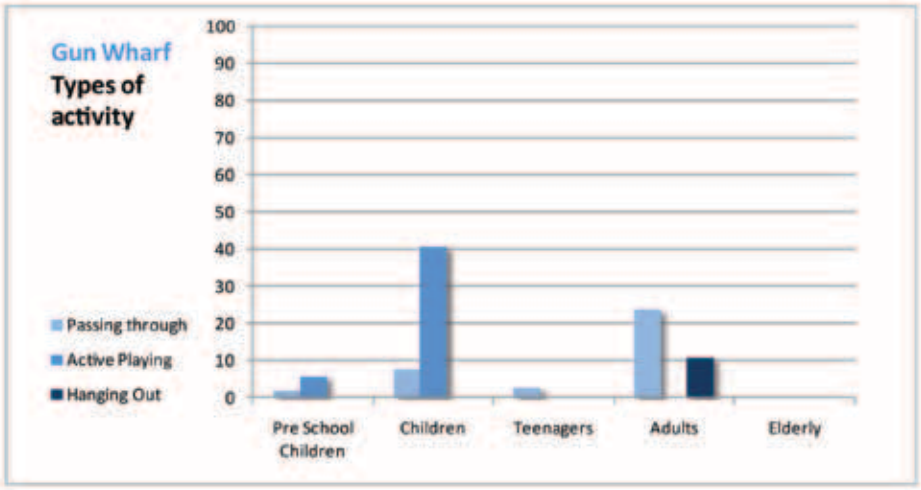


Figure 59



Simplicity and Ramblers Lanes, Newhall, Harlow

The Design

Newhall is an exemplary residential development which, although isolated from Harlow, seems to embrace many of the design and development ambitions to which urban designers aspire. The project is well known. The neighbourhood is based on an exemplary masterplan produced by Roger Evans Associates (now REAL studios) for enlightened land owners Newhall Projects. Phase one of the development is complete. It was originally planned to contain 440 homes and includes buildings that will become a small neighbourhood centre. It contains 6 residential projects on land parcels which were each shaped by the masterplan and design codes, with designs emerging from competitions. A series of other smaller parcels of development were released to allow for bespoke buildings and landmarks in key locations.

In this project the fieldwork focussed on two streets, Simplicity Lane and Ramblers Lane (Figure 60). They are located in a quiet part of the street network and form part of the Cala Domus scheme designed by PCKO architects for Cala Homes. The scheme is well known having been given a Housing Design Award in 2003, a National Home Builder Award and 2004 and being awarded the Building for Life Gold Standard in 2005.

The whole phase contains a mix of dwellings including 2 bedroom maisonettes and flats and 5, 4, 3 and 2 bedroom townhouses. Located next to the central park the scheme is an early example of a shared surface treatment which was reluctantly accepted by highway authorities, but subsequently developed with the close involvement of all of the development partners, including Essex County Council who had produced the Essex Design Guide (Essex Planning Officers' Association 1997). The requirement that the scheme should be shared surface was set out in the masterplan and design code. Subsequent phases of the development have similar shared-surface qualities, following the success of this scheme.

The scheme contains a tight block form with a relatively continuous building frontage, but very articulated facades and rooflines (Figure 61). Parking is in a mixture of locations including on-street, on-plot, in integrated garages and in four rear parking courts accessed from Ramblers Lane (Figure 62). The street junction where the two streets meet has a patterned raised table across its width, which in combination with distinctive corner buildings acts to make a memorable place and calm the traffic (Figure 63). The building line in Ramblers Lane bends and also varies, narrowing the street view. It has a light asphalt surface with paviour edging details and street trees planted at irregular intervals (Figure 64). Simplicity Lane is a more linear street with a very low kerb creating some kind of highway and pavement distinction (Figure 65). In both streets building entrances are slightly set-back between a prominent bin store and an "entrance step" which creates a small buffer between the front door and the street (Figure 66). There are no opportunities for seating or formal play built into the streets. The townscape is interesting and significant due to the combination of a very contemporary architectural treatment with the use of shared surfaces on through streets.

Figure 60 Simplicity and Ramblers Lanes, Newhall, Harlow

Figure 61

The scheme contains a tight block form with a relatively continuous building frontage, but very articulated facades and rooflines

Figure 62

Parking is in a mixture of locations including on-street, on-plot, in integrated garages and in four rear parking courts accessed from Ramblers Lane (photo Chris Walker)

Figure 63

The street junction where the two streets meet has a patterned raised table across its width, which in combination with distinctive corner buildings acts to make a memorable place and calm the traffic

Figure 64

The building line in Ramblers Lane bends and also varies, narrowing the street view. It has a light asphalt surface with paviour edging details and street trees planted at irregular intervals (Photo Chris Walker

Figure 65

Simplicity Lane is a more linear street with a very low kerb creating some kind of highway and pavement distinction

Figure 66

In both streets building entrances are slightly set-back between a prominent bin store and an "entrance step" which creates a small buffer between the front door and the street (Photo Chris Walker

How is it used?

Vehicles moving in these streets travel on average at 14.44 mph. This compares well with the other home zones.

Figure 67 shows the total number of people seen in these streets and what they were doing. A reasonable number of all users passed through the area. The streets were used briefly for football and on occasion for cycling but interestingly, compared to the other home zones these streets weren't used for play by children for longer periods. One child cycled around in a loop between parking court and street for less than 10 minutes. 4 teenagers hung out in the street for less than 10 minutes, with 4 more passing through. Apart from these events the streets were relatively quiet.

The area selected in Newhall was slightly smaller than others discussed above, and this was probably a mistake but despite this, compared to the other home zones, the area was less intensely used. This is probably due to a number of reasons. Firstly there is a little less passing through because of the position of the streets in the wider network. Secondly the lack of a focal space or play equipment means that it might be less attractive for play when compared to the neighbouring area of green open space. We can probably compare these streets to the courtyards in Bude which were also typically quiet, despite the activity elsewhere in the wider scheme.

Figure 67

Table showing the total number of people engaging in activities in the Newhall scheme

Newhall, Harlow	10.00 – 12.00, 13.00 – 18.00								
	Time in the Street			Necessary or Optional Activity			Social Activity		
	Briefly	A While	Longer	Passing through	Active Playing	Hanging Out	Talking	Observing	Not socialising
Pre School Children	12	-	1	8	3	1	4	-	9
Children	15	3	-	12	5	1	9	-	9
Teenagers	5	3	-	4	-	4	3	-	5
Adults	23	3	2	21	1	3	12	2	14
Elderly	2	-	-	2	-	-	-	-	2

Limetree Square, Street, Somerset

The Design

Limetree Square is the first phase of a larger scheme of 400 homes on the site of a former Clark's Shoe factory in Street, Somerset. The scheme was developed by Crest Nicholson and designed by Feilden Clegg and Bradley Architects and Grant Associates landscape architects based on a masterplan for the larger site developed with the landowner, local authority and local community (Figure 68). The scheme won a CABE Building for Life award (CABE 2005) in 2009 and is partly celebrated for the form of its public realm.

The scheme has a local supermarket just outside its entrance, and is otherwise about 500 metres from Street town centre. The first phase contains 130 homes, including 70 terraced family houses and two apartment buildings. A lot of the houses in particular, contain features that open onto or animate the streets. The scheme contains a series of shared surface streets around an open square which is designed for social use, with three large tables and benches (Figure 69). Well planted with trees, the square also has a gravel surface suitable for ball and wheeled play. All houses also have generous recessed entrances and small benches (Figure 70), whilst integrated garages also open into the street space, allowing children's toys to spill out. Some of the streets contain large well stocked planters with edge seating (Figure 71), and garages often involve roof balconies overlooking the street. Street surfaces vary from relatively large areas of paviours to smaller areas of asphalt (Figure 72).

Figure 68
Limetree Square, Street, Somerset

Figure 69

The scheme contains a series of shared surface streets around an open square which is designed for social use, with three large tables and benches

Figure 70

All houses also have generous recessed entrances and small benches

Figure 71

Some of the streets contain large well stocked planters with edge seating

Figure 72
Street surfaces vary from relatively large areas of paviours to smaller areas of asphalt

The access road will form a loop road to the wider scheme, and so the scheme is currently the destination for all traffic, although it is possible to drive around parts of the scheme. The highway form is composed of short, narrow rectilinear stretches, highlighted by edging details, which connect through tight "built form" junctions and which typically have no dedicated pedestrian space or corner radii for vehicles (Figure 73). The result is a form of public space which very successfully provides space for vehicular access, but provides very few dedicated vehicular spaces or evidence of highway features dedicated to the needs of vehicles.

Figure 73

The highway form is composed of short, narrow rectilinear stretches, highlighted by edging details, which connect through tight "built form" junctions and which typically have no dedicated pedestrian space or corner radii for vehicles

How is it used?

