Pilot home zone schemes: evaluation of The Methleys, Leeds

Prepared for Charging and Local Transport Division, Department for Transport

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Executive Summary

The Methleys Home Zone in Leeds is one of nine home zone schemes in a pilot programme set up by the Department for Transport (DfT). The programme's aim is to evaluate the potential benefits, particularly in regard to shared road space, of a wide range of home zones in different parts of England and Wales.

The Methleys Home Zone is in Chapel Allerton, to the north of Leeds City Centre. The area has a strong local identity and contains about 300 properties in a compact grid pattern of terraced housing with little or no garden space. About 30 per cent of households have children under 17 years of age. Car ownership is relatively low (about 60% of households) and most parking is on-street.

The Methleys has an active residents association, Methley Neighbourhood Action Group (MNA) which has been campaigning for a number of years for better and safer places where local children can play. In 1999, Leeds City Council took the opportunity of the DfT pilot home zone programme to back the residents' proposals for an improved streetscape and undertook an extensive consultation process, initially about whether people favoured the home zone in principle, and later regarding the concept and detailed design. During the consultation process, residents generally showed very positive support for the scheme. The main criticism of the proposals was that only a relatively small part of the area was to be radically changed. However, most residents were aware that (their) parking requirements were constraining more radical changes to other streets.

Construction of the home zone started in June 2001 at a total cost of £220,000. Site work was completed in December 2001 and planting was completed in March 2002.

TRL was commissioned by the Charging and Local Transport Division of the DfT to assess the effectiveness of the pilot home zone schemes in achieving the aims of home zones. As part of this process, TRL carried out 'before' and 'after' monitoring including, interview surveys with adults and children, collection of traffic flow, traffic speed and accident data, video recording, and air quality and noise monitoring.

Home zone measures

The home zone measures included:

- gateway treatments (with road narrowing, 20mph and home zone signing) at the principal entry points to the home zone to make non-local drivers aware of the changed environment;
- a new shared road surface, incorporating coloured block paving and extensive planting, on the western section of Methley Drive to encourage street based activity and change driver behaviour on this wide straight road through the zone;
- traffic calming on key streets to manage speeds in these areas.

At the time of the implementation of the pilot scheme, the final form of the 'standard' home zone sign to be used in the UK had not been determined. The boundary of the home zone was signed with local artwork positioned below the 20mph zone signs.

The new shared surface has been raised to the footway level and is accessed by short ramps. Vehicles travelling along the shared surface have to negotiate staggered planted areas. These have been arranged to substantially reduce the forward 'free view' width. Vehicles can pass each other at or near the junctions but are restricted to single lane working in the narrower sections near the planted areas.

The plant beds contain trees (maintained, by Leeds City Council) and a variety of shrubs and herbaceous perennials maintained by the local community. The linear nature of the tarmacadam vehicle path has been further broken up by contrasting circular patterns of coloured concrete block paving at the junctions with the adjoining streets. These circular patterns add visual appeal, and contain bricks that have been imprinted with designs produced by local children and adults. Other artwork emphasising the changed nature of the area has been mounted on the walls of properties around the zone.

Residents support for the home zone scheme

The majority of the adult residents who were interviewed in The Methleys were supportive of the home zone, and many more mentioned advantages than disadvantages. Most of them thought that the home zone had a positive impact in terms of: the appearance of shared surface on Methley Drive, walking within the home zone, speeding vehicles, danger from traffic, and the way they drove within the home zone. However, the majority of them also thought that the frequency of their journeys along their street, the time they spent outside the front of their home, and the time spent by their children outdoors had not changed greatly since the home zone scheme was introduced.

This perceived lack of change is not entirely surprising as, for many of the respondents living in side roads off Methley Drive, the appearance of the street outside their front door and the volume and speed of traffic on their street had not substantially changed after the home zone was introduced. In the side roads there were still footways, kerbs and parked vehicles and the mean speeds and daily traffic flows were relatively low both before and after the home zone scheme was introduced. One of the aims of the home zone was to formalise the existing use of the side roads (e.g. children playing) and to make non-local drivers aware of the changed environment.

As with the adults, almost all the children interviewed said they thought the street looked nicer now that it was a home zone. Most popular with the children was the planting of flowers, trees and shrubs, and the patterned brick paving on the new road surface.

About half the adult respondents thought that the changes to the streets were sufficient to make the home zone work. Additional things that were thought to be needed included a safe area for children to play in, further traffic calming or traffic restrictions, more planting, and more streets to have a shared surface. Overwhelmingly, the children interviewed said that The Methleys needed a play area.

On-street parking spaces

One of the main concerns raised by residents during the home zone consultation process was that of parking, particularly regarding the space available for on-street parking and the desire to park vehicles near the home due to fear of crime. As a consequence, careful consideration was given to the likely effect on the numbers of on-street parking spaces when designing the changes to the streets.

On-street parking availability within the home zone was reduced by about 16 per cent, mainly at locations where parking was generally not directly overlooked by houses. However, there was still enough space left within the zone to cater for the existing demand. The residents' interview surveys found that just under a third of the motorists thought that parking outside their home was more of a problem since the home zone was introduced.

Traffic speeds and traffic flows within the home zone

The staggered planting areas on the shared surface at the western half of Methley Drive, and the speed cushions in the eastern half, were successful in reducing mean speed by about 6mph, 15mph at the speed cushions, and 14mph on the shared surface was achieved. However, the speeds were still higher than the home zone target of 10mph, with only 20 per cent of vehicles travelling at or less than 10mph. The mean speed on a typical side road (with no measures) remained largely unchanged at about 14mph.

Traffic flows on most roads within the home zone were relatively low (typically less than 250 vehicles per day), apart from Methley Drive (the main east/west route through the zone) and Blake Grove (a north/south route on the eastern edge of the zone) at about 1,200 vehicles per day. After the home zone was introduced, the measured daily two-way traffic flow on these two roads was lower by about 10 per cent. Ideally, home zone streets should have two-way traffic flows of no more than about 100 vehicles per hour in the afternoon peak hour. This was achieved for all the streets where flow was measured within the home zone, except for Blake Grove (130 vehicles per hour).

Driver behaviour and perceived safety

Most of the adults interviewed, thought that poor driving standards / behaviour had neither increased nor decreased since the home zone was introduced. However this issue was less of a concern to respondents in the 'after' survey than in the 'before' survey.

About half of the adult respondents thought that motorists are now more considerate to children playing in or near the street and over two-thirds of the car/van users said that they were now driving more slowly and carefully. Less than a third of adult respondents said that motorists took priority in the home zone streets.

With regard to danger from traffic, over two-thirds of the adults interviewed thought that the home zone had made it safer for children when walking or cycling and just over half thought that children should play in the street now that it was a home zone. The age of children was an important factor when considering the impact of the home zone on the safety of unsupervised play in the street. As might be expected, an increasing proportion of the adults thought that it was safer for older children and the main 'before' to 'after' change in their views related to junior / middle school children.

With regard to danger from crime, most of the adults interviewed thought that the home zone had not changed the perceived danger from crime when walking or cycling. There was also little change, 'before' to 'after', in the proportion of children who were worried about issues such as danger from strangers and bullying when playing outside.

Adult journeys and activities

Walking, cycling and driving within the home zone were all felt to be more pleasant by many respondents but for most respondents the introduction of the home zone made no difference to the ease of day to day journeys within the home and how often they walked, drove or cycled along their street.

Most adult respondents said that the home zone had made no difference to the amount of time they spent outside the front of their home when the weather was reasonable.

Children's outdoor activities

Two thirds of the children interviewed said they sometimes played outdoors near their homes, most of these did so at least twice a week. More than three-quarters had friends living close by and almost half could name two or more local people they spent time with regularly. However, the home zone had relatively little impact on the frequency of playing out doors with most respondents saying they played outdoors about as often as before.

Playing in the street, either outside the child's own home or elsewhere, was far more common than playing in gardens or open spaces and the proportion of children who said that they played in the street increased in the 'after' survey. However, when asked directly, few children said that they had changed where they play since the home zone was introduced.

The most popular outdoor activities named by children were riding bikes, playing football-type games and chatting or hanging around with friends. Children were asked whether they found it more or less fun to play or spend time outdoors since the home zone was built. Most of them said it was about the same. Most of the children felt their journeys to/from school were neither better nor worse since the home zone was constructed.

Noise levels and air quality

The home zone had little impact on noise levels and the kerbside concentration of the air pollutants benzene and NO_2 (nitrogen oxides). This lack of major change in measured values was supported by the results of the

interview survey in which about two-thirds of the respondents thought that traffic noise and traffic pollution had not changed since the home zone was introduced.

Road traffic injury accidents

In the five years before the home zone was introduced, there were two road traffic injury accidents reported on roads within the home zone boundary. The two accidents involved child cyclists who failed to give way at a junction, both accidents resulted in slight injury. In the year after the zone was installed, there were no injury accidents within the home zone. Further 'after' accident data will be sought as it becomes available but any change in accident frequency is unlikely to be statistically significant because of the small number of accidents involved.

1 Introduction

Home zones are residential areas designed with streets to be places for people, instead of just for motor traffic.

The aim is to change the way that streets are used in order to improve the quality of life in residential streets. The outcome will be that they are places for people (including people who walk and cycle, and children), not just for traffic. Introducing a home zone will allow scope for a wider range of activities in street space that was formerly considered to be for exclusive use by vehicles. Changes to the layout of the street should emphasise this change of use, so that motorists perceive they should give informal priority to other road users. Good and effective consultation with all sectors of the community, including young people, is important, and can help ensure that the design of individual home zones meets the needs of the local residents.

The Methleys, Leeds is one of nine home zone schemes in a pilot programme set up by the Department for Transport (DfT). The programme's aim is to evaluate the potential benefits, particularly in regard to shared road space, of a wide range of home zones in different parts of England and Wales.

1.1 The report structure

Section 1 describes the development of the home zone concept in the UK and the DfT pilot home zone programme. Section 2 of this report gives details of the streets forming The Methleys Home Zone and the consultation and implementation timetable. Section 3 describes the measures used in The Methleys to create a home zone. Section 4 and appendices A to D provide details of the data collection. Section 5 considers the impact of home zone on residents and traffic. Section 6 looks at some of the issues raised in the home zone design. Section 7 contains the summary and conclusions.

1.2 Home zones and woonerven

Conventional traffic calming schemes and 20mph zones have shown that reducing the mean speeds of traffic in urban areas to below 20mph can have a substantial beneficial effect on road safety (Webster and Mackie, 1996). However, the traffic function of such streets may still predominate at the expense of other activities.

The concept of shared road space within a safe residential area or 'home zone' is widespread in many parts of Europe. It originated in the Netherlands as woonerven (residential precincts) in which the residential function clearly predominates over any provision for traffic. This principle is expressed in the design and layout of the residential areas. The road space is shared between motor vehicles and other road users, with the needs of pedestrians, including children, and cyclists coming first. The regulations require drivers within a woonerf to drive at a walking pace and make allowance for the possible presence of pedestrians including children at play (ANWB, 1980).

Home zones were originally suggested for the UK in the 1980s as a low cost measure to reduce casualties to young children in residential areas and allow them to play out in safety. The idea was to introduce new legislation such that child pedestrians should have priority and drivers who injured children should be presumed negligent. It was anticipated that this new legislation would modify driver/rider behaviour such that speeds would be reduced to a walking pace and that the need for conventional road engineering traffic calming measures would be minimal (Preston, 1992).

The concept of reclaiming residential streets as home zones was given new emphasis by the Children's Play Council, Transport 2000 and the Child Accident Prevention Trust. They advocated a change in priority between drivers, cyclists and pedestrians supported by new legislation and lower speed limits. The lower speeds would be enforced by a combination of traffic calming measures and other design features (Children's Play Council, 1998).

The Government's Transport White Paper, A New Deal for Transport: Better for Everyone, published in July 1998, recognised the value of home zones in improving the places where people live and play. The Government wished to work with local authorities to evaluate the effectiveness of home zones. In order to do so, nine pilot schemes were established in England and Wales.

The Government's Road Safety Strategy and Speed Policy Review, as well as Planning Policy Guidance Notes 3 (Housing) and 13 (Transport), reinforced the Government's commitment to home zones.