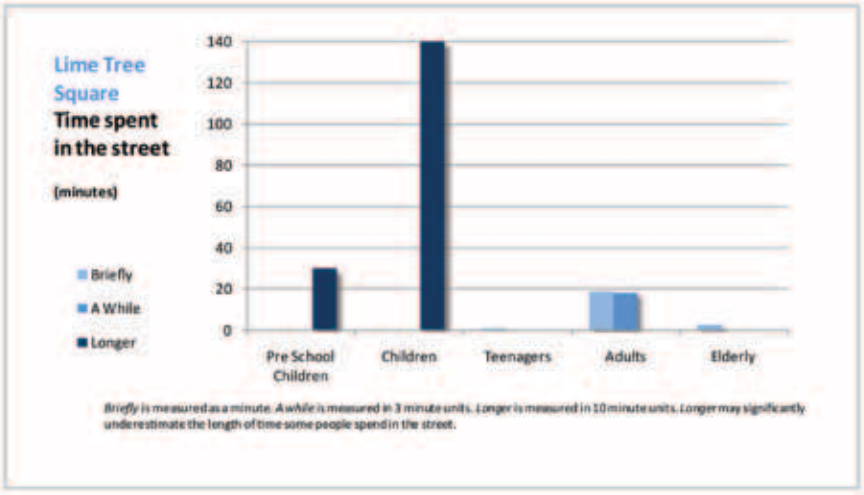
Figure 74 shows the total number of people seen in these streets and what they were doing. It is probably one of the most straightforward schemes to discuss. Essentially adults, a teenager and a few elderly people pass through briefly or for a while, whilst children and pre-school children actively play for long periods. Figure 75 shows the time spent in the spaces by different groups, and emphasises the popularity of them for children all of whom are playing. The pre-school children tended to play close to their homes. The slightly older children often ride bikes around the estate along circular routes, they played football between the features

Figure 74

Table showing the total number of people engaging in activities in the Limetree Square scheme

Lime Tree Square	3 hours observation: 15.30 –16.30, 19.20 – 20.20, 10.30 – 11.30, Overcast some light showers								
	Time in the Street			Necessary or Optional Activity			Social Activity		
	Briefly	A While	Longer	Passing through	Active Playing	Hanging Out	Talking	Observing	Not socialising
Pre School Children	-	-	3	-	3	-	3	-	-
Children	-	-	14		14	-	14	-	-
Teenagers	1	-	-	1	-	-	-	-	1
Adults	19	6		21	-	7	11	15	-
Elderly	3	-	-	3	-	-	3	-	-

Figure 75

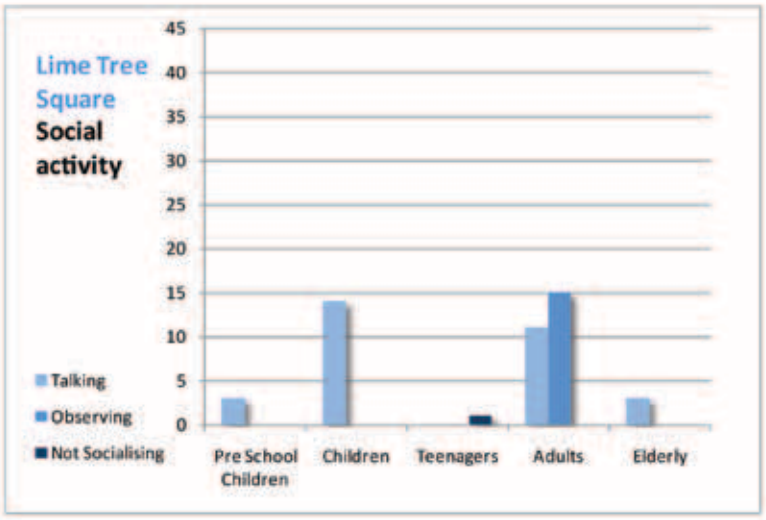


of the square, and they climbed on and sit at the picnic benches and hung off the bike stands (Figure 76). They used the central space intensively for long periods of time. Figure 77 shows that this is a very social scheme with nearly all people either talking or observing others. The findings here reflect the findings elsewhere; that the treatments are being used by children in particular, and that the reasonably intense activity in the public space is leading to social possibilities for the wider population.

Figure 76

The pre-school children tended to play close to their homes. The slightly older children often ride bikes around the estate along circular routes, they played football between the features of the square, and they climbed on and sit at the picnic benches and hung off the bike stands

Figure 77



Page Drive, Cardiff

The Design

Page Drive is included here as an example of a Design Bulletin 32 compliant street design. Page Drive forms part of a larger scheme of 390 homes. The site is about 3 kilometres to the east of Cardiff city centre bounded by the Swansea to London railway line and large scale out of town style shed developments to the north-west, the River Rumney to the east and allotments to the south. The site is relatively isolated, being hemmed in by the railway, river and allotments, but also connected to the rest of the city only by Rover Way which is a heavily used strategic highway. The street itself is a cul-de-sac that is 200 metres long and contains 53 homes (Figure 78). 26 of these homes have four bedrooms, and three additional houses have three bedrooms. In addition a group of twenty-four 3 storey, four bedroom town houses group around a 50 metre long mews road which joins the connecting cul-de-sac. There are no shops or other services within easy walking distance, but there is a poor quality children's play space in a large open grassed area at the centre of the wider scheme. This is within walking distance of the street. The main cul-de-sac contains a highway that is 5.5 metres wide, and two metre pavements on either side down its entire length (Figure 79). The highway also includes three speed cushions. In combination with the mews junction, these features aim to slow traffic. Houses are set back roughly 5 metres from the road and have on plot parking and front gardens. The scheme is included as a benchmark scheme against which to assess the more innovative schemes.

Figure 78
Page Drive, Cardiff

Figure 79
The main cul-de-sac contains a highway that is 5.5 metres wide, and two metre pavements on either side down its entire length. The highway also includes three speed cushions.

How is it used?

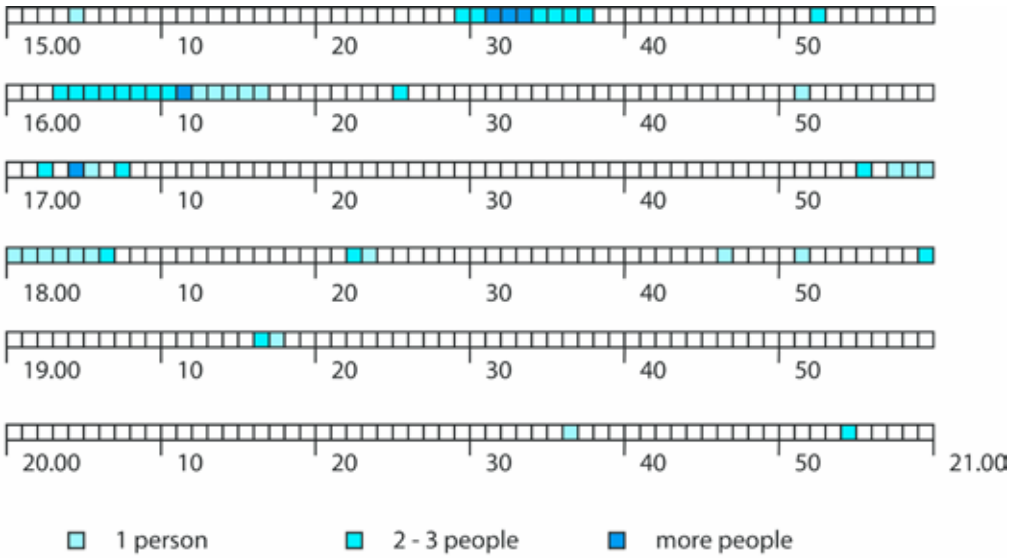
The average speed of vehicles using Page Drive was 18.5 mph. This speed is well within the speed limit of 30mph. It is, however, the road with the second highest average speed.

Figure 80 shows the total number of people seen in this street and what they were doing. Page Drive saw 44 people using the street during the 6 hours studied, and 7 of these people took in their bins. This was a very low level of use. It should be compared with Jubilee and Somerset Streets which have fewer homes and are discussed below. Figure 81 is an occupation study diagram which shows every minute that the street had some form of activity on it. It illustrates graphically the amount of dead

Figure 80

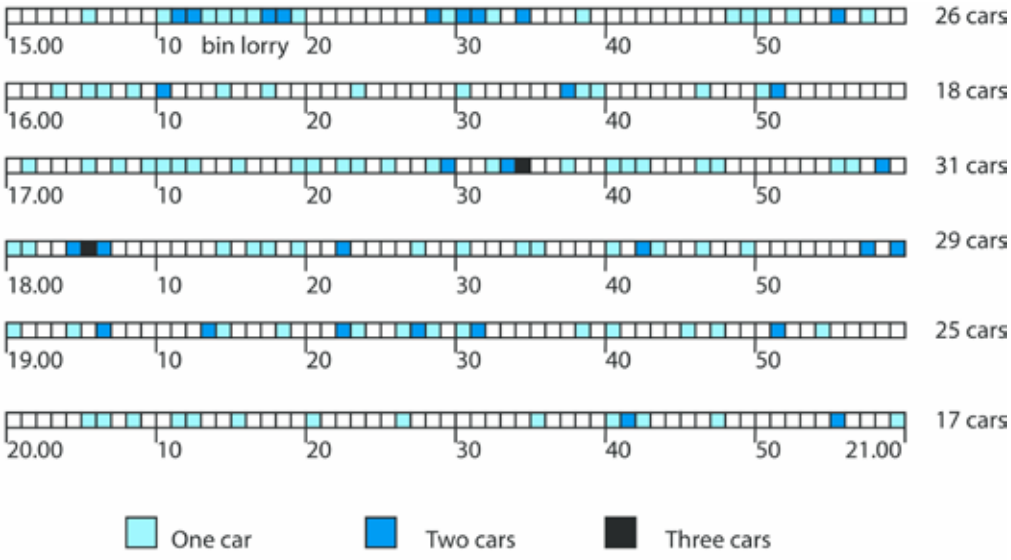
Table showing the total number of people engaging in activities in the Page Drive scheme

Lime Tree Square	3 hours observation: 15.30 –16.30, 19.20 – 20.20, 10.30 – 11.30, Overcast some light showers								
	Time in the Street			Necessary or Optional Activity			Social Activity		
	Briefly	A While	Longer	Passing through	Active Playing	Hanging Out	Talking	Observing	Not socialising
Pre School Children	-	-	3	-	3	-	3	-	-
Children	-	-	14		14	-	14	-	-
Teenagers	1	-	-	1	-	-	-	-	1
Adults	19	6		21	-	7	11	15	-
Elderly	3	-	-	3	-	-	3	-	-



Page Drive, Cardiff. Occupation study from 15.00 until 21.00 showing each minute that the street is occupied.