The Transport Act 2000 makes provision for home zones in England and Wales. This came into effect in February 2001 and local authorities now have a specific power to designate home zones in their area. They will also be able to make orders about the use of roads and about speed reduction measures in home zones, subject to regulations to be made by the Secretary of State (for England) or the National Assembly (for Wales). Similar provisions exist in Scotland.

In order to accelerate the growth of the home zone concept the Government made available £30 million for a Home Zone Challenge scheme in England to be spent within the financial years 2001/02 to 2004/05. Local authorities with traffic and/or highway functions were eligible to bid for funding, 61 home zone schemes were selected to receive funding through the Challenge.

1.3 The DfT Home Zone Pilot Programme

TRL was commissioned by the Charging and Local Transport Division of the DfT to evaluate the DfT Home Zone Pilot Programme which is being implemented by nine local authorities in England and Wales.

The Home Zone Pilot Programme started in 1999 and the main 'before' surveys were completed in 2000. The major part of the consultation, scheme design and construction took place between spring 2000 and spring 2003. The timing of the 'after' surveys and reporting has been dependent on the implementation progress of the individual home zone schemes.

Over 30 local authorities in England and Wales put forward around 50 schemes for inclusion in the pilot programme. Many of the schemes had been initiated by residents' associations with the local authority acting as a catalyst. In the selection of pilot schemes, priority was given to schemes with innovative ideas, strong support from residents' associations, transferable results and a commitment to implementation within the study time scale. During the sifting process, broad categories of scheme emerged including regeneration projects, large neighbourhood schemes, inner urban schemes and single streets or clusters of small streets. The selection panel endeavoured to get a range of scheme types into the pilot programme reflecting the variety and geographic spread of the schemes submitted.

The nine pilot home zone schemes are in Ealing (London), Lambeth (London), Leeds, Manchester, Magor Village (Wales), Nottingham, Peterborough and Sittingbourne (Kent). Although the home zone sites chosen are very different both in scale and type, none have particularly heavy flows and most have few accidents. Home zones are not principally safety schemes but are aimed at improving the quality of life.

Extensive consultation has taken place with the local communities on problems within the areas and on the evolving design for the schemes. This has taken many forms: leaflets, interview surveys, public meetings, exhibitions, street events and design workshops. The nine home zone schemes are being designed and funded by local authorities and the implementation timetables for the individual schemes have varied according to the progress with consultation, the size and type of scheme, the extent of the work involved and the acquisition of sufficient funds.

A working group advises the Department on the results of the monitoring effort, including design and implementation issues. Membership of the group included local authorities, the Association of Chief Police Officers, the Disabled Persons' Transport Advisory Committee, the Children's Play Council, Transport 2000, TRL, DfT and members of the devolved administrations.

1.4 Study objectives

The DfT's objectives are to assess the effectiveness of the pilot home zone schemes in achieving the aims of home zones, to come to a view on the need for additional legislation, and to identify and disseminate good practice guidance.

The main success criteria for Leeds City Council include achievement of the following:

- Reduction of speed of traffic using the streets within the home zone.
- Provision of increased opportunities for children's outdoor play.
- Reduction of injury accidents of all road users.
- Increased street based activity and neighbourhood involvement.
- Improved perception of road safety for all road users.

2 The site

The Methleys is located in Chapel Allerton to the north of Leeds City Centre (Figure 2.1). It is called 'The Methleys' because the streets are named Methley Drive, Methley Grove, Methley Terrace etc. The area has a strong local identity and contains about 300 properties (about 700 people) in a compact grid pattern of 14 streets (Figure 2.2). The longest road in The Methleys is Methley Drive (about 255m) and this forms the main east/west route across the area. The houses are mainly Victorian style terraces (1905), arranged back to back with little or no garden space, some have rear access. The south-western part of the site contains a more modern housing development.

Door to door 'before' interview surveys with adult residents found that: about 60 per cent of households had at least one car, about 30 per cent of households had children under 17 years of age, about 20 per cent of residents interviewed were aged 60 or over and the occupational group categories of respondents were AB 24 per cent, C1 38 per cent, C2 9 per cent, DE 29 per cent (see Section 4.1).

Figures 2.3, 2.4 and 2.5 show the area before the home zone was implemented. There is a north/south gradient across the site. Most of the streets are relatively wide (about 7m to 8.5m carriageway, 1.7m to 2m footways) and most parking is on-street. There is some multiple occupancy (conversion to flats) at the eastern end of Methley Drive and parking density here is greater. There is a printing shop on Blake Grove and, prior to the 'after' monitoring study, a car repair business in old buildings at the junction of Zermatt Street and Methley Place. This is now being redeveloped for flats.

Before the scheme was implemented, there was some through traffic north/south along Blake Grove on the eastern edge of the site and some through traffic east/west along Methley Drive (see Section 5.5.1). Traffic congestion arising from parents parking and dropping off/ collecting children, occurred in the Northern section of Methley Terrace for short periods outside the Chapel Allerton Primary School at school start and finish times.

2.1 Background

There is an active residents association, Methley Neighbourhood Action Group (MNA), formed in 1994, which has been campaigning for better and safer places where local children can play. The MNA issues a regular newsletter about The Methleys and have organised communal gardening and various events including street sports, annual outdoor 'Screen on the Wall' film shows (see Figure 2.6) and even turfing over sections of a street to demonstrate what it would be like without cars.

There are, however, different groups within the home zone population who have different concerns, sometimes conflicting (e.g. elderly people who have lived in area for a long time, people with young children who have moved in more recently). In one particular instance, plans by the Methley Neighbourhood Action Group to build a Millennium Green garden at the north end of Methley Terrace were abandoned after objections from people living around the proposed site.

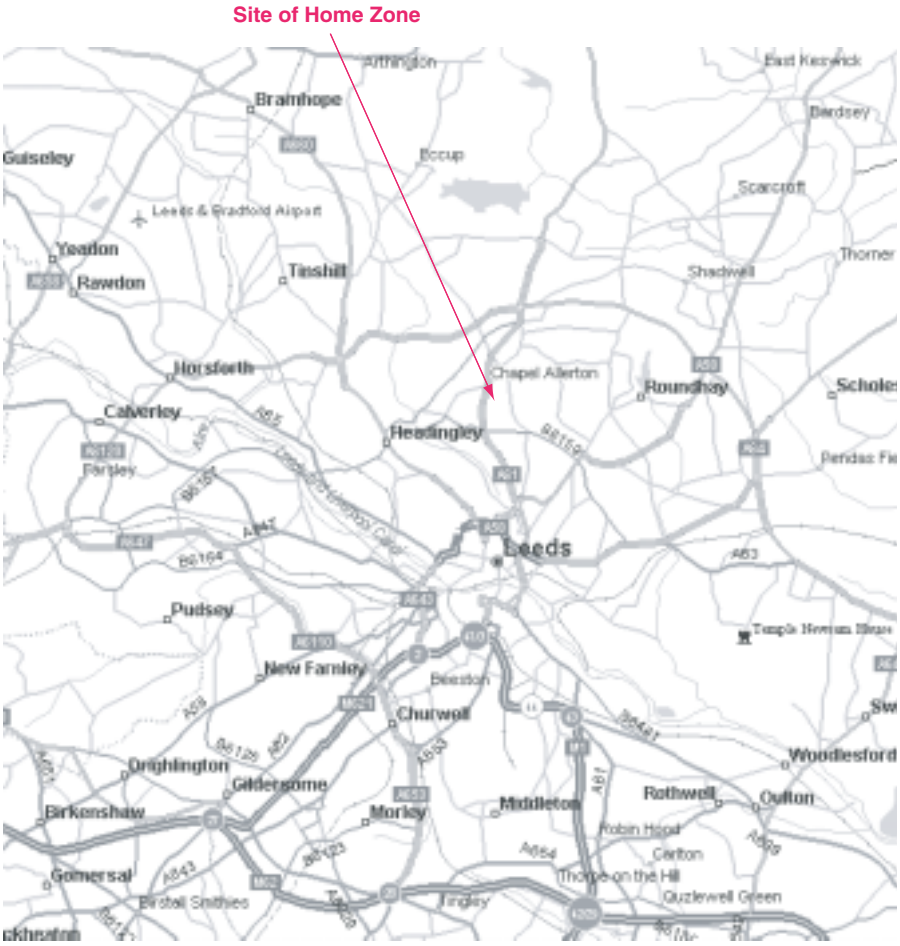


Figure 2.1 Location of The Methleys, Chapel Allerton within Leeds

2.2 Consultation and implementation timetable

Partners in the project are the Leeds City Council Department of Highways and Transportation and Methleys Neighbourhood Action Group. In 1995, Methleys Neighbourhood Action Group commissioned a community architect to draw up proposals for environmental improvements within The Methleys having identified the need to improve the streetscape. Leeds City Council became involved in 1996 and further developed the scheme.

In 1999, Leeds City Council took the opportunity of the DfT pilot programme to back the residents' proposals for a home zone and consulted with all residents as to whether people favoured the home zone in principle. Most of the responses were in favour but there was some reservations about the intention to use play street legislation. It was decided to create a 20mph zone for the entire estate with separate signs to describe the nature of the area and the required driver behaviour.

The home zone scheme in The Methleys fits into the broad category of 'large neighbourhood home zone schemes' in the DfT pilot home zone programme.

A landscape architect was brought in to assist with the design of the scheme and in September 2000, the Council undertook formal consultation on the draft proposals for the home zone. An exhibition was held, publicised by leaflets delivered to each household. A mobile exhibition caravan was sited in the middle of the estate. Nearly 130 people visited the exhibition including some from neighbouring areas. There was very positive support for all aspects of the scheme from the visitors to the exhibition. The main criticism of the proposals was that only a relatively small part of the estate, the western half of Methley Drive, was to be radically changed. However, most residents were aware that (their) parking requirements were constraining more radical changes to other streets. Further consultation was carried out through the Leeds City Council / Methleys Neighbourhood Action working party, although residents directly affected by works were consulted individually.

The detailed design was finalised in spring 2001 and 20mph Speed Limit Orders advertised. Construction started in June 2001 at a total cost of £220,000 that included the cost of the traffic calming and streetscape improvements with the necessary regulatory and home zone entry signing. Implementation was not entirely smooth as some residents claimed that they were not consulted while others changed their minds about features near their homes.

Residents were interviewed in door to door surveys by TRL as part of the data collection for the DfT pilot programme before and after the scheme was introduced (see Section 4.1). The results from the 'after' survey showed that over two-thirds of the adult respondents thought that there had been sufficient consultation with