Figure 81



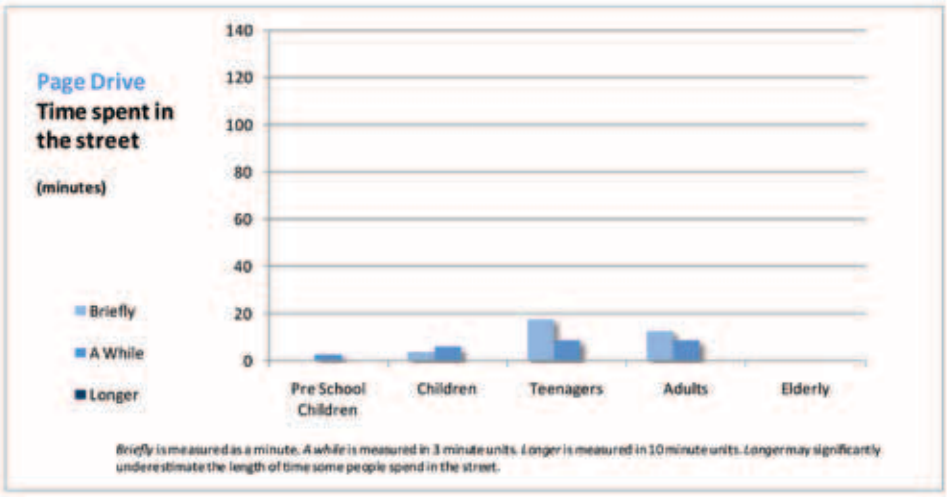
Page Drive. Car use study from 15.00 until 21.00 showing each minute that the street is used by cars. Total 136 cars.

Figure 82

time when nothing was happening. Figure 82 presents the car use time line. It shows that compared to the 44 people seen, 136 car movement occurred, but even with this type of use there were plenty of periods when nothing was happening.

Figure 83 is a weighted graph showing the time that different groups spent in the street, and interestingly more teenagers were seen than any other group. 18 teenagers passed through briefly, often is small groups chatting. They are probably going to the larger open space nearby, as the same people often came and went. Other people came and went by car, with no group spending a longer time in the street. Compared to

Figure 83



other streets which connect well into a wider network and uses it is really noticeable how car dependent the people here are, with only 6 adults seen passing through on foot in a six hour period which embraced rush hour. Despite being a cul-de-sac and this being the summer holidays there were only four instances of children seen playing, but only briefly or for a while. No child spent longer in the street. Given the above results it is relatively predictable and interesting that it was teenagers who socialised in this street the most; chatting as they passed through. As this street was studied using time lapse cameras it is possible to map the only instance of active play – a grandmother helping her grandchild on a bike for a few minutes (Figure 84). Compared to the home zones this is a very limited event and range.

Figure 84

A map of the only instance of active play in Page Drive – a grandmother helping her grandchild on a bike for a few minutes

Milestone Close, Cardiff

The Design

Milestone Close is also included here as an example of a Design Bulletin 32 compliant street design. The Close is about 4 kilometres to the north of Cardiff city centre. It is close to the Caerphilly Road, a significant arterial route directly connecting northern suburbs with the centre. There is a supermarket within close walking distance and a neighbourhood centre within about 700 metres of the scheme. It is also within walking distance of some employment uses which are to the north. The road studied is 335 metres long and contains 59 family houses (Figure 85). All homes are detached with on-plot parking, apart from 8 terraced town houses. Houses are generally set back roughly 5 metres from the road (Figure 86). The street is a cul-de-sac for cars with one access point, but has four connections for pedestrians to streets within the immediate context. Two mews courts have been built off the main highway 100 metres apart, and the junctions to these mews include ramps and brick paving to calm traffic from all directions. The main highway is 5.5 metres with two metre pavements on either side, apart from at its end. Here, for a short stretch, the highway surface is made of brick paviours, but retains the pavements. After a few metres a 40 metre stretch of shared surface highway provides access to 8 homes, and a pedestrian link through to a neighbouring street (Figure 87). The scheme is also included as a benchmark scheme against which to assess the more innovative schemes.

Figure 85
Milestone Close

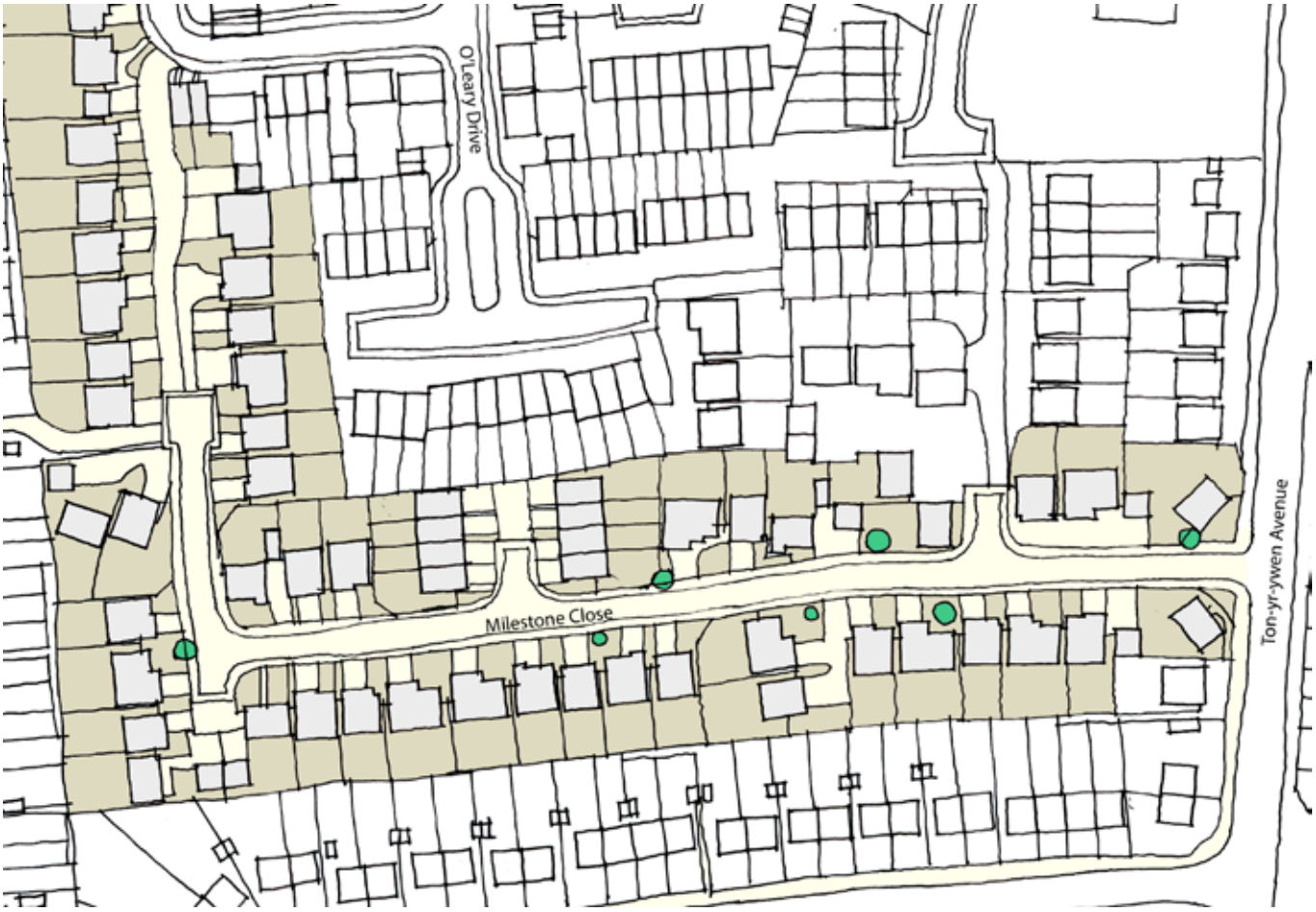


Figure 86
Houses are generally set back roughly 5 metres from the road. The main highway is 5.5 metres with two metre pavements on either side

Figure 87
A 40 metre stretch of shared surface highway provides access to 8 homes, and a pedestrian link through to a neighbouring street

How is it used?

The average speed of vehicles in Milestone Close was 20 mph. This was the fastest average found, but all vehicles recorded speeds within the 30mph speed limit.

Figure 88 shows the total number of people seen in this street and what they were doing. It is interesting to compare this street with Page Drive above. The most significant difference is the impact of this scheme being reasonably well connected to its context, and the vicinity of local services. The impact is seen in the number of people briefly passing through (Figure 89). Compared to the 27 people (6 adults) seen in Page Drive, here there were 136 (88 adults) during the same period. A reasonable number of children and teenagers pass through briefly often chatting in small groups. Adults are more typically alone. They are the largest group using the street but less people socialise along the way (Figures 90 and 91).

When we look at whether this street is used for a while or longer for anything other than passing through the results are poor. Only 1 child spent any length of time in the street cycling a circular route of limited range and repeatedly (Figure 92). Of the 9 times play is observed, the majority are whilst people are only briefly in the street.

Milestone Close	15.00 and 21.00. Cloudy but mainly dry.								
	Time in the Street			Necessary or Optional Activity			Social Activity		
	Briefly	A While	Longer	Passing through	Active Playing	Hanging Out	Talking	Observing	Not socialising
Pre School Children	5	-	-	4	1	-	2	-	3
Children	30	2	1	25	8	-	15	-	18
Teenagers	19	-	-	19	-	-	13	-	6
Adults	88	2	-	88	-	2	27	2	61
Elderly	-	-	-	-	-	-	-	-	1

Figure 88

Table showing the total number of people engaging in activities in the Milestone Close scheme

Figure 89

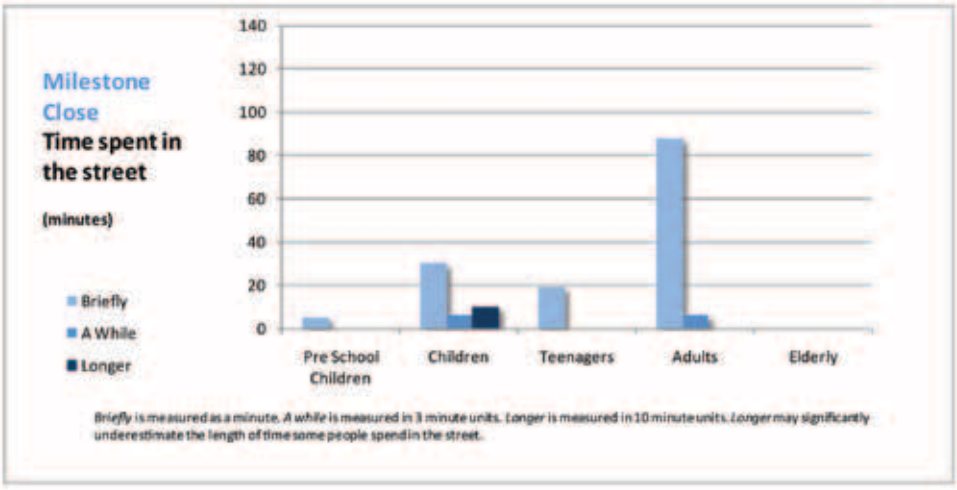


Figure 90

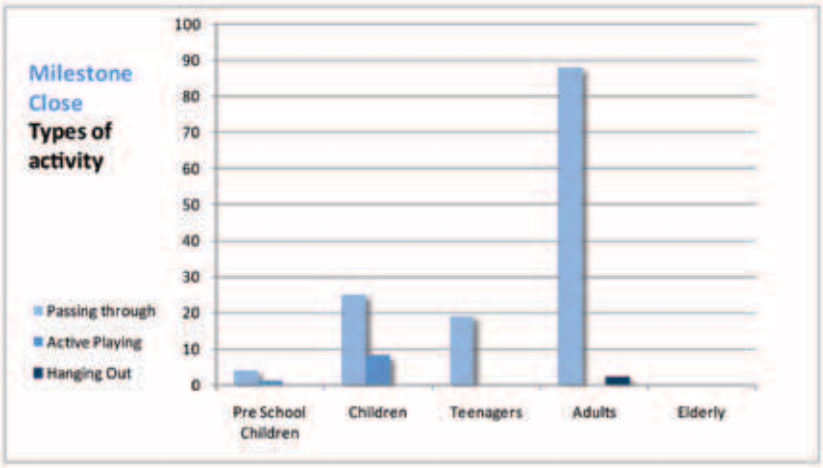


Figure 91

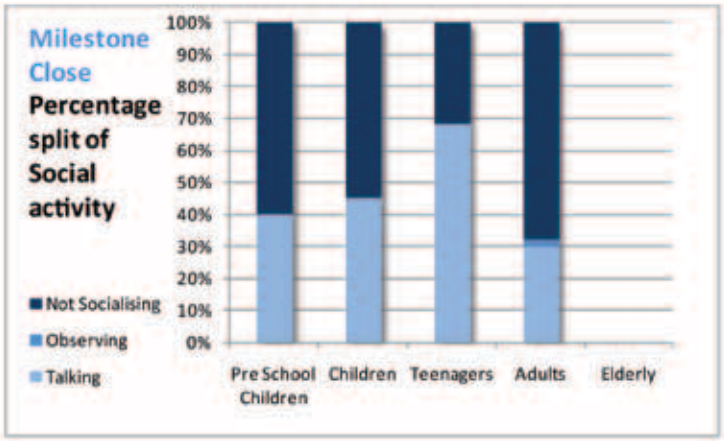


Figure 92

Only 1 child spent any length of time in the street cycling a circular route of limited range and repeatedly

Somerset Street, Cardiff

The Design

Somerset Street is a traditional terraced street of 19th century houses which has recently been traffic calmed and re-landscaped following an extensive public participation process. The street is 148 metres long and contains 52 two storey homes located on the back of the pavement behind a small setback and low front wall (Figure 93). Parking is on the street. All homes front directly onto the street. The street is about 400 metres from a neighbourhood centre containing an extensive range of shops and services, whilst there is also a corner shop within easy walking distance.

The work to the street introduced corner radii junction tightening, a raised table at the busier end and a raised table and two build-outs along its extent. The street has also had four trees planted and planters and a mosaic introduced (Figure 94). The street is a through street for traffic with on-street parking. A post-occupancy study of the street residents showed that 82% thought that the traffic speeds have reduced. Traffic volume data showed a 74% drop over a 24 hour period from 213 vehicles to 158. Speeds also dropped by 1 mph during rush hour to 18 mph. The study also found that 69% of residents feel that their street is safe for children to play in, compared to 0% at the outset.

The street was selected for study as it is typical of "inner city" terraced streets, and because it had been extensively traffic calmed and re-landscaped. I was interested in whether, as a result of this, it was used differently, especially given the fact that residents reported that it was now safe to play in. The research by Hodgkinson and Whitehouse (1999) had found that traffic calming alone did not lead to a change in how streets were used. It seemed like a good chance to see if this street was different.

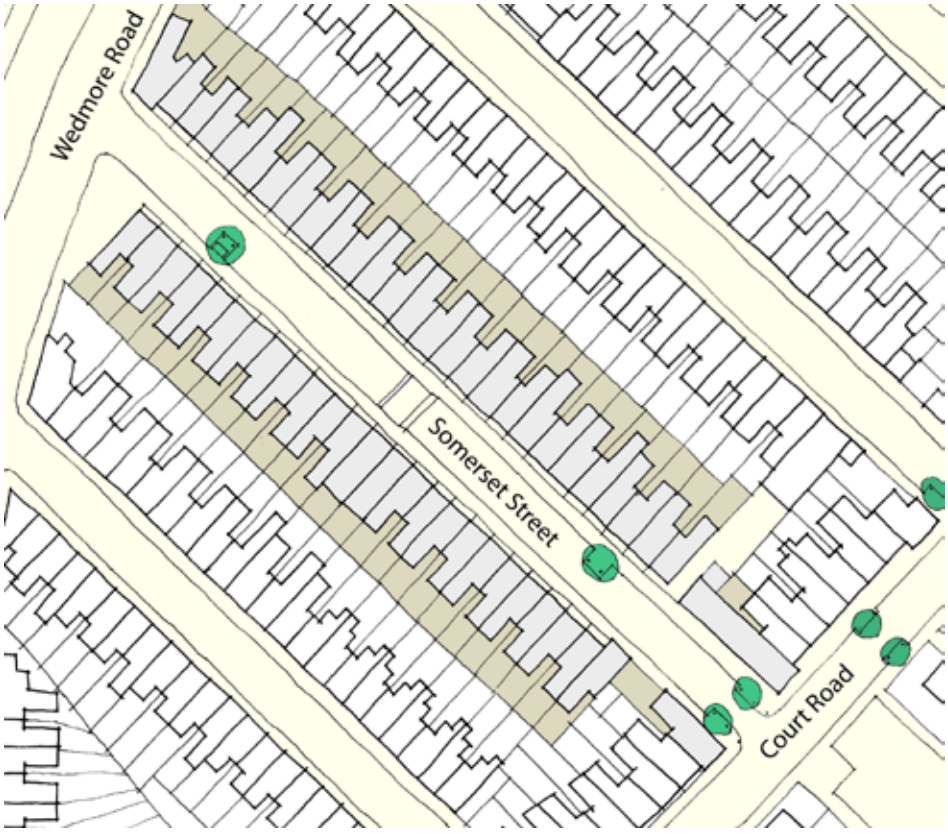


Figure 93
Somerset Street

Figure 94
The work to the street introduced corner radii junction tightening, a raised table at the busier end and a raised table and two build-outs along its extent. The street has also had four trees planted and planters and a mosaic introduced

How is it used?

Figure 95 shows the total number of people seen in this street and what they were doing. This scheme tells a similar story to Milestone Close. Being well connected to its context and within walking distance to services the street is dominated by adults passing through briefly (Figures 96 and 97) and with a majority of people not socialising (Figure 98). These figures are significant, bearing in mind that much larger schemes like Allerton Bywater and Horfield had under half the number of people passing through a much larger scheme, and even a scheme like Bude, also much larger and close to a significant store actually has very similar numbers. So as a passing though environment it performs very well. Unfortunately no one was seen playing in the street and no one spends any length of time in the street, and this is despite the fact that residents think that it is safe to do so.