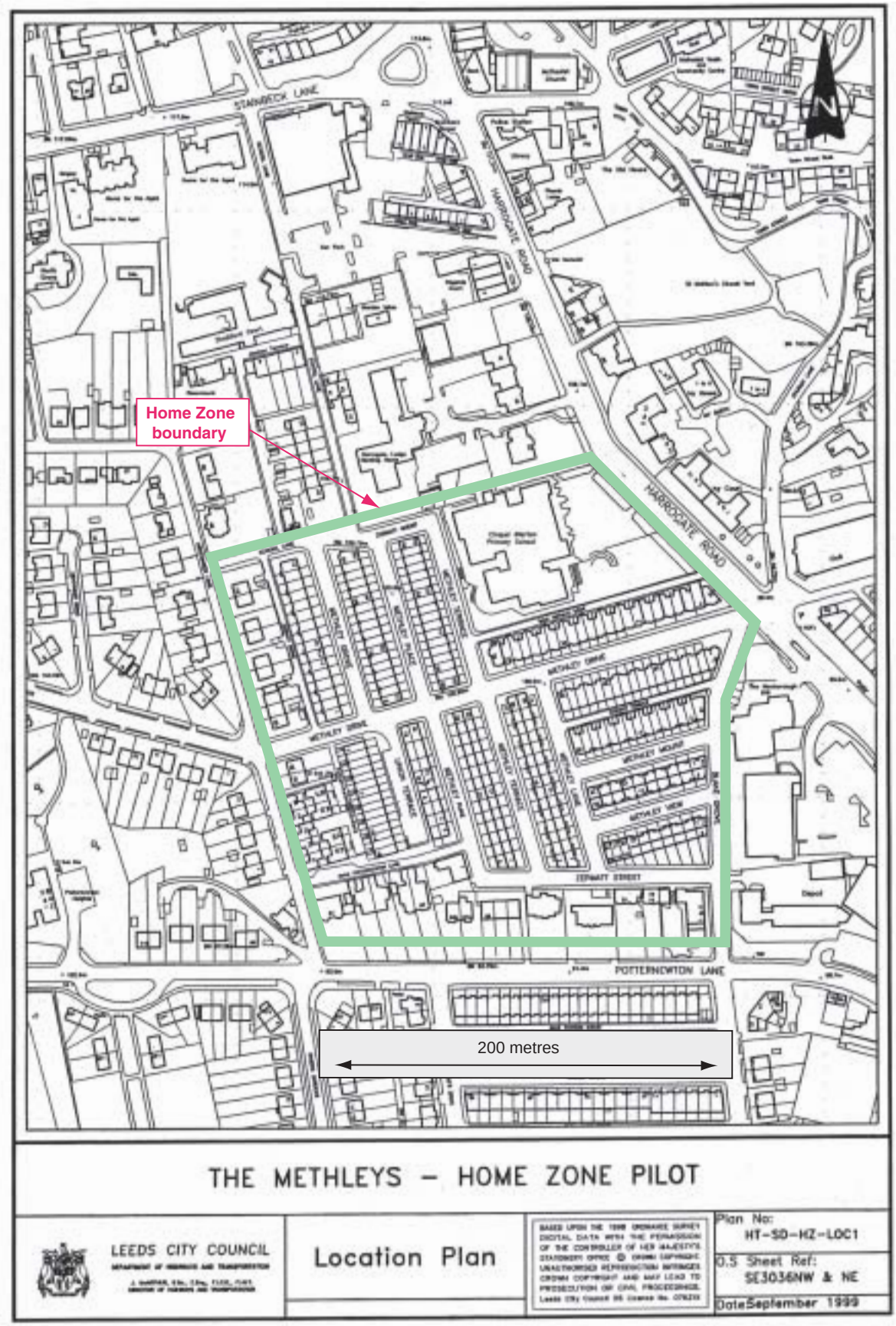


Figure 2.2 Location plan of The Methleys Home Zone

Figure 2.3 Methley Drive, looking west, before the home zone was installed

Figure 2.4 Methley Terrace looking south outside the school, before the home zone was installed

Figure 2.5 Methley Lane, looking north, before the home zone was installed

Figure 2.6 The outdoor ‘Screen on the Wall’ in Zermatt Street

residents before work began and about half thought that the views of residents were adequately taken into account (see Section 5.1).

Site work was completed in December 2001 and planting was completed in March 2002. The residents association organised an official opening on May 6, 2002 with live music, stalls, games, children’s entertainment, street performers, maypole dancing, and an outdoor evening movie show at ‘The Screen on the Wall’.

3 Home zone measures

A schematic plan of the measures used in The Methleys Home Zone is shown in Figure 3.1. The home zone proposals included:

- gateway treatments (with 20mph and home zone signing) at the principal entry points to the home zone to make non-local drivers aware of the changed environment;
- traffic calming on key streets (Methley Drive, Blake Grove and Zermatt Street) to manage speeds in these areas; and
- a new shared road surface, incorporating coloured block paving and extensive planting, on the western section of Methley Drive to encourage street based activity and change driver behaviour on this wide straight road through the zone.

The appearance of many of the streets within the home zone was substantially unchanged

During the consultation process with local residents some changes were made to the proposed design: minor changes to the location of the gateways, a revision of the layout of the planting and paved areas on the shared surface on Methley Drive, a pair of speed cushions proposed for Zermatt Street was replaced by a chicane, and the numbers of speed cushions were reduced on Methley Drive and Blake Grove.

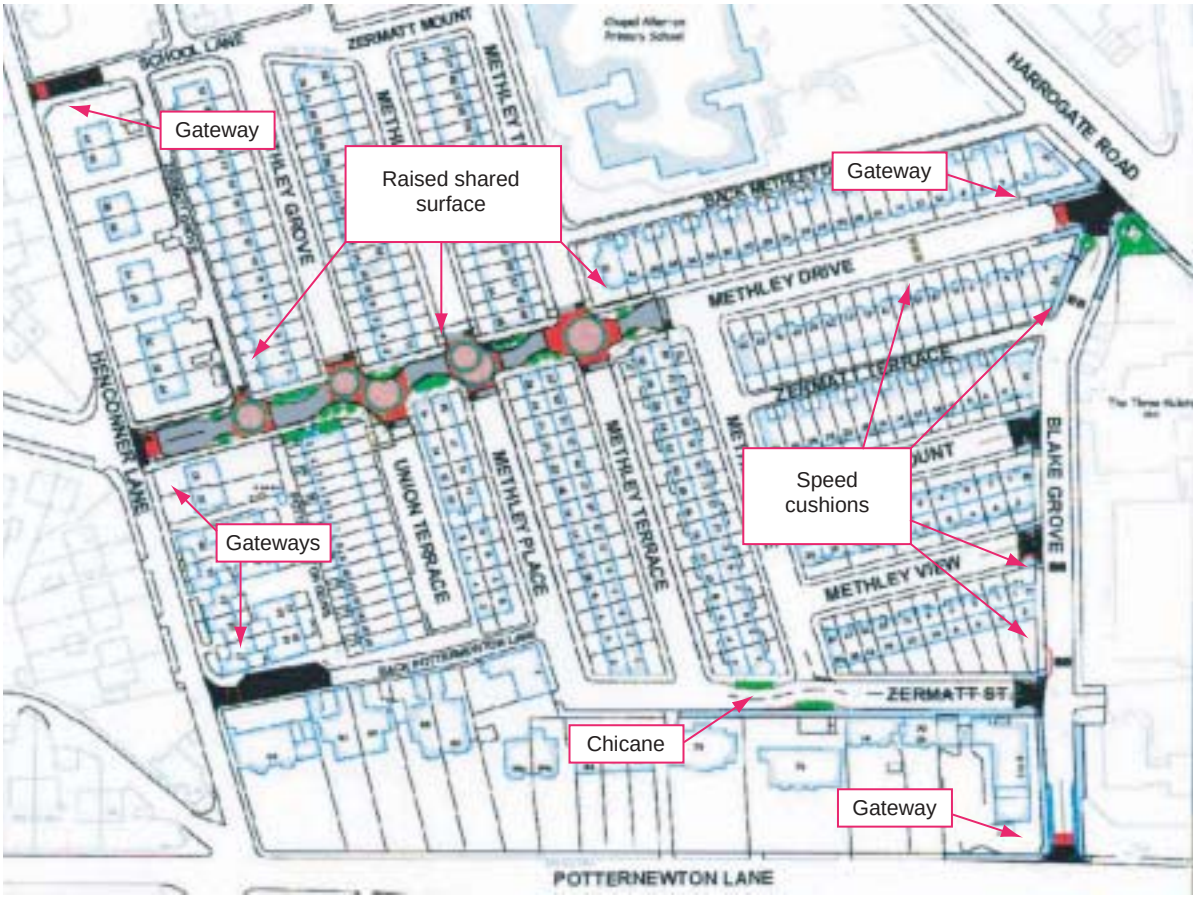


Figure 3.1 Home zone measures

3.1 Gateways and home zone signing

At the five gateways to the scheme, the roads were narrowed to between 5 and 6m, depending on the location, and patches of buff and imprinted red coloured overlay were applied. The gateway at the western end of Methley Drive also incorporated a ramp up to the raised shared surface (Figure 3.2).

A 20mph zone was established at the boundary of the home zone. At the time of the implementation of the pilot scheme, the final form of the 'standard' home zone sign to be used in the UK had not been determined and the boundary of the home zone was signed with local artwork positioned below the 20mph zone signs (Figure 3.3).

Figure 3.2 Gateway at western end of Methley Drive

Figure 3.3 Home zone and 20mph zone signing

3.2 Shared surface on Methley Drive

The heart of The Methleys Home Zone is located in the western section of the main spine road, Methley Drive, which has been intensively treated along a length of approximately 140 metres (see Figure 3.4).

Methley Drive was selected for shared surface treatment in order to change existing road user behaviour on this straight east / west route through the zone and create a community area that would act as a focal point in the centre of the zone. Due to concerns about the reduction of on-street parking, the shared surface was limited to the western part of Methley Drive where there were few houses directly fronting onto the street. This part of Methley Drive mainly consisted of side road junctions separated by gable ends of terraced houses. The shared surface treatment was not continued into the eastern part of Methley Drive because the different street layout and the multi-occupancy of some properties in this part of the street resulted in a greater requirement for overlooked on-street parking (see Section 5.4.1).

The shared surface has been raised to the pre-existing footway level and is accessed by short ramps (see Figure 3.4). It is made up of four main elements: buff paved areas ('Traffica Flags'), plant beds containing trees smaller plants and shrubs, coloured concrete blockwork at the junctions and sections of tarmacadam in between. Some of the trees have also been planted in the buff paved areas and are protected by metal tree-guards (see Figure 3.5). The incursion of vehicles on to plant beds is prevented by complementary knee-rails. The buff paved areas and plant beds are distinguished from the coloured blockwork and tarmacadam by pre-cast concrete kerbing set to give a 15mm upstand (see Figure 3.5).

The shared surface was located fairly close to the school on Methley Terrace and, because it would be used by people accessing the school, it was felt necessary to include the buff paved areas that would be primarily for pedestrian use. The original design for these paved areas was not so linear, it had some of them curving around the outside of some of the planted areas. However, during consultation, concerns were raised by some residents about the desirability of having any planted beds close to the gable ends. In order to overcome these concerns, the locations of the affected planted and paved areas were transposed with the result that all the paved areas were located near the gable ends producing a more linear 'footway' effect (see Figure 3.2 and Figure 3.5).

Figure 3.5 Tree planting on Methley Drive

Vehicles travelling along the shared surface have to negotiate the staggered planted areas. These have been arranged to substantially reduce the previous forward 'free view' width of 8.5m between kerb lines, with the visual impression of reduced width likely to become more apparent as the planting matures. Vehicles can pass each other at or near the junctions but are restricted to single lane working in the narrower portions (minimum width 4m) near the planted areas. The linear nature of the tarmacadam vehicle path has been further broken up by the contrasting circular patterns of coloured concrete block paving at the junctions with the adjoining streets.

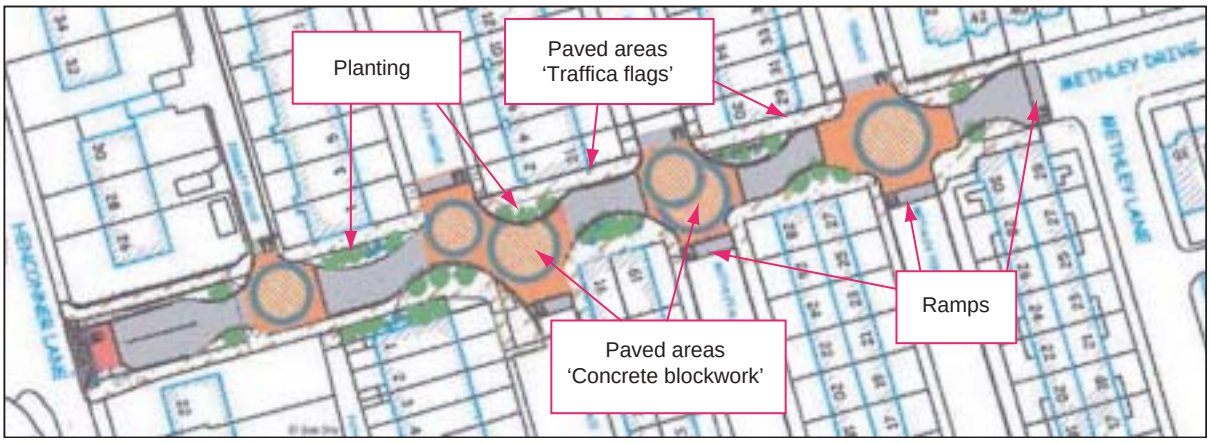


Figure 3.4 Plan of shared surface on Methley Drive

The circular patterns of paved blocks, add visual appeal, and contain bricks that were imprinted with designs produced by local children and adults (Figure 3.6). Other artwork emphasising the changed nature of the area has been mounted on the walls of properties around the zone (Figure 3.7).