Figure 95
Table showing the total number of people engaging in activities in Somerset Street

Somerset Street, Cardiff	15.00 – 21.00 Overcast, light showers								
	Time in the Street			**Necessary or Optional Activity**			**Social Activity**		
	Briefly	**A While**	**Longer**	**Passing through**	**Active Playing**	**Hanging Out**	**Talking**	**Observing**	**Not socialising**
Pre School Children	3	3	-	5	-	1	1	-	5
Children	6	2	-	6	-	2	7	-	1
Teenagers	4	2	-	4	-	2	6	-	-
Adults	100	7	-	99	-	8	20	-	87
Elderly	-	-	-	-	-	-	-	-	-

Figure 96

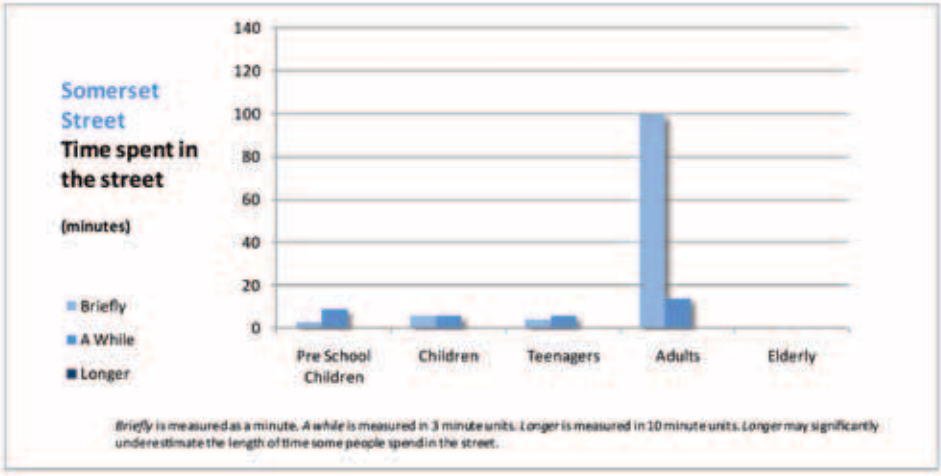


Figure 97

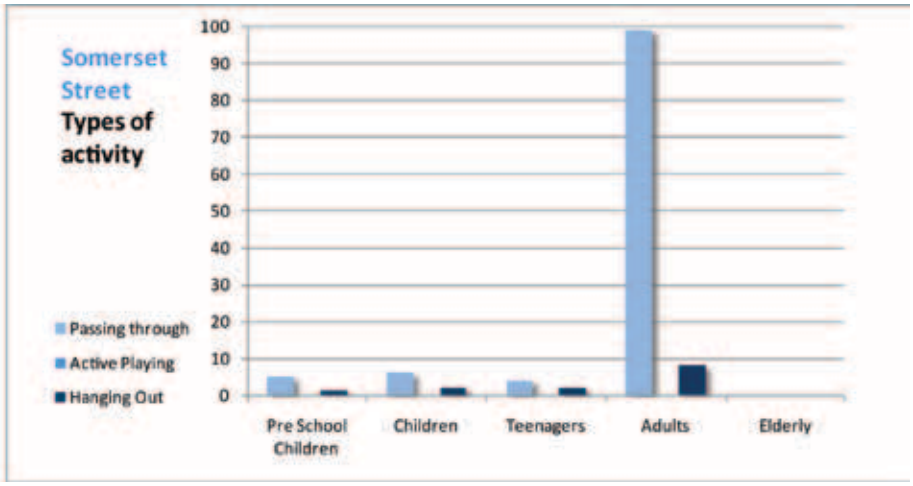
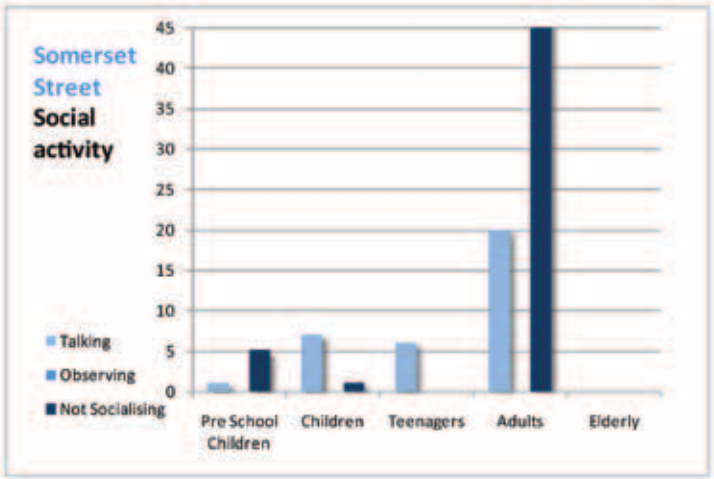


Figure 98



Jubliee Street, Cardiff

The Design

Jubilee Street is also a street of terraced houses. This street is within the same group of streets as Somerset Street discussed above, and so it is also within walking distance of a neighbourhood centre, whilst a corner shops sits at the end of the street. Half of it (90 metres) is built to the same standard as Somerset Street and contains 25 established homes. The other half contains 20 new homes arranged around a home zone treatment. The street is closed to through traffic, but like Somerset Street it is open to pedestrians and cyclists (Figure 99). The unchanged end of the street remains a traditional street with back of pavement terraced houses facing onto pavements and a highway with on street parking (Figure 100). This end is the entrance of the street which has also been narrowed. A speed table has been introduced and trees have been planted. At the centre of the street is a turning space for cars. The home zone includes block paving, tree planting at the entrance, a discontinuous alignment of highway and building line and "gate posts" also highlighting the start of the treatment (Figure 101). The design is relatively conservative, retaining a protected pavement space on both sides and areas of parallel parking. At the end of the street is a turning space alongside a railway embankment and an area protected from traffic by bollards. In this area a goal post has been drawn on the embankment wall (Figure 102). The scheme is included as it is unusually half innovative and half traditional in its treatments, whilst also being comparable to Somerset Street, above.

Figure 99
Jubliee Street

Figure 100

The unchanged end of the street remains a traditional street with back of pavement terraced houses facing onto pavements and a highway with on street parking

Figure 101

The home zone includes block paving, tree planting at the entrance, a discontinuous alignment of highway and building line and "gate posts" also highlighting the start of the treatment

Figure 102

At the end of the street is a turning space alongside a railway embankment and an area protected from traffic by bollards. In this area a goal post has been drawn on the embankment wall

Jubliee Street				15.00 – 21.00, Cloudy, sun shine and showers					
	Time in the Street			Necessary or Optional Activity			Social Activity		
	Briefly	A While	Longer	Passing through	Active Playing	Hanging Out	Talking	Observing	Not socialising
Pre School Children	2	2	-	2	1	-	-	-	4
Children	32	-	13	32	13	13	13	13	19
Teenagers	19	1	-	19	-	-	6	3	11
Adults	94	20	2	96	-	17	21	9	86
Elderly	6	-	-	6	-	-	1	1	4

Figure 103
Table showing the total number of people engaging in activities in Jubilee Street

How is it used?

Figure 103 shows the total number of people seen in this street and what they were doing. Similar to both Milestone Close and Somerset Street it is also used by a significant group of people who pass through briefly, and again this reflects the location of the street in the network and the short distance from the street to local services. In contrast to these two streets, but similar to other home zones, however, this street is also well used by children who play for long periods (Figures 104 and 105).

Figure 106 shows the occupation study and the period of time that the street was occupied. Between 3.00pm and 7.15 pm the street was occupied by roughly 13 children who played constantly with a gap for food. They played ball, rode bikes and hung around. Figure 107 shows the pattern of play with all the activity focussed on the home zone end. The street is also relatively well used by vehicles. Figure 108 shows the times when the street is being used by cars, but the majority of cars turn in the turning circle before the home zone. It is the combination of home zone treatment and this turning circle that seems to give the children space to play. This is in relatively sharp contrast to Somerset Street above which is a very comparable street only a few streets away, but which is used very differently.

Interestingly with a large number of people passing through briefly there were also a large number of people who didn't socialise (Figure 109), but despite the numbers the reasonably small group of children were socialising in the street for hours, whilst a not insignificant group of adults were also seen staying for a while and talking with their children or other neighbours or observing the play.

Figure 104

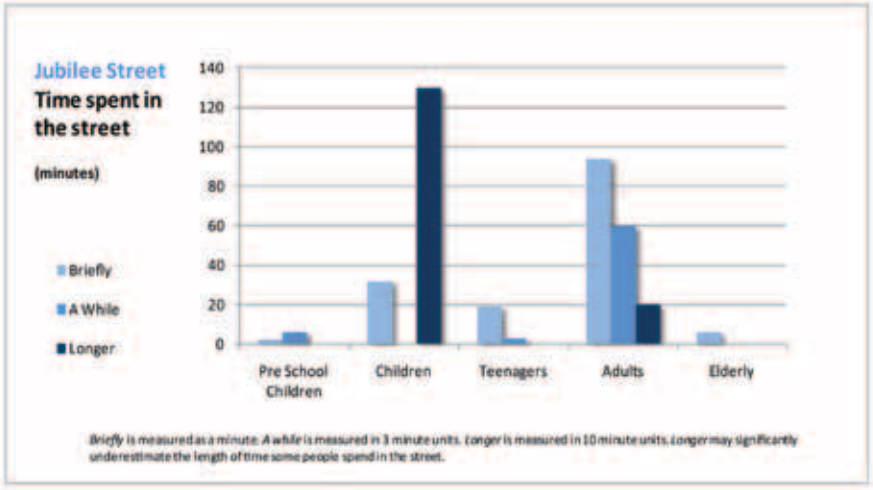
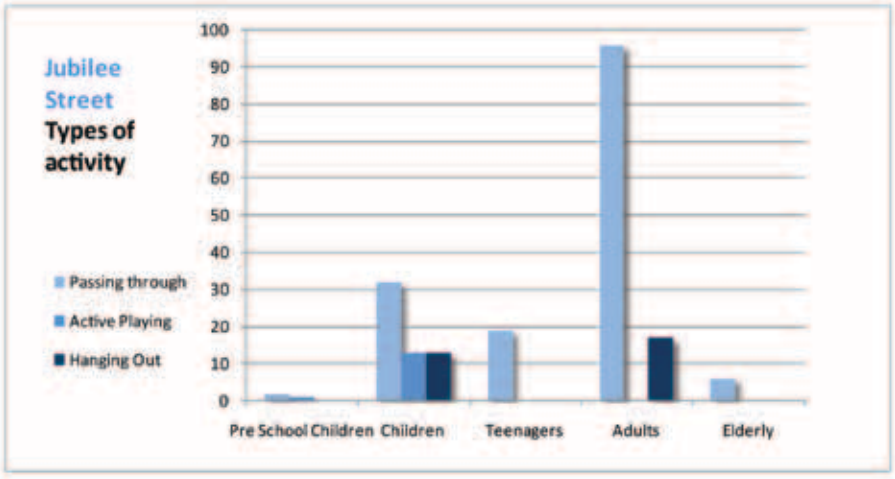