The trees were planted, and will be maintained, by Leeds City Council. Species chosen were all suited to street planting (salt tolerant, limited root spread, conical and fastigiated in shape). The start of the single-surface area is marked by a pair of limes (*Tillea cordata)* and the area is flanked by cherry trees (*prunus schubert, prunus sargentii and prunus hillieri*) all of which flower at the same time. The beds were themed by colour and comprise a variety of shrubs and herbaceous perennials. Plants like lavender and mahonia provide scent. These beds were planted by the community who continue to maintain them on a monthly basis. Locals have also added annual bedding plants; one bed was planted by the local school children and includes herbs.

A community noticeboard was also set up on a gable wall within the shared surface area.

3.3 Traffic calming measures on other streets in the zone

Methley Drive

A set of three speed cushions placed abreast across the road was introduced on the eastern part of Methley Drive to ensure low traffic speeds were maintained between the eastern gateway and the shared surface on the western part of Methley Drive. Originally two sets of speed cushions were proposed on this section but this was reduced to one following consultation with residents. The specified cushion dimensions were, height 70mm, width 1750mm and length 1900mm, plateau width of 1000mm and a plateau length of 700mm.

Blake Grove

Speed cushions and road narrowings (5.5m) were installed along Blake Grove to lower speeds on this north / south route along the eastern edge of the zone. Blake Grove was also substantially narrowed at the junction with Methley Drive / Harrogate Road in order to reduce the speed of traffic entering Blake Grove from Harrogate Road.

Figure 3.6 Bricks with imprinted artwork

Figure 3.7 Example of wall mounted artwork in The Methleys Home Zone

Zermatt Street, Methley View and Methley Mount, were narrowed to 5.5m at their junctions with Blake Grove to lower the traffic speeds of vehicles turning to and from Blake Grove.

Zermatt Street

A chicane layout (two-way working, carriageway width reduced to 5.5m) was introduced on Zermatt Street near the junction with Methley Lane to control traffic speed. It also provided an opportunity for additional areas of planting.

4 Data collection

TRL's 'before' and 'after' monitoring programme comprised:

- Attitudinal surveys of adults and children living within the home zone, the results of which form the main basis for determining whether the aims of the home zone has been achieved.
- Collection of traffic flow and speed data.
- Video recording to determine pedestrian counts and classified traffic counts, and to gather information on parking activity, general street activity and pedestrian behaviour.
- Accident data will be analysed, but low accident numbers are unlikely to give a statistically significant result.
- Air quality and noise monitoring.

The main 'before' surveys were carried out by TRL between June-September 2000 and the main 'after' surveys between May and July 2002.

4.1 Interview surveys

Door to door interview surveys took place during September 2000 and were aimed at adult residents and their children living within the home zone. Following scheme implementation, the same respondents, where possible, were interviewed in June/July 2002. The children, aged 7-16, were interviewed using a modified questionnaire concentrating on on-street activities and behaviour within the home zone.

In both 'before' and 'after' surveys, questions to adult respondents included:

- The characteristics of their household.
- The perceived level of traffic speed, flow, noise and or pollution within the home zone.
- Cycle ownership, car or similar ownership/ access and where parked.
- Frequency of journeys for different purposes by walking, cycling and car.
- Safety within the home zone and on surrounding roads.
- Involvement in accidents or near misses.
- How their children travel to school and whether accompanied by adults.
- Where their children play within the gardens and street area of the home zone.
- What types of play activity take place.
- Safety of street for playing.
- What on-street activities they undertake within the home zone.
- The degree of priority given by drivers to children, pedestrians or cyclists.

In the 'after' surveys, respondents were asked about their perceptions of changes in vehicle speeds, traffic flow, noise, pollution, mode of travel, parking provision, safety, playing and other activities within the street. Respondents were also asked about the visual appearance of the home zone, the measures used to control traffic, the effect on accessibility to their home by different modes and the need for further measures.

Interviews were conducted in those streets in The Methleys area of Leeds which were to become part of the home zone. A target of 100 adult and 50 child interviews was set, the child interviewees to be selected from households where an adult had completed an interview. Quotas were set for each street to ensure that the interviews were spread fairly evenly across the home zone area. Some houses in The Methleys span the area between two roads and have two addresses – one on each of the roads. Care was taken to ensure that such houses were included on the interviewers' address lists only once, and that the questions in the interview about 'this street' related to the street named in the address list, rather than the other street that the property also fronted onto. Every selected address received a minimum of three calls at varying times of the day and week, including weekends, before being abandoned as a 'non-contact'.

Only one adult and one child were selected for interview from any one household. Adults were specified as 17 years or over, and only those living at the address for at least 6 months prior to the interview were eligible. Adults selected were head of household, then partner of head of household. Children selected for interview were between 7 and 16 years. If there was more than one qualifying child in the household then the child whose birthday fell next in the calendar year was interviewed. The child interview was always conducted *after* the adult interview in each household and an adult member of the household was present during the child interview. The child questionnaires topics covered included attitudes to the street, travel modes, outdoor activities and play within the street, and attitudes to the proposed home zones.

4.1.1 Characteristics of the adult survey sample

The 'before' interviews were carried out in September 2000 with 97 adult residents living within or on the edge of the proposed home zone (see Table 4.1). The 'after' interviews took place during the June and July of 2002 with 99 adult residents living in the same streets, 67 of whom had previously been interviewed before the home zone scheme was introduced.

Table 4.1 Number of adults interviewed in streets within the home zone

Street name	*'Before'*	*'After'*	*Street name*	*'Before'*	*'After'*
Methley Drive	14	14	Potternewton Gardens	6	9
Methley Terrace North	10	9	Methley Lane	5	5
Methley Terrace South	0	1	Methley Mount	4	5
Methley Place North	16	14	Methley View	6	7
Methley Place South	10	10	Zermatt Street	10	8
Methley Grove	5	8	Back Potter Newton Lane	2	3
Henconner Lane	1	1	Blake Grove	2	1
Union Terrace	6	4			

Table 4.2 gives details the age, sex, occupational group, length of time at address, car ownership and ages of household members. One-fifth of respondents have lived in their street for 20 years or more and about one-third of households interviewed had children under 17 years of age. Over three-quarters of the respondents live in terraced housing, approximately half have small back gardens, and roughly one quarter have no back garden.

4.1.2 Characteristics of the child survey sample

The characteristics of the sample of children living in the home zone who were interviewed are given in Table 4.3. 'Before' interviews were carried out in September 2000 with eighteen children aged between 7 and 16 years. The 'after' interviews took place, just under two years later, with seventeen children aged between 7 and 16 years (6 who had been interviewed previously) and 4 'adults' aged 17 to 19 years. The 4 adults were included in the 'after' child survey because they had been interviewed as children in the 'before' survey.

4.2 Traffic flows and speeds

Traffic flow and speed data were collected during school term-time by TRL with automatic traffic counters (ATCs) using tube detectors. The 'before' traffic flow and vehicle speed measurements were made over three weeks in June/ July 2000 at the following locations (shown in Figure 4.1):

- Location 1: Methley Drive (eastern part).
- Location 2: Henconner Lane.
- Location 3: Methley Terrace.
- Location 4: Blake Grove.

'After' traffic flow and vehicle speed measurements were made for one week in May 2002 at the above locations and also at Location 5: Methley Drive (western part).

The ATCs store speed information by allocating speeds within a given range (e.g. between 0 and 10mph) to a particular 'bin'. For this study, the speed 'bins' on the ATCs were set to provide adequate detail on lower speeds (below 20mph) as well as higher speeds.

The measured changes in daily traffic flows and vehicle speeds are given in Sections 5.5.1 and 5.5.2. Appendix A contains bar charts of mean hourly flows.

Table 4.2 Characteristics of adult respondents and households in 'before' and 'after' surveys

	'Before' survey	*'After' survey*
	% of respondents	
Age of respondent		
17-21yrs	0	1
22-29yrs	29	18
30-44yrs	33	43
45-59yrs	20	15
60+yrs	18	23
Sex of respondent		
Male	36	32
Female	64	68
Occupational group		
AB**	24	*
C1**	38	*
C2**	9	*
DE**	29	*
Length of time at this address		
Between 6 – 12 mths.	10	0
Between 1 – 5 years	37	41
Between 5 to 10 years	16	27
Between 10 – 20 years	19	20
20 yrs or more	18	12
Total number of respondents	97	99
	% of interviewed households	
Age of members of household		
Any children under 17 yrs	30	33
Any 17 – 21 yrs	7	9
Any 22-25 yrs	14	11
Any 26 yrs and over	97	96
Households owning one or more cars	62	63
Respondents with members of their household suffering from:		
Breathing problems	19	16
Heart problems	5	9
Sight problems	2	3
Hearing problems	6	5
Learning difficulties	3	3
Other problems affecting mobility outside the house	10	17
(Note: household members may have more than one of the conditions listed)		
Total number of households	97	99

* *Comparable data not available.*

** *Occupational groups (AB = Senior/middle managers, C1 = Junior managers; C2 = Skilled manual; D = Semi-skilled / unskilled manual workers; E = State dependent).*

4.3 Video records

Video recordings were made using lamp post mounted cameras, before and after the implementation of the scheme, at a variety of locations within the home zone for 12 hours (7am to 7pm) on a weekday in term time and on a Saturday in term time.

The 'before' recordings took place on September 29/30, 2000 and the 'after' recordings took place on July 5/6, 2002.

Table 4.3 Characteristics of the children interviewed

	Number of respondents	
	'Before' survey	*'After' survey*
	Total 18	*Total 21*
Age		
Child 7-9 years	3	4
Child 10-12 years	5	6
Child 13-16 years	6	7
Child age not known	4	0
Adult 17-19 years*	–	4
Sex		
Male	10	9
Female	8	12

** Adults included in the 'after' child survey because they had been interviewed as children in the 'before' survey.*

The locations chosen (Figure 4.1) took account of the range of measures and environmental features that were proposed during the design of the home zone scheme. The 'before' video recording locations were as follows:

- Location 1: Methley Terrace, outside the Chapel Allerton Primary School.
- Location 2: Methley Grove, northwards, towards School Lane.
- Location 3: Methley Drive, approximately midway, looking westwards.
- Location 4: Methley View, eastwards, towards Blake Grove.
- Location 5: Zermatt Street, approximately midway, westwards.

In the 'after' survey, cameras were positioned at Locations 1, 2, 3, 5 and at Location 6: Methley Drive looking eastwards.

The video records were used to determine pedestrian counts and classified traffic counts as well as to provide information on street activity and pedestrian behaviour. Changes in street activity and behaviour within the home zones may be very small, very weather dependent and difficult to detect, even if many hours of data are collected. Therefore, the data from the video recordings is unlikely to be reliable as a *quantitative* measure unless the changes in activity are very large. However, the video recordings will give a *qualitative* measure of the location and type of activity and behaviour taking place. This information will be related to changes in street activity and behaviour provided by the interview surveys.