Figure 105



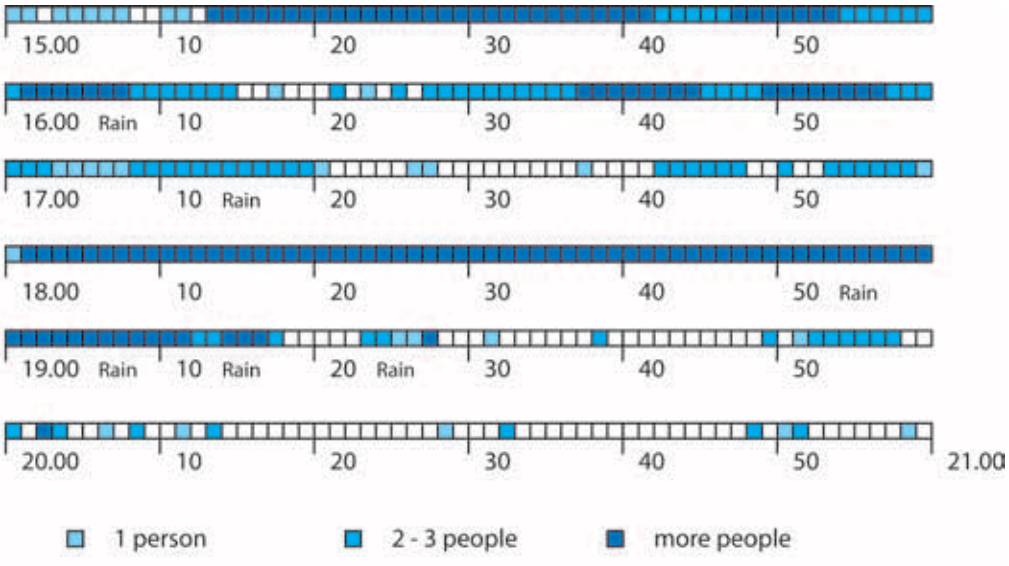


Figure 106 Jubilee Street home zoned area. Occupation study from 15.00 until 21.00 showing each minute that the street is occupied.

Figure 107 Mapping children's play

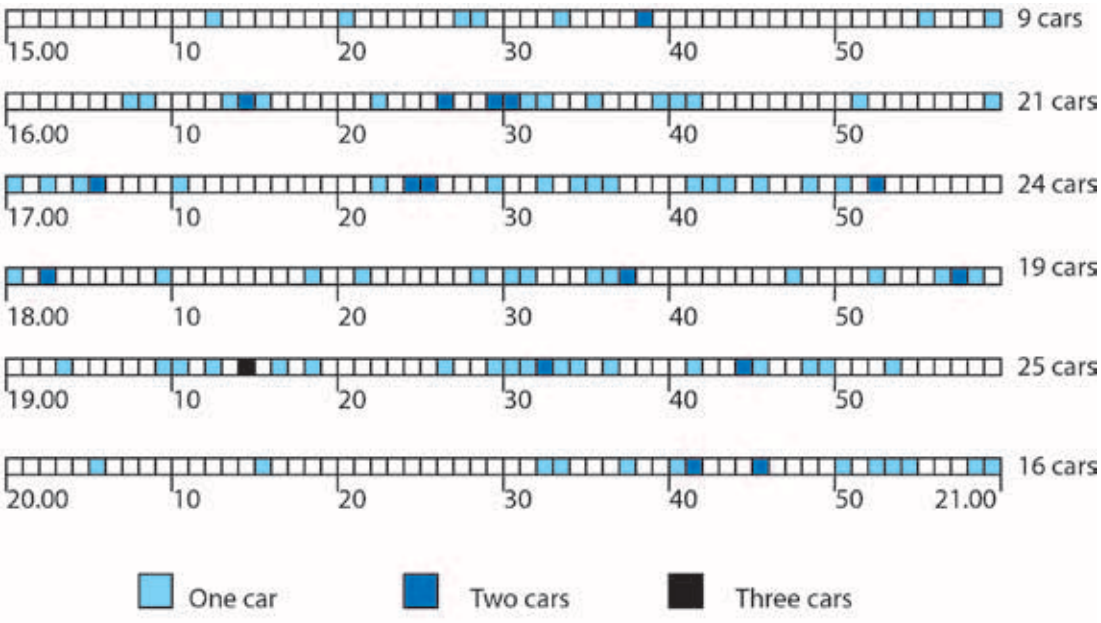
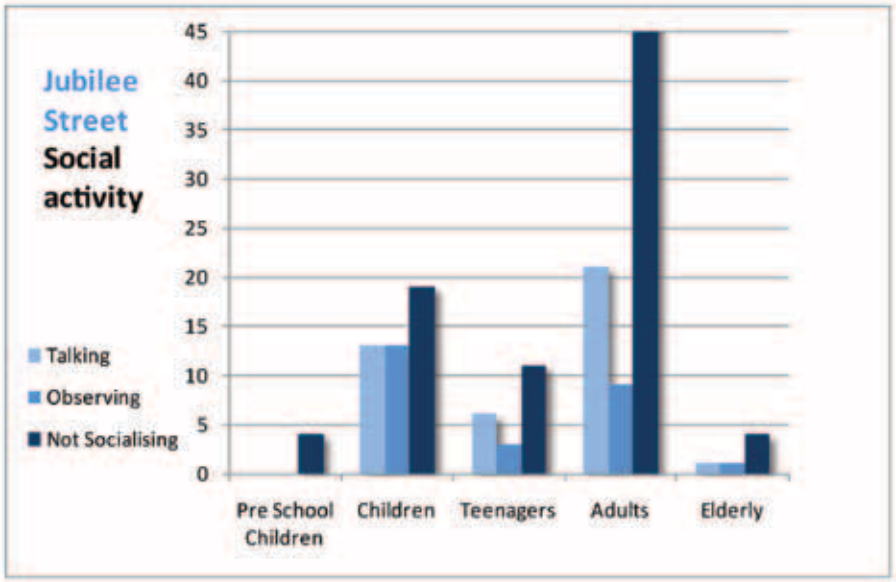


Figure 108 Jubilee Street. Car use study from 15.00 until 21.00 showing each minute that the street is used by cars. 114 cars.

Figure 109


Jubilee Street
Social activity
Talking
Observing
Not Socialising
45
40
35
30
25
20
15
10
5
0
Pre School Children
Children
Teenagers
Adults
Elderly

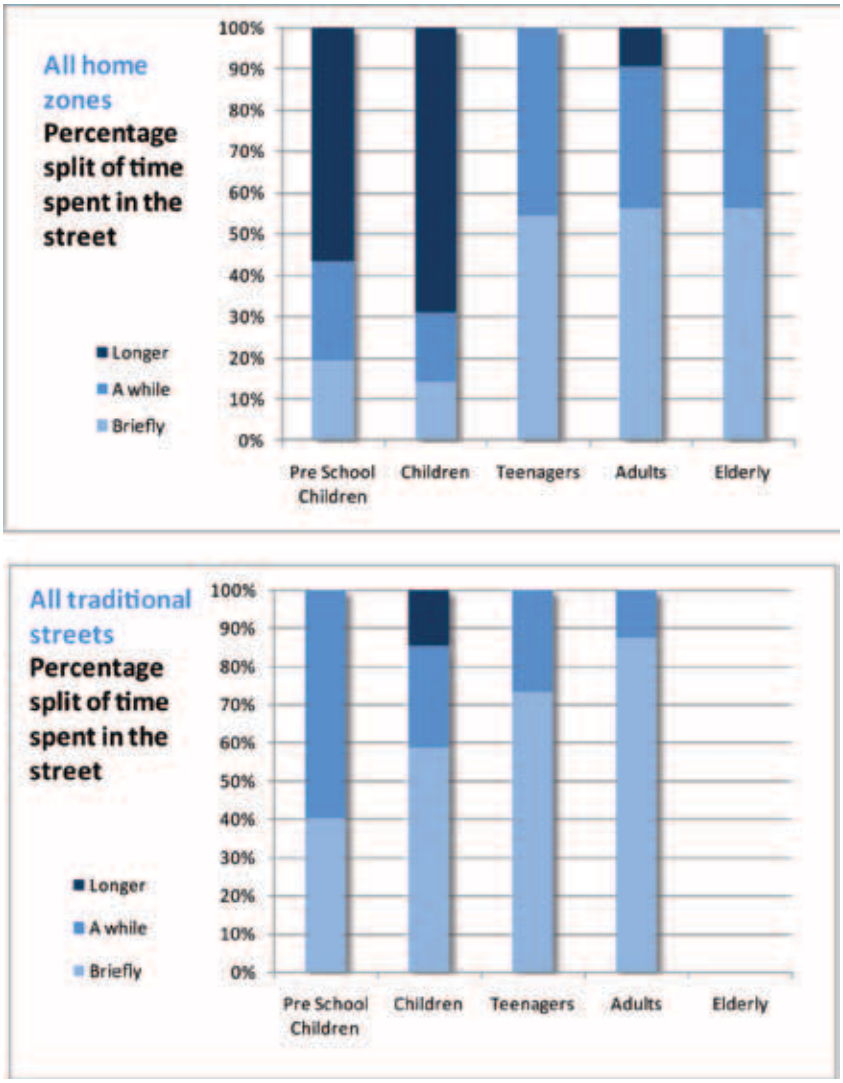
Discussing the findings

Despite the different and interesting circumstances surrounding each scheme, some patterns do seem to emerge from what was observed. Below I pull together and discuss the general findings from the seven home zones and the three Design Bulletin 32 compliant streets.