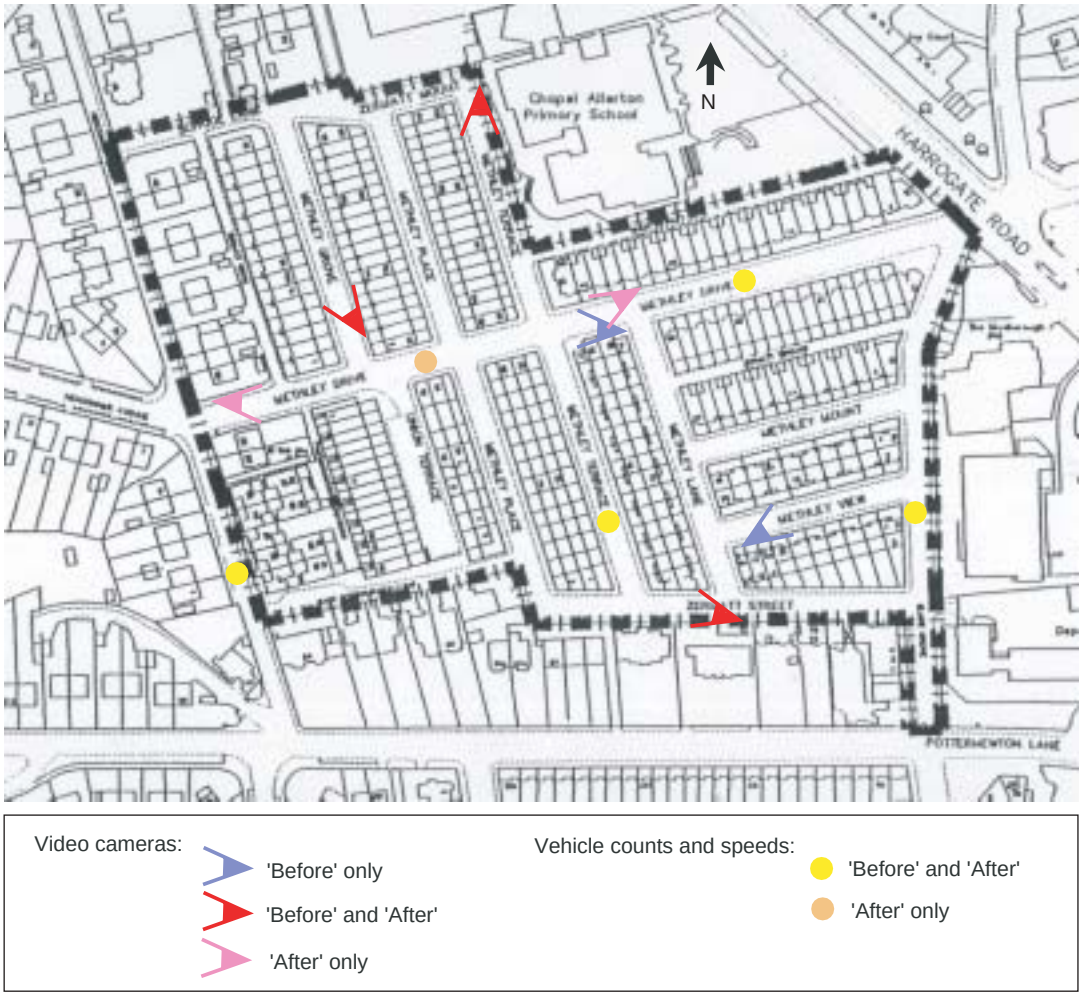


Figure 4.1 The Methleys Home Zone – site locations for automatic vehicle counts / speed measurements and for fixed video cameras

Still photographs and a low cost drive through video recording (bi-directional) were also taken showing the 'before' and 'after' situation for The Methleys Home Zone.

4.4 Traffic accidents

Information on reported road traffic injury accidents (STATS19) within the home zone area was sought from Leeds City Council for the five years before the implementation of the scheme and one year after. Further 'after' data will be obtained as it becomes available. However, the number of injury accidents is likely to be small, particularly for the 'after' study where the time period will be a year or less. Any changes in accident frequency are unlikely to be statistically significant because of the small numbers involved. Details of the injury accidents are given in Appendix B and the changes in accident frequencies are summarised in Section 5.5.3.

Further information on injury accidents, damage only and near misses, before and after the installation of the scheme, has been obtained from the interview surveys. Respondents were asked in the 'before' and 'after' surveys whether as a pedestrian, cyclist or car user, they had been involved in any accidents or near misses within the area covered by the home zone. Details were obtained from those giving positive responses.

Because of problems with exact definitions of accidents/ near misses and uneven recollection, this data is unlikely to provide a reliable indicator of changes in the numbers of accidents or in accident frequency. However, it will help in the understanding of the types of accidents /near misses that may occur before and after the installation of the home zone and highlight any problems associated with the operation of the home zone scheme. The data will also provide supporting evidence for information collected on changes in perceived safety.

4.5 Noise

Changes in the level of traffic noise in traffic calmed areas are influenced by changes in the volume and speed of traffic, the traffic composition and the type of speed control features used. Generally it has been found that reductions in traffic flow and vehicle speeds from traffic calming measures cause decreases in overall traffic noise levels. However, vehicle noise can be influenced by other factors such as driver behaviour and vehicle operation. These factors may alter the character of the sound and this may lead to an increase in annoyance to residents. (Abbott, Taylor and Layfield, 1977; Harris, Stait, Abbott and Watts, 1999).

Measurements of vehicle noise and overall traffic noise were monitored outside one residential property in The Methleys in Leeds before, May 2001, and after, May 2002, the installation of the home zone scheme. The property was located at the junction of Methley Drive and Methley Terrace (see Figure 4.2). The location of the site was not ideal due to noise from a near-by school, but permission to monitor at the most suitable residential properties could not be obtained. However, the site chosen was positioned

Figure 4.2 The Methleys Home Zone – site locations for measurements of noise and air quality

where a ramp was to be installed as part of the scheme and would therefore likely to be exposed to changes in pass-by vehicle noise. Full details of the noise measurements are given in Appendix C and the results are summarised in Section 5.3.2.

4.6 Air quality

Because the home zone was likely to substantially affect the volume and operation of traffic on some roads the effect of changes in vehicle emissions on local air quality was monitored for the pollutants NO_2 (nitrogen dioxide) and benzene by the use of diffusion tubes.

NO_2 is of interest in terms of the National Air Quality Strategy. There is evidence that, in some areas, concentrations of NO_2 regularly exceed the health related air quality standards and may continue to do so into the 21st century. Road traffic contributes a significant proportion of NO_x (nitrogen oxides) emissions, which are a precursor to NO_2. Benzene is also important in terms of local air quality and because it is largely derived from vehicle exhausts.

An NO_2 and a benzene diffusion tube were mounted together on a lamp post approximately 2.5 m above ground, on both sides of the road at two locations within the home zone, the sites chosen were on Methley Drive and Blake Grove (see Figure 4.2). A further site, located in Potternewton Lane, acted as a 'control' for changes in air quality due to other factors than vehicle operation and flows within the home zone.

In the 'before' survey, the diffusion tubes were exposed for two week periods from May 31 to December 7, 2000. In the 'after' survey they were exposed from May 29 to November 4, 2002.

Full details of the air quality measurements are given in Appendix D and the results are summarised in Section 5.3.2.

Table 5.1 Summary of adult residents' views towards the home zone

Over half the adult residents interviewed thought that:

- the home zone was a good idea (74%);
- there was sufficient consultation (70%);
- the views of residents were taken into account (53%);
- it had made a difference to the street (59%);
- it had improved the appearance of the street (99%);
- that the number of speeding vehicles in the street had decreased (51%);
- that walking along the street was more pleasant (73%);
- that they had changed the way they drove within the home zone (67% of motorists);
- that it was safer from traffic danger for children and adults walking and cycling in the home zone (66%);
- that children should be able to play in the street now that it is a home zone (57%).

There were roughly equal positive and no change responses to:

- whether motorists were more considerate towards children playing in or near the street (49% more, 47% same);
- whether the danger to children from traffic had decreased (46% decreased, 42% same);
- whether cycling along the street was more pleasant (46% of cyclists more, 42% same);
- whether driving along the street was more was pleasant (45% of drivers more, 31% same).

Over half the adult residents interviewed thought that there was no change in the issues listed below. However, the remaining responses to these issues, apart from 'the ease of parking outside their home', were more, rather than less, supportive towards the introduction of the home zone:

- the friendliness of people in the street (79%);
- the amount of traffic in the street (58%);
- traffic noise (66%);
- traffic pollution (72%);
- poor driving / standards behaviour (70%);
- the ease of parking outside their home (63% of motorists);
- the safety from crime for children and adults walking and cycling (76%);
- the ease of their day to day journeys within the home zone (71%);
- the frequency of their journeys along their street by walking (94%), cycling (92% of cyclists) or driving (90% of motorists);
- the time they spent outside the front of their home (92%);
- the time spent by their children outdoors (77%).

5 Impact of the home zone

The majority of the adult residents who were interviewed were supportive of the home zone, and thought that it had a positive impact in terms of the appearance of the shared surface on Methley Drive, walking within the home zone, speeding vehicles, danger from traffic and the way they drove (see summary of adult residents' views in Table 5.1).

Most of the adult respondents also thought that the frequency of their journeys along their street, the time they spent outside the front of their home, and the time spent by their children outdoors had not changed greatly since the home zone scheme was introduced. This perceived lack of change is not entirely surprising as, for many of them living in side roads off Methley Drive, the appearance of the street outside their front door and the volume and speed of traffic on their street had not substantially changed after the home zone was introduced. In the side roads there were still footways, kerbs and parked vehicles. The mean speeds and daily traffic flows were relatively low both before and after the home zone scheme was introduced. One of the aims of the home zone was to formalise the existing use of the side roads (e.g. children playing) and to make non-local drivers aware of the changed environment.

Children's views were similar to adults in that many of them thought the streets looked nicer, motorists had changed the way they drove and they felt safer. However generally, most of them thought there had been little change (see Table 5.2).

5.1 Residents' support for the home zone, consultation and changes to the street

Adults

Support for the home zone from adults was consistent in both the 'before' and 'after' surveys of adult residents with about 74 per cent being in favour and 11 per cent not in favour and many more respondents mentioning advantages than disadvantages (see Figure 5.1 and Figure 5.2).

There were only small variations in support across the different streets and age groups. Generally about 60 per cent or more of respondents in particular streets and age groups were in favour. Support for the home zone did not appear to be affected by the presence / absence of

Table 5.2 Summary of children's views on changes since the home zone

The home zone had the biggest impact on:

- the appearance of the streets- nicer 90%, same 5%, uglier 5%;
- how people drive in the street – changed 43%, same 48%, don't know 9%;
- how safe they felt when outdoors – safer 38%, same 57%, not as safe 0%, no answer 5%;
- frequency of outdoor play near their home – more 24%, same 43%, less 5%, no answer 29%.

Most of the children thought there was no change in following:

- their journey to and from school was - better 9%, same 81%, worse 0%, no answer 9%;
- where they played outside – changed 9%, same 81%, no answer 9%;
- how much fun it is when playing outside - more fun 19%, same 71%, less fun 5%, no answer 5%;
- how friendly people are to each other – more friendly 24%, same 76%, less friendly 0%.

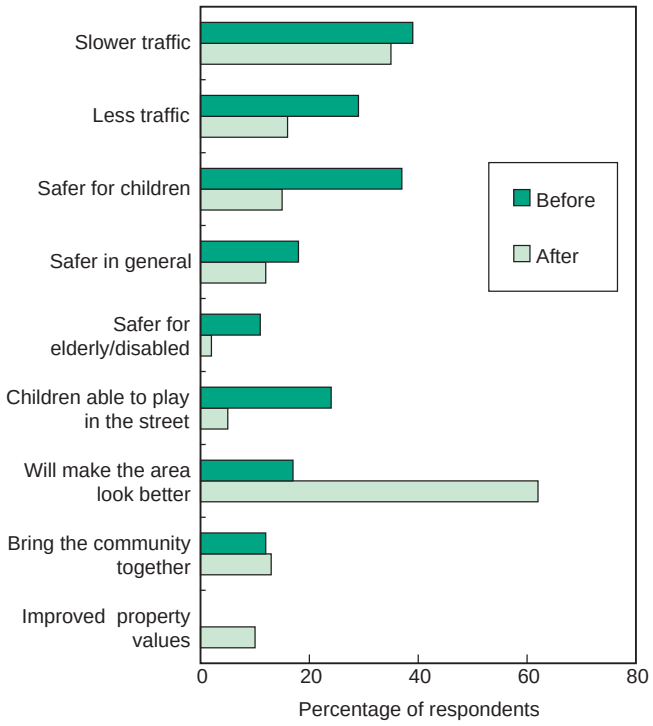


Figure 5.1 Perceived advantages of The Methleys Home Zone

children under 17 years living in the household with about three-quarters of respondents in both categories being in favour.