Time spent in the streets

If we combine together the results from the 7 home zones and separately combine together the results from the Design Bulletin 32 compliant streets we can look at the proportion of people who spend different amounts of time in the streets. The results are very revealing. Figure 110 illustrates how the majority of children and young people spend longer in home zone spaces. The results are a little less convincing for other users, but the trend is for about 45% of teenagers, adults and the elderly to spend a while there. This compares with a clear pattern of people in Design Bulletin 32 compliant streets who tend to be their briefly. These results don't compare the numbers of people seen, as this wouldn't be appropriate given the diverse range of schemes, but it does seem to show that Manual for Streets compliant schemes might have encouraged a change in the amount of time people spend in such treatments.

Figure 110



Types of activity

When we look at what people are doing we can also combine together the different types of street to compare the proportions. Figure 111 illustrates that in home zones the big change is the amount of playing that children do when compared with the children in Design Bulletin 32 compliant streets. The results for other groups, however, are far more flat. These radical treatments do not seem to result in significant changes in how they are used by other groups to the same extent. Individual streets also, however, have interesting variations. Most notable perhaps are both Allerton Bywater and Newhall which are used by a reasonably significant proportion of teenagers to hangout in. This is probably explained by the relative isolation of the schemes, and the fact that it is harder to go elsewhere. The more well connected schemes such as Horfield, Gun Wharf, Limetree Square and Jubilee Street are just passed through by the same group. Schemes which are well used by children also, however, see a reasonable number of adults hanging out for some time as well. Notable are Allerton Bywater, Gun Wharf, Limetree Square and Jubilee Street. Sometimes this hanging out is a discrete event, but more often than not it relates to the children and what they are doing.

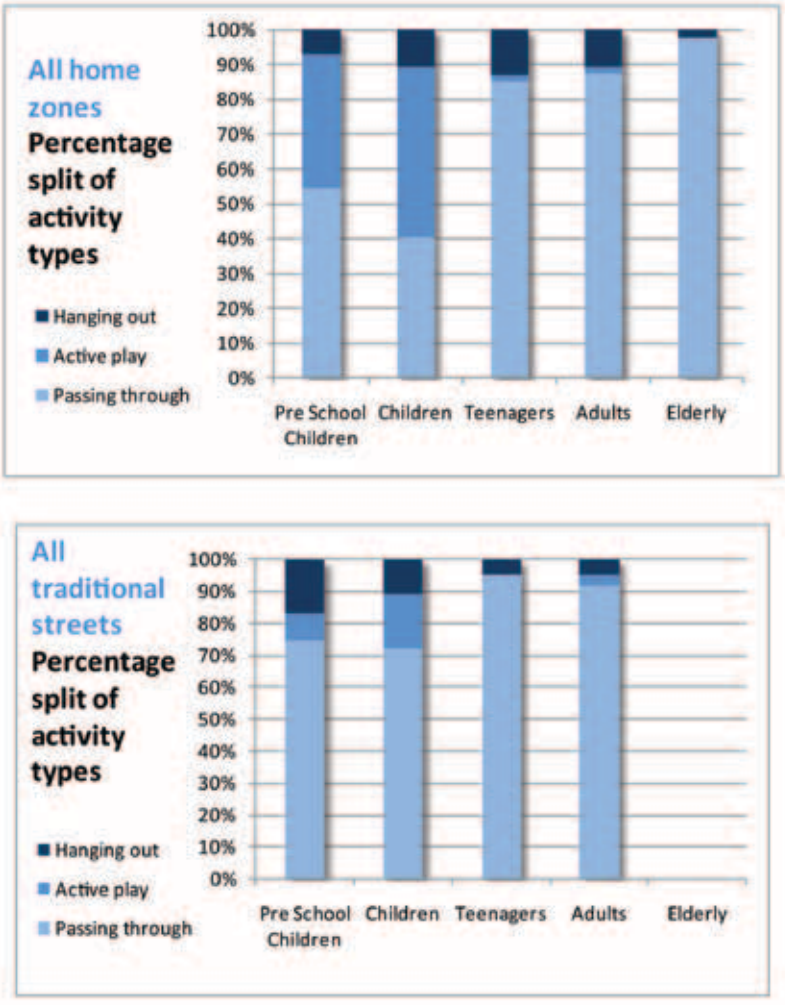


Figure 111

Range and types of play

Whilst we now know that home zones are used by more children for longer and for more play, we also know that, possibly inevitably, the same schemes are the sites of more expansive and diverse sorts of play. Figure 112 brings together the maps from the home zones where mapping was possible to show how liberating the treatments are for children who can roam the spaces with relative freedom, whilst our images of what they do show that there is a far greater diversity of types of play observed. A lot of children play on bikes, scooters and skateboards whilst some play with balls. This reminds us of the value of harder surfaces where such activities are easier. Many children also just engage in relatively free forms of play which combine with long periods of hanging out and spending time with their friends. The only exception to this was possibly in Jubilee Street where the space allowed for a goal to be created and therefore for a more rule based game of football to emerge.

Figure 112
The combined play maps for home zones

It is worth repeating that Somerset Street, the recently traffic calmed street, saw no play at all despite the view expressed by residents that it was now safe for play. We are reminded that opinion surveys do not necessarily reflect actual use. Although both Milestone Close and Page Drive are possibly limited examples, the maps and images do tell a certain sort of story about what children (and their parents) might feel that they can get up to in a Design Bulletin 32 street spaces (Figure 113).

Social activity

When we compare the home zones with the traditional streets it is also possible to see that the home zones are also the sites of the most social activity, with younger people generally engaging more with each other, but even the elderly appearing albeit in small numbers to see or talk with others. Design Bulletin 32 compliant streets, interestingly,

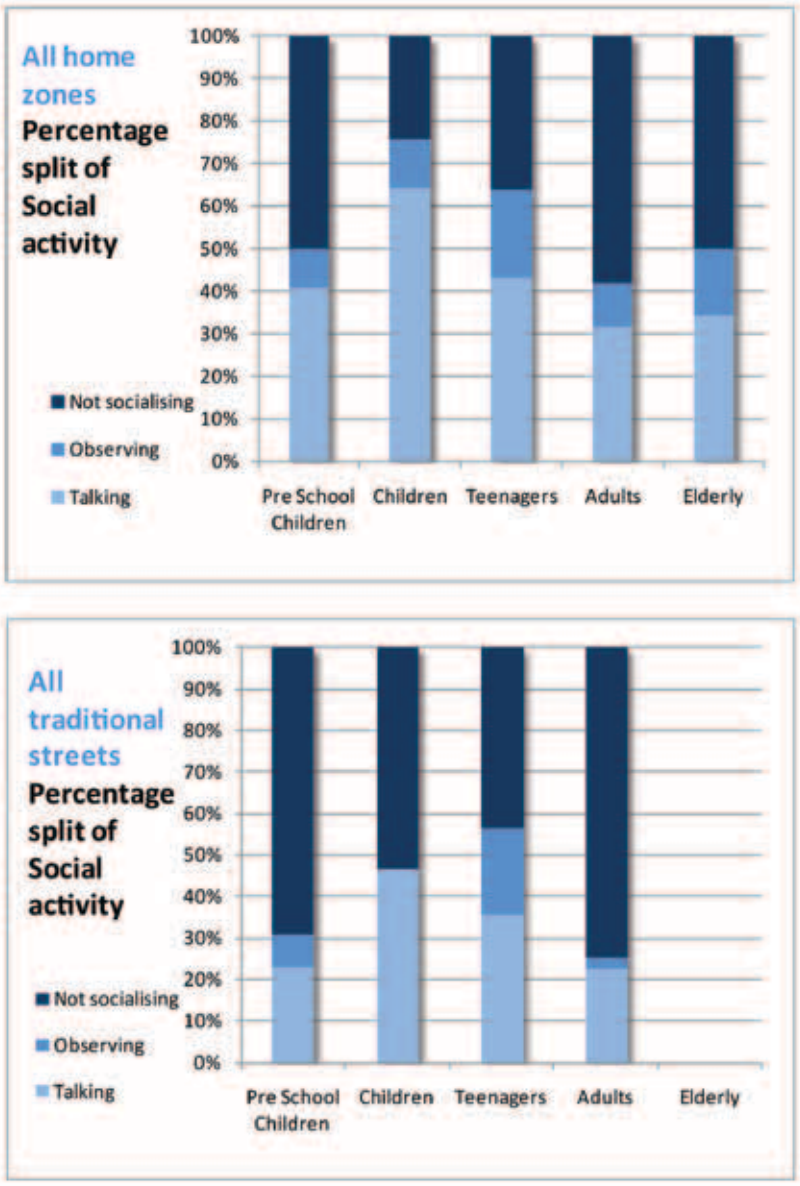
Figure 113
The play maps for the Design Bulletin 32 complaint streets

are dominated fractionally by the social activities of teenagers, although more children are seen chatting to each other (Figure 114). It was notable that teenagers would be seen on their way somewhere else in groups talking, and that this was a notable feature of Somerset Street, Page Drive and Milestone Close. Some home zones performed very poorly in this respect for teenagers, with Limetree Square, Gunwharf and Horfield having no socialisation amongst even the small group of teenagers who were seen. It is hard to explain this tendency unless the younger children displace the older teenagers, or the teenagers come and go from friendship groups who meet at some distance from otherwise well connected schemes.