In the 'before' survey, the most commonly perceived advantages of the home zone related to traffic - slower traffic and less traffic (39% and 29% respectively), safety – with children and the elderly specifically mentioned (37% and 11% respectively), children able to play in the street (24%), improved appearance of the area (17%) and bringing the community together (12%). In the 'after' survey, the main advantages mentioned were: that it made the area look better (62%), traffic was slower (35%), there was less traffic (16%), it was safer for children (15%), it brought the community together (13%) and it increased

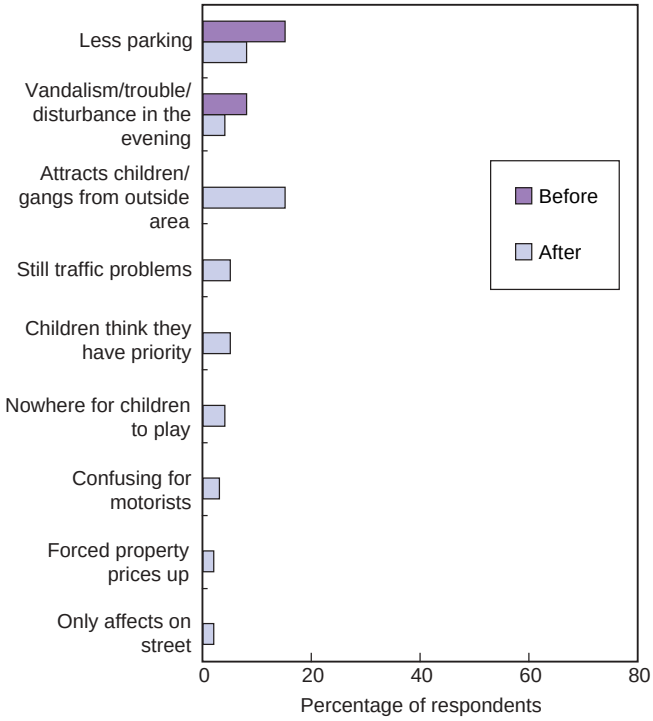


Figure 5.2 Perceived disadvantages of The Methleys Home Zone

property values (10%). The main disadvantages mentioned were that it attracts children / gangs from outside the area (15%), and that there is less parking (8%).

It would seem that after implementation of the home zone, the proportions of adult respondents who thought that the advantages of the home zone were slower traffic and bringing the community together remained unchanged. However, fewer respondents in the 'after' survey than in the 'before' survey considered the advantages of the home zone to be less traffic, improved safety and children playing in the street while many more mentioned making the area look better.

Less parking (15%) and trouble in the evening (6%) were seen as the main disadvantages in the 'before' survey. In the 'after' survey there were fewer concerns about parking and more about children/gangs from outside the area.

Figure 5.3 gives the percentages of respondents who mentioned categories of people thought to benefit from the home zone. In the 'before' survey, adult respondents mentioned all residents (61%), children (36%), elderly people (11%), parents with young children at home (9%), disabled people (6%) and pedestrians (5%). In the 'after' survey, more respondents mentioned children (50%) and pedestrians (14%) but fewer people mentioned all residents (43%), elderly people (4%) and disabled people (1%).

More than half of the adult respondents interviewed in the 'after' survey said that the home zone had made a difference to their street. The main changes mentioned were that the street looks better / greener (23 respondents), that the traffic was slower (12 respondents), that there was more children playing in the area (11 respondents), and that it had brought the community together (8 respondents).

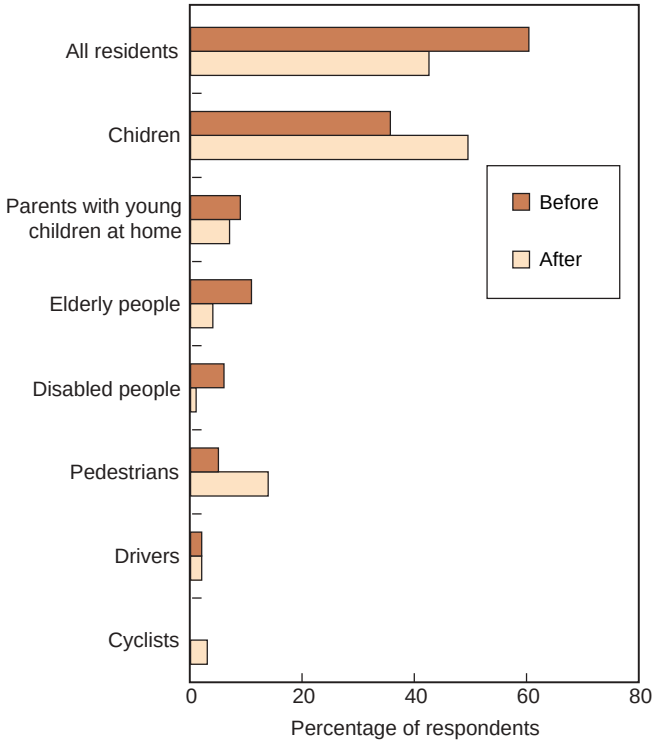


Figure 5.3 People perceived to benefit from the home zone

Over two-thirds of adult respondents thought that there had been sufficient consultation with residents before work began on the home zone (70% yes, 16% no, 14% don't know) and about half thought that the views of residents were adequately taken into account (53% yes, 27% no, 21% don't know).

About half the respondents thought that the changes to the streets were sufficient to make the home zone work and about a third thought that they were not. Additional things that were thought to be needed included:

- a safe area for children to play in (11 respondents);
- further traffic calming / traffic restrictions - particularly on Blake Grove (9 respondents);
- more planting (4 respondents);
- more streets to have a shared surface like Methley Drive (3 respondents);
- road markings and signs (3 respondents); and
- and seating in other streets (2 respondents).

Children

About half of the 21 children interviewed in the 'after' survey felt their street had changed since becoming a home zone. Six believed it was better overall, referring mainly to the appearance of the street and safety from traffic. One child said there were now more things to do *'because the parents organise football games and things like that'*. Four children thought the street was now worse. Two or these mentioned parking problems, including cars parked on pavements, and two said they felt threatened by people who *'pick on me'* or children from other areas who *'come here and cause trouble'*.

[Note 1: During a visit to The Methleys in April 2002, the author talked to a few of the children playing in the street and asked them what they thought of the home zone. One general comment was that they could not play football in the street because of the new trees and planting. This response was not found in the main 'after' survey. Its absence is probably due to the football games in a nearby park mentioned above which were organised during 2002 by parents to meet this local need.]

[Note 2: The home zone may not be responsible for attracting gangs / children from outside the area who cause trouble. The Methleys is located on the fringes of different gang territories and representatives of the residents association thought the problems associated with street gangs were generally more prevalent in this part of Leeds during 2002.]

Only five children did not offer any suggestions for improving the home zone. Overwhelmingly, children said The Methleys needed a play area (10 children). Of these, six children specifically mentioned the need for the play area to be *free of traffic* and three suggested blocking off part of a street so that motorists could not drive through or park there. In addition, three children said further measures should be taken to restrict traffic in the home zone, including preventing motorcycles from speeding down Methleys Drive (*'they go over the speed humps slowly and then travel quite fast'*) and extending the changes to other streets in The Methleys. Two respondents suggested additional improvements to the appearance of the area, such as more flowers and coloured bricks, and one thought a few security cameras and police walking the beat in the area would be a good idea. One child requested a youth club be established.

5.2 Satisfaction with the street

Adults

Overall, adult respondents were positive about their street as a place to live, with over two-thirds in both the 'before' and 'after' surveys rating their street as satisfactory. However, the mean rating of satisfaction (scale from 0 'definitely unsatisfactory' to 6 'definitely satisfactory') changed slightly between the surveys from 4.9 to 4.4.

When asked what they liked about living in their street, adult respondents in both surveys mentioned: good neighbours, living near shops and local amenities', living in a quiet peaceful / clean area, and nice properties. In the 'after' survey respondents also mentioned the community atmosphere. The main dislikes in both surveys were: 'too many kids' / 'noisy kids', parking problems, and too much traffic, although fewer people mentioned traffic and more mentioned children in the 'after' survey.

Children

One third of the children interviewed in the 'after' survey said they liked living in their street because it was friendly and the neighbours were good (see Table 5.3). A similar proportion of children, just under two-fifths, liked this

Table 5.3 What children liked about living in their street

	Number of respondents	
	'Before' (18)	*'After' (21)*
Friendly, good neighbours	7	7
Pretty, looks nice	0	5
Convenient to town / shops / school	5	6
Can play / ride bike outside	3	3
Safe / quiet roads	5	2
Nothing / don't know	3	2

More than one response was possible.

aspect of their street before the home zone was implemented. Five children in the 'after' survey, but none in the 'before' survey, mentioned that they thought the street looked nice.

After implementation of the home zone, fewer children said they disliked their street because the traffic was dangerous. However, slightly more children mentioned problems with gangs/ street crime, abuse, arson, drunks and bullies in the 'after' survey (see Table 5.4). Lack of space to play was of concern to some children in both surveys. Two interviewees in their mid-to-late-teens thought that that the area had now become trendy or commercialised, driving house prices up and attracting young professionals who did not join in with the community.

Table 5.4 What children disliked about living in their street

	Number of respondents	
	'Before' (18)	*'After' (21)*
Street crime / verbal abuse / bullies / gangs	4	5
Drugs / drink	0	1
Vandalism / graffiti	0	1
Kids playing in the street	0	1
Traffic is dangerous	5	3
Not enough space	1	3
Conflict between football and parked cars	1	1
Nothing to do / boring	3	0
Now 'trendy', so house prices rising	0	2
Back alley is dangerous	0	1
Problems with neighbours including noise	2	0
Nothing / don't know	3	3

More than one response was possible

5.3 Environment

5.3.1 Appearance of street

Adults

Almost all the respondents interviewed in the 'after' survey thought that the home zone had made the appearance of the streets more attractive, 50 per cent thought it was a lot more attractive, 49 per cent a little more attractive. The main attractive elements mentioned were: the trees and greenery (by 92 respondents), and the paved surface (by 49 respondents). The only unattractive feature mentioned (by one respondent) was the *'large red signs in Methley Drive'*.

In the 'after' survey there was a small reduction in the proportion of adult respondents who agreed with the statements that their street was 'poorly lit' (23% to 10%), or 'poorly maintained' (40% to 32%) but there was little change in the proportion agreeing with the statement that *'it is clean'* (42% to 45%).

Children

As with the adults, almost all the children interviewed said they thought the street looked nicer now that it was a home zone. Most popular with the children was the planting of flowers, trees and shrubs, and the patterned brick paving on the new road surface. Two children said they liked the artwork and one mentioned the general layout of the street. One child said it looked uglier than before. This child evidently lived in an area where relatively little work had been done, *'the other part of the street looks better and so it makes this part look worse'*.

5.3.2 Noise and air quality

The results of the noise surveys on Methley Drive (see Appendix C) showed that on average maximum pass-by noise levels from light vehicles have reduced by about 1.9 dB(A) after the home zone was introduced. The influence of the ramp may have prevented a larger reduction in vehicle noise given the reduction in vehicle speeds of 5.6mph. Overall day time traffic noise levels, $L_{A10,18h}$, have reduced by 0.9 dB(A) and were in good agreement with predicted values using standard prediction methods.

The daytime measures of background noise, $L_{A90,18h}$, and both the night-time indices, $L_{A10,6h}$ and $L_{A90,6h,}$ showed increases of about 2 and 4 dB(A) respectively. These indices can be influenced by both distant extraneous noise sources and by weather conditions. During the night time period rain and windy conditions did prevail during the 'after' survey and would have influenced the noise recordings.

The main conclusion from these surveys is that measured and predicted changes in daytime traffic noise levels, $L_{A10,18h}$, at the junction of Methley Drive and Methley Terrace indicate reductions of about 1 dB(A) after the scheme was in operation.

[Note 3: reductions in traffic noise levels of less than 3 dB(A) are unlikely to be perceived.]

A comparison of kerbside air quality data for benzene and NO_2 collected on Methley Drive and Blake Grove before and after the installation of the home zone scheme indicates that there has been little change in the concentrations of these air pollutants in the area (see Appendix D).