Connections to the wider context and services

Of most note within this work has been the impact of the combination of permeability and distance to local services on the number of people using the streets to pass through. Most streets which are permeable and close to other uses were principally used for passing through by the vast

Figure 114



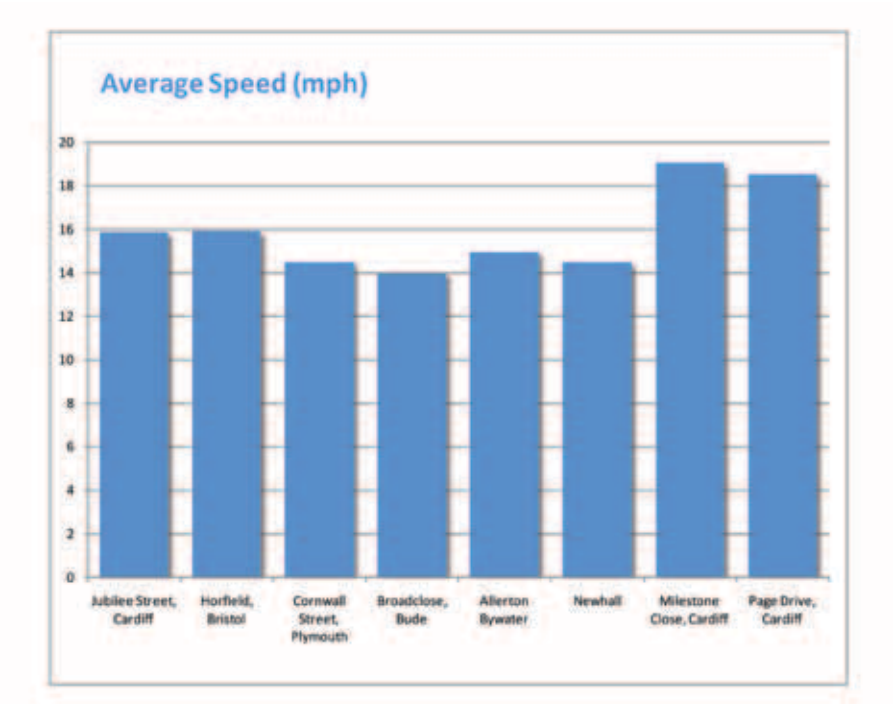
majority of people, and this occurred whatever the treatment. This was the case for Jubilee Street, Somerset Street, Milestone Close, Broadclose and to a slightly lesser extent in Horfield where maybe the local shops aren't so good. If distances are short and the quality of local services is good then people chose to walk to them. This is in sharp contrast with Page Drive, Newhall and Allerton Bywater which tended to be relatively isolated or lacking shops. Page Drive is particularly notable for its combination of both car dependency and lack of use by other groups for any length of time.

The impact of cars and cul-de-sacs

It is interesting to reflect on the impact of cars and the design of cul-de-sacs on whether streets are used more or less for different types of activity. It can be firmly concluded that the number of cars and how they travel or are parked have no impact on whether streets are used for passing through. Creating space and the desire for play, however, is far

more subtle. The home zones tend to have slower speeds (Figure 115) than the other streets, typically by a few miles per hour. This is significant, but it is not considered as significant as the combination of this speed with the volume of cars using a given space, the nature of the street treatment and the need to provide some kind of space or network to play in.

Figure 115



Cul-de-sacs studied here were not necessarily well used for play. Milestone Close, Page Drive and Broadclose all contained very quiet traditional and shared surface cul-de-sacs full of family housing which were not a focus for any kind of play or socialisation, with many children or young people seen wandering off or playing elsewhere. We might therefore question tentatively the previous research which maybe focussed on adult opinions of cul-de-sacs rather than observation studies of where children actually play. These spaces were quiet; typically very quiet. But they may draw together too few children and be too spatially constrained for things like riding bikes or even limited ball games. Children beyond a certain age want to be on the move, albeit within a limited spatial range, and also critically with friends.

Many of the schemes studied here were located within closed loops for vehicles which limited the amount of through traffic whilst maintaining permeability for pedestrians and bikes. This kept the volume of vehicle movements down, and the combination of speed and volume seems to have tipped most spaces to being acceptable spaces for play. Being permeable for pedestrians and bikes meant that people passed through, but also that for example, bikes were ridden within wider loops around estates, or children might meet other children as they came and went.

In combination with this quality, space to play also seemed to be significant. This does not mean providing play equipment. A wall in an area free of cars and maybe a little removed from homes is a great place to play football (Jubilee Street), but the football played here might be different from the ball games played in a circus free of cars, but which is built in terraces (Gun Wharf). What was interesting and maybe obvious about many of the successful schemes with regard to play is that they contained some kind of focal space free of car movements by design (Limetree Square, Gun Wharf, Broadclose) and possibly having signs of personalisation (Jubilee Street) where play was allowed to occur. Typically these spaces were in some way connected to the street network and so formed a designed or more incidental focus to the communities.

Finally, however, the nature of the street treatment is significant. We learn this from Jubilee Street which is exceptional in being half a home zone and half a traditional treatment. The children do not play along its extent. They play in the home zone section, across the entire width and length, and in some respects protected from some vehicular movements by the

turning circle introduced before the treatment. The traditional section of street wasn't used in the same way at all.

How radical the design?

The research confirmed the findings from previous work which suggested that adding traffic calming to a traditional street will not necessarily change the way the street is used. Both Page Drive and Milestone Close had some traffic calming elements, whilst Somerset Street has also been changed with the active involvement of residents, but during the 18 hours of study few people stayed for a while or longer in any of the spaces.

To have some impact therefore it seems necessary to adopt some form of more radical treatment which transforms the environment, and the use of shared surface elements seems to be significant. Beyond this, however, the shared surface features might be quite conservative. Probably one of the most elaborate and attractive schemes was the Gun Wharf scheme in Plymouth which had a very carefully designed parking configuration and landscape. It performed very well, but it performed as well as Jubilee Street which by comparison was far less interesting or attractive to look at.

Who is using the streets

Finally, although it has already been suggested above, it is worth just reminding ourselves that it is younger people who are mainly benefitting from these treatments, whilst teenagers, adults and the elderly were not. Teenagers did not hang around, meet and socialise in these residential streets. Adults would stay for a while, watch their children and socialise, but they are possibly too time poor to spend longer here. It is certainly slightly disappointing that so few elderly people were seen during the research. This possibly reflects the choice of cases which were dominated by new family housing; although it worth wondering if streets remain places that the elderly do not feel comfortable unless other features or measures are introduced.

So it is children who are playing here in relatively small friendship groups, and always children from within the vicinity. Myths about introducing home zone qualities leading to a flood of children turning up are not borne out by the evidence, whilst the amount of contact observed between children and adults suggests that the play is well managed.

When we look at the numbers presented here for the well used streets we see that on 21 occasions children stayed longer in Allerton Bywater, on 13 occasions children stayed longer in Broadclose, on 27 occasions children stayed longer in Gun Wharf, on 14 occasions children stayed longer in Limetree Square and on 13 occasions children stayed longer in Jubilee Street. These numbers tell a somewhat narrow story because evidence from Jubilee Street tells us that the 13 children stayed for 2 hours and 41 minutes, on a day when play was stopped early by rain. Other streets would tell similar stories. Interestingly, sometimes these groups of children represent only a small proportion of the number of people using the street in a given day. The 13 children in Jubilee Street, for example, are only a small proportion of the 191 people who appeared during the 6 hour period. So it is the quality of the activity that we must also be concerned with. These small groups stayed for a long time and did all sorts of things across a wide area, as opposed to a large number staying briefly and doing very little. Such is the nature of these places.

Conclusion

The aim of this research was to explore whether completed new build residential streets which conform to the Manual for Streets criteria are used differently when compared with more established streets which comply with the older guidance. It was particularly interested in whether they encourage a greater variety of street users and activities.

The answer is yes they do, but the users tend to be children. Streets which have home zone design qualities are used by them more intensively, for longer periods, and they engage in play activities across the whole area with relative freedom. More adults also spend a longer time in home zones compared to the time spent in Design Bulletin 32 compliant streets, but the sense is that this is in response to the children playing there.

Such streets have been designed to achieve lower traffic speeds than streets that are merely traffic calmed, but the success of such streets in terms of their use emerges when a combination of factors appear. Streets must achieve the slow speed but must also have low vehicular volumes. Guidance suggests this must be no more than 100 vehicles per hour at peak time (Institute of Highway and Incorporated Engineers 2002).The busiest street studied here had 32 cars during the peak hour serving 59 homes (Milestone Close), so 100 vehicles is a generous figure which very few quiet streets would achieve. I actually have no idea why this figure is concerned with peak time as children played for much longer, and the number of vehicles passing the variety of points along streets varied very considerably. There is logic here, however. A car every minute for half an hour might disrupt play, but I am not convinced there is any reason here to restrict the use of such treatments as a result. It is more likely that car use would merely displace the play for a while until the street quietened down again.

These highway measures must combine with an appropriate street treatment and the provision of space or, better still, a network of spaces to play in. Providing cul-de-sacs alone is not an effective measure, as cul-de-sacs do not bring children from a wider friendship circle together. The most successful spaces here tended to be permeable for pedestrians and bikes, but closed to other through traffic. Designs do not need to be elaborate and formal play equipment does not appear to be necessary.

What was also interesting, and possibly a by product of the methods used here, was the evidence of how well used for just passing through well connected streets are which link to a good mix of local facilities. Whilst we might become interested with the potential of promoting different types of activity within streets, the more mundane but also very important coming and going of pedestrians remains really critical. The best streets could support the play and coming and going in equal measure, and it was often the passing through of adults that supported the social activity between the generations.

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