In the adult interview survey, about two-thirds of the respondents living in the home zone thought that traffic noise and traffic pollution in the street had not changed since the home zone was introduced (see Table 5.8). However, more of the of the remainder thought noise and pollution had decreased than increased and noise and pollution appeared to be less of a concern to residents in the 'after' survey than in the before survey with about 18 per cent of respondents being 'very' or 'quite a lot' bothered by noise and pollution after the home zone was

introduced compared with about 46 per cent before. There was no evidence of significant variation across the different streets in the 'after' survey in the proportion of respondents bothered by noise and pollution.

5.3.3 Friendliness of street

About half the adult respondents in both the 'before' and 'after' surveys knew five or more households in their street by name. When asked whether their street was more friendly or less friendly since it became a home zone, most people thought that it had not changed greatly (11% more friendly, 79% about the same, 5% less friendly, 4% don't know). However, 'bringing the community together' was mentioned by 13 per cent as one of the main advantages of the home zone and as one of the reasons they liked living in their street.

When children were asked whether they thought people in the street had generally become more or less friendly since the home zone, about a quarter said that they found the street a friendlier place. The remaining children said that it was about the same as before.

Community atmosphere has been developing within The Methleys over a long period and the completion of the home zone is only part of this process. Events such as the weekend turfing over of Methley Terrace in 1996 and the annual outdoor 'Screen on the Wall' film shows in Zermatt Street are likely to have made major contributions. The community notice board and the regular gardening sessions to maintain the planted beds on the shared surface are likely to continue the process.

5.4 Car parking

5.4.1 Demand and availability of on-street car parking

The 'before' and 'after' interview surveys with adult home zone residents indicated that about 63 per cent of households own or have access to one or more cars (an average of about 0.8 to 0.9 cars per household). Most of the residents within the home zone have houses with very small gardens with little or no space for on-site parking, most cars are parked on the road directly outside their home. There are about 300 households in the area, thus with an average of 0.8 to 0.9 cars per household, there is a need to park about 260 cars, mostly on-street. Before the home zone was implemented, the available on-street parking capacity within the home zone boundary was greater than this (estimated at about 370 spaces for cars – with parallel parking using 6m kerb space per car).

However, the ability of the street network to cater for the local demand for *overlooked* on-street parking near the home varies across the streets within the home zone boundary. It is helped by the nature of some of the terraced housing, the houses between the northern parts of Methley Terrace, Methley Place and Methley Grove are served by different streets at their front and rear. In addition, the demand for on-street parking is likely to be lower on the streets with a low housing density (e.g. Zermatt Street) or streets that are only overlooked by gable ends (Blake Grove and western half of Methley Drive). Local demand for on-street parking is likely to be higher at the eastern end of Methley Drive where some of the houses have been converted into flats.

The location of on-street parking within the home zone boundary is generally not limited by waiting restrictions such as single or double yellow lines. There are however, yellow zigzag (keep clear) markings outside Chapel Allerton Primary School on the northern part of Methley Terrace.

5.4.2 Impact of the home zone measures on on-street parking space

One of the main concerns raised by residents during the home zone consultation process was that of parking, particularly regarding the space available for on-street parking and desire to park vehicles near the home for fear of crime. As a consequence, the home zone measures were designed to minimise the reduction of on-street parking spaces within the zone whilst still achieving a change in driver behaviour.

It is estimated from site plans that the home zone measures (gateway narrowings, buildouts, chicane and shared surface) have reduced the on-street parking availability by about 60 places (16%). Most of this loss of on-street parking spaces has occurred where parking is generally not overlooked by houses (at the shared surface on the western end of Methley Drive, at the narrowings in Blake Grove and at the chicane on Zermatt Street). The gateway narrowings and other narrowings within the zone did not have a great impact on on-street parking availability and were located near junctions where on-street parking is undesirable.

It should be noted that about the same time the home zone was completed a back street car repair business at the junction of Zermatt Street and Methley Place closed and the land was used to build flats with on-site parking. These were not completed at the time of the interview survey and video survey.

5.4.3 Residents perception of car parking issues

Before the home zone was implemented, about 46 per cent of the adults interviewed were bothered by parking problems in their street (27% 'very much', 19% 'quite a lot'). After the home zone was implemented, this had not changed greatly.

Over half of the respondents who drove cars thought that the home zone had made no difference to parking outside their home. Just under a third thought that parking was more of a problem and of these, eight said that it was because 'some parking has been taken away', five mentioned 'more cars' and two respondents mentioned 'children playing in the road'. When all respondents were asked later about activities that they could *not* do now in the home zone that they could do before, nine mentioned 'parking / parking nearby'.

There have been differences of opinion between some residents about the desirability of parking cars on the paved blockwork buildouts within the shared surface area on the western half of Methley Drive. These now appear to have been resolved. However, the legality of parking within this area is no clear cut, there are no designated parking areas, parking on the 'tarmacadam vehicle path' would probably

obstruct other traffic, and parking on the blockwork buildouts probably cannot be classed as 'parking on the footway' as the area is now a shared surface and hence available for all road users. Although the management of parking within the shared surface area is not a major issue in this scheme, it is likely to occur in other home zone schemes and does highlight the need for a simple and aesthetically acceptable system that is clear to all.

5.5 Traffic, driver behaviour and safety

5.5.1 Measured changes in traffic flows

Mean daily (24-hour) two-way vehicle flows in the area were measured before and after the home zone was implemented and are summarised in Table 5.5. The 'before' flows in June/July 2000 averaged just over about 1,150 on Methley Drive (the main east / west route across the home zone), about 160 on Methley Terrace (a typical residential side road off Methley Drive), 1,225 on Blake Grove (a north / south route on the eastern edge of the zone and nearly 1,100 on Henconner Lane (a road on the western edge of the zone that might be affected by any traffic diverted from Methley Drive).

Table 5.5 Summary of 'before' and 'after' traffic flows

Location	*Mean daily flow*		
	'Before'	*'After'*	
Direction	*June/ July 2000*	*May 2002*	*Change*
***Methley Drive** (west of junc. with Methley Place on shared surface)*			
Eastbound	n/a	378	n/a
Westbound	n/a	345	n/a
Two-way	n/a	723	n/a
***Methley Drive** (east of junc. with Methley Lane near speed cushions)*			
Eastbound	553	507	-46 (-8%)
Westbound	592	526	-66 (-11%)
Two-way	1145	1033	-112 (-10%)
***Methley Terrace** (no measures)*			
Northbound	70	122	52 (+74%)
Southbound	92	104	12 (+13%)
Two-way	162	226	64 (+40%)
***Blake Grove** (cushions & buildouts)*			
Northbound	581	548	-33 (-6%)
Southbound	646	585	-61 (-9%)
Two-way	1227	1133	-94 (-8%)
***Henconner Lane** (no measures, just outside home zone)*			
Northbound	507	490	-17 (-3%)
Southbound	574	625	51 (+9%)
Two-way	1081	1115	34 (+3%)

In May 2002, after the home zone was implemented, average two-way flows on the eastern part of Methley Drive, near the speed cushions, were about 1030 vehicles per day (lower than the 'before' flows by about 110 vehicles (10%). 'After' flows at the western end of Methley Drive, on the shared surface, were an average of about 720 vehicles per day. Flows on Hennconner Lane had increased by an average of about 35 vehicles (3%) to about 1,120 per day.

Some of the 'before' to 'after' reduction in traffic flow on Methley Drive may have been be due to seasonal variations in flow rather than the introduction of the home zone. The presence of the small increase in flow on Henconner Lane indicates that there has been some transfer of traffic away from Methley Drive.

Flows on Blake Grove, which had kerb buildouts and speed cushions, were reduced by about 90 vehicles (8%) to an average of about 1,130 per day. Flows on Methley Terrace increased by about 60 vehicles (40%) to an average of about 225 per day.

Bar charts of mean hourly flows on weekdays, Saturdays and Sundays during the 'before' and 'after' monitoring periods are presented in Appendix A. Ideally, home zone streets should have two-way traffic flows of no more than about 100 vehicles per hour in the afternoon peak hour. This is usually the time of day when there is most conflict between vehicles and people, including children playing (IHIE, 2002). After the home zone scheme was introduced, the maximum afternoon weekday peak hour flows on the streets surveyed within the home zone were about 90 vehicles per hour on Methley Drive, starting 18.00 hours, about 35 vehicles per hour on Methley Terrace, starting 18.00 hours and about 130 vehicles per hour on Blake Grove, starting 17.00 hours. While the overall level of weekday traffic had been reduced on Blake Grove, the maximum flows in the morning and evening peak periods had increased slightly by an average of about 10 vehicles per hour in the morning peak and 25 vehicles per hour in the evening peak.

5.5.2 Measured changes in traffic speeds

The changes in mean and 85th percentile speeds on a sample of roads in The Methleys before and after the introduction of the home zone are shown in Table 5.6. The mean speed is the average speed recorded at the location, the 85th percentile speed is the speed up to which 85 per cent of the vehicles travel.

The staggered planting areas on the shared surface at the western half of Methley Drive and the speed cushions in the eastern half were successful in reducing speeds on this road which is the main east / west route through the home zone. Mean speeds were reduced by about 5.5mph to about 14mph on the shared surface and 14.5mph at the speed cushions. 85th percentile speeds on Methley Drive were reduced by about 6mph to about 19mph.

Mean speeds on Methley Terrace, a typical side road off Methley Drive with no measures were reduced slightly (0.7mph) to 14mph and 85th percentile speeds were reduced by about 2mph to about 18mph.

On Blake Grove, a north / south route on the eastern edge of the zone, the speed cushions and buildouts reduced mean speeds by about 5mph to about 17mph. 85th percentile speeds on Blake Grove were reduced by about 6mph to about 21mph.

Speeds on Henconner Lane, a road on the western edge, just outside the home zone, remained substantially unchanged with mean and 85th percentile speeds at about 20 and 24mph respectively.

Table 5.6 Summary of 'before' and 'after' traffic speeds

	Vehicle speeds (mph)					
Location	*'before'*		*'after'*		*Changes (mph)*	
Direction	*Mean*	*85th%ile*	*Mean*	*85th%ile*	*Mean*	*85th%ile*
***Methley Drive** (west of junc. with Methley Place on shared surface)*						
Eastbound	n/a	n/a	14.0	18.6	n/a	n/a
Westbound	n/a	n/a	13.6	18.1	n/a	n/a
Two-way	n/a	n/a	13.8	18.4	n/a	n/a
***Methley Drive** (east of junc. with Methley Lane near speed cushions)*						
Eastbound	20.4	25.5	14.9	18.7	-5.5	-6.8
Westbound	19.8	24.8	14.1	19.0	-5.7	-5.8
Two-way	20.1	25.1	14.5	18.9	-5.6	-6.2
***Methley Terrace** (no measures)*						
Northbound	16.1	21.6	14.2	18.1	-1.9	-3.5
Southbound	13.6	19.3	13.8	18.1	0.2	-1.2
Two-way	14.7	20.3	14.0	18.1	-0.7	-2.2
Blake Grove **(cushions & buildouts)**						
Northbound	21.1	26.5	16.3	21.2	-4.8	-5.3
Southbound	22.4	27.9	17.0	21.4	-5.4	-6.5
Two-way	21.8	27.2	16.7	21.3	-5.1	-5.9
***Henconner Lane** (no measures, just outside home zone)*						
Northbound	19.6	23.7	20.2	24.0	0.6	0.3
Southbound	20.3	24.8	19.1	23.3	-1.2	-1.5
Two-way	20.0	24.3	19.6	23.6	-0.4	-0.7

Table 5.7 shows the proportion of vehicles travelling faster than a given speed on Methley Drive, Methley Terrace and Blake Grove:

- On Methley Drive, the percentages of vehicles travelling faster than 10, 15 and 20mph had been reduced from about 95 per cent, 85 per cent and 55 per cent respectively to about 90 per cent, 40 per cent and 10 per cent near the speed cushions and to about 80 per cent, 35 per cent and 10 per cent on the shared surface.
- On Blake Grove, the percentages of vehicles travelling faster than 10, 15 and 20mph had been reduced from about 95 per cent, 90 per cent and 65 per cent respectively to about 90 per cent, 60 per cent and 25 per cent.
- On Methley Terrace the percentage of vehicles travelling faster than 10, 15 and 20mph remained substantially unchanged at about 75 per cent, 45 per cent and 15 per cent.

5.5.3 Accidents and near misses

Information on the number and type of reported road traffic injury traffic accidents (STATS19) *within* the home zone boundary, at the junctions leading into the zone and on the home zone perimeter roads (Henconner Lane, Potternewton Lane, Harrowgate Road) was sought from Leeds City Council before and after the installation of the home zone. The 'before' period covered the five years prior to scheme installation (June 1, 1996 to May 31, 2001), the 'after' period was for 1 year following scheme installation (January 1 to December 31, 2002). Details of the injury accidents are given in Appendix B.

Table 5.7 The percentage of vehicles travelling faster than a given speed on roads within the home zone

	The percentage of vehicles travelling faster than a given speed						
Location	*0mph*	*5mph*	*10mph*	*15mph*	*20mph*	*25mph*	*30mph*
***Methley Drive** (speed cushions)*							
Before	100	99	96	85	54	14	1.5
After	100	99	88	40	11	3	0.3
***Methley Drive** (shared surface)*							
After	100	99	78	35	10	1.5	0.9
***Methley Terrace** (no measures)*							
Before	100	94	72	45	15	1	0.2
After	100	98	82	40	13	5	2
***Blake Grove** (speed cushions)*							
Before	100	100	97	90	66	20	5.1
After	100	100	92	60	23	6	1.4

The 'before' injury accident frequencies were 0.4 accidents per year within the home zone, 2.2 per year at the junctions leading into the zone and 2.2 per year on the perimeter roads outside the zone. In the year after the zone was installed, there were no injury accidents within the home zone, one accident at the junctions leading into the zone and no injury accidents on the perimeter roads. The two accidents occurring within the boundary of the home zone during the 'before' period both involved child cyclists who failed to give way at a junction, both accidents resulted in slight injury.

Further 'after' accident data will be sought as it becomes available but any change in accident frequencies are unlikely to be statistically significant because of the small numbers of accidents involved. However, the data may help in the understanding of the types of any accidents that occur after the installation of a home zone and highlight any problems associated with the zone operation.

None of the respondents said that members of their household had been involved in a road accident in their street since it had become a home zone but 9 per cent said that they had been involved in a near miss. This was a similar percentage to those in the 'before' survey who said that they had been involved in accidents or near misses 'in the last year or so' (12%). Of the near misses reported in the 'after' survey, five were while in a car, three were while walking and one while cycling. Two-thirds of the near misses in the 'after' survey occurred at the junctions of Methley Drive with Methley Place, Methley Terrace and Blake Grove.

5.5.4 Residents perceptions of changes in traffic, driver behaviour and safety

For many adult respondents, the home zone appeared to have made an impact on their perception of traffic using the street, particularly regarding the speed of vehicles (see Table 5.8). In the 'after' survey, the percentages of respondents who thought that speeding vehicles, the amount of traffic and danger to children had decreased on

Table 5.8 Perceptions of respondents on the effect of home zone on traffic in their street

	'Increased' %	*'No change'* %	*'Decreased'* %
Speeding vehicles	9	40	51
The amount of traffic	15	58	36
Danger to children from road traffic	13	42	46
Traffic noise	9	66	24
Traffic pollution	10	72	18
Poor driving standards / behaviour	12	70	17

their street since the home zone (51%, 36% and 46% respectively) were greater than those who thought they had increased (9%, 15% and 13%). As a result, substantially fewer respondents were bothered by these issues in the 'after' survey (35% 36% and 40% respectively) than in the 'before' survey (61%, 61% and 68% respectively).

Over two-thirds of the adult respondents thought that driving behaviour had not changed since the home zone was introduced and the remainder were roughly evenly split between those who thought that poor driving behaviour had decreased and those who thought it had increased. However, poor driving behaviour appeared to be less of a concern to respondents in the 'after' survey than in the 'before' survey. About 29 per cent of respondents were 'very' or 'quite a lot' bothered by driving behaviour after the home zone was introduced compared with 49 per cent before.

About half of the adult respondents in the 'after' survey thought that motorists are now more considerate to children playing in or near the street since the home zone had been introduced and about half thought that motorists were about the same as before. The percentages of respondents who considered that motorists on this street are either 'very considerate' or 'fairly considerate' to child and adult road users also substantially increased between the 'before' and 'after' surveys, as detailed in Table 5.9.

Table 5.9 Perception of the consideration of motorists towards child and adult road users

	'Very considerate' and 'fairly considerate' combined	
	'Before' %	*'After'* %
Children walking / crossing the road	57	83
Children cycling	55	80
Children playing on or near the street	48	81
Adults walking / crossing the road	70	85
Adults cycling	69	80

To some extent, children shared adults' views about motorists. Almost half the children, 10 respondents, said they believed drivers had *not* changed the way they drove within the home zone and two others said they did not know. Of the nine children who felt drivers had changed, six said they had slowed down and two of these respondents also felt drivers were more careful. One child said drivers were now *'more considerate to pedestrians and cyclists'*. Nevertheless, some negative effects had also been noticed. One respondent said motorists now drove faster, while another believed that *'some drive slower, some drive faster'*.

The perceived reduction in traffic, and the greater consideration by motorists to adults and children using the street was reflected in the adult respondents' assessment of the danger from road traffic. In the 'after' survey, 66 per cent of respondents thought that the home zone had made it more safe for children walking or cycling (11% less safe) and 82 per cent of respondents thought that it was 'very' or 'fairly safe' for children walking or cycling in their street compared to 43 per cent in the 'before' survey. The perceived safety of adults walking or cycling was also thought to have increased with 90 per cent of respondents in the 'after' survey thinking that it was 'very' or 'fairly safe' for adults walking or cycling in their street. The main reasons given in the 'after' survey for those thinking it was unsafe was that cars were travelling too fast (7 respondents), 'too many parked cars/can't see to cross' (3 respondents).

There was little change 'before' to 'after' in the proportion of children worried 'a lot' or 'quite a lot' by danger from cars and traffic (45% to 33%). However, when children were asked generally whether they felt more or less safe playing outdoors since the home zone was constructed, the answers tended to focus on traffic volume and speeds. Of the eight children who said they now felt safer, the reasons for this included that traffic was slower (5 respondents), and/or that there was less traffic (3 respondents). One child mentioned a generally more protective atmosphere, although it was not clear whether this related to traffic danger or street crime: *'I think everyone keeps their eye on each other'*. Most children (12 respondents), however, felt the safety of the street had neither improved nor declined since the construction of the home zone.

Only about a third of adult respondents thought that it was 'very' or 'fairly safe' for pedestrians and cyclists on roads outside the home zone area. The reasons given for it being unsafe were attributed to traffic danger and crime.

5.6 Perceived danger from crime

With regard to danger from crime, over three-quarters of adult respondents in both the 'before' and 'after' surveys believed that both children and adults who walk/cycle in their street are 'very' or 'fairly safe'. Of the 14 per cent in the 'before' and 19 per cent in the 'after' stating that it is 'not very safe' or 'not at all safe' for children walking or cycling, the most common reasons mentioned were 'groups of kids causing trouble / undesirable people around' (13%) and mugging / attacks / theft (3%).

About three-quarters of the adult respondents thought that the home zone had not changed the perceived danger from crime for children or adults when walking or cycling. Of the remainder, more thought that the home zone had made it safer (about 17%) than less safe (7%).

Children were asked how much they worried about various threats to their safety and their possessions when they were outside close to home. There was little change, 'before' to 'after' in the proportion of children who worried 'a lot' or 'quite a lot' about danger from strangers

(34% to 23%), bullying (22% to 28%), bicycle theft (22% to 24%) or physical assault / mugging (17% to 19%) This final question was only asked of children aged 11 or over.

About a quarter of adult respondents had been a victim of crime in their street since the introduction of the home zone. This was a slightly smaller proportion than was found in the 'before' survey. In the 'before' survey the crimes were roughly split between 'household' and 'car' categories, in the 'after' fewer respondents mentioned car crimes.

5.7 Using the street

Before the home zone was introduced, most adult respondents either thought that pedestrians should have priority (55%) in their streets or all road users should be equal (35%). Very few (6%) thought that motorists should have priority.

In the 'after' survey, these desires for an absence of priority to motorists had to some extent been met. About 34 per cent of the respondents felt that pedestrians took priority, 32 per cent felt that pedestrians and motorists now had equal priority and 24 per cent said that motorists took priority.

Over two-thirds of adult respondents thought that the ease of day to day journeys within the home zone had not changed. Feelings of the remainder were roughly evenly split between those thinking that they were easier (15%) and those thinking that they were more difficult (12%). The main reasons given by those who thought it was easier were, slower traffic (7 respondents), less traffic (2 respondents) and greater safety (2 respondents). The main reasons given by those who thought it was more difficult were, road humps (2 respondents), narrow road (2 respondents) and motorists having to weave in and out (2 respondents).

There was little change between the 'before' and 'after' surveys in how respondents' children travel to school. In the 'before' survey the percentages by mode of travel were walk (63%), cycle (4%), car (20%) and bus (12%). In the 'after' survey they were walk (65%), cycle (0%), car (21%), bus (15%).

5.7.1 Walking

In the 'before' survey, the predominant modes of travel for the adult respondents along their street were walking and car. Walking was generally to the shops (73% walked to the shops twice a week or more), for leisure purposes (64%), to visit friends (61%), to go to work (33%) and to accompany children to school (17%). For most respondents, the introduction of the home zone did not appear make a large difference to the overall frequency of walking trips (6% walked more often, 0% less often, 94% no change).

Walking along the streets in the home zone was felt to be more pleasant by 73 per cent and less pleasant by 5 per cent. The main positive reasons mentioned were the planting (43 respondents) and paving (22 respondents) on Methley Drive, slower traffic (6 respondents), less traffic (3 respondents), and easier for pushchairs & wheelchairs (3 respondents). The negative reason mentioned was problems of hooligans & gangs (3 respondents).

The number of children interviewed who walked to school fell substantially between the surveys, 11 before, 6 after. This may have arisen because of changes in the proportions of children attending different schools and colleges. More children travelled to school by bus in the 'after' survey but a similar number travelled by car. Fewer children were accompanied by parents on their journeys to and from school in the 'after' survey, which is consistent with the greater use of buses.

Most of the children felt the school journey was neither better nor worse since the home zone was constructed. Only two said the journey had changed, both thought it was now better because traffic had slowed.

5.7.2 Cycling

About a quarter of adult respondents owned a bicycle but cycle use was very low in both the 'before' and 'after' surveys with few respondents using their bicycle on a regular basis. Less than 5 per cent of *all* respondents cycled twice a week or more for any particular journey purpose. Cycles were mainly used for occasional journeys to work, to visit friends or for leisure purposes. For most respondents owing bicycles, the introduction of the home zone made no difference to how often they cycled along their street, 1 per cent more often, 0 per cent less often, 22 per cent no difference, 1 per cent don't know. 76 per cent do not own a cycle.

For those adult respondents who did cycle, about half said that the introduction of the home zone had made cycling more pleasant and about half said that it had made no difference. The main positive reasons mentioned were: the planting (5 respondents), less traffic (3 respondents) and good cycle surface (2 respondents). A negative reason mentioned was that you can feel the bumps in the road in Methley Drive (1 respondent).

Just over half of the children interviewed in the 'after' survey owned bicycles, a slightly smaller percentage than found in the 'before' survey (61%). There were fairly high levels of cycling for leisure. The most common use of bikes was for 'just riding around', seven children (33%) did this at least once a week. Three children cycled out with friends or to visit friends at least weekly (14%), but only one child regularly used a bike for going to the shops and none used a bike regularly to get to school. The percentage of children who *never* used their bicycles for each activity was consistently smaller in the 'after' survey.

Of the eleven children who owned bicycles, three (27%) said they rode them more often than they did before the home zone was implemented, and the other eight (73%) said they rode about as often as before. Ten (91%) felt that cycling was more fun or about the same as it had been before, and only one (8%) said it was less fun to cycle within the home zone.

5.7.3 Driving

About half the respondents owned or had access to a car or van. In the 'before' survey, cars/vans were used by respondents twice a week or more to go to work (33%), to go out for leisure purposes (28%), to visit friends (26%) to

go to the shops (20%) and to accompany children to school (7%). In the 'after' survey, most of the motorists said that the introduction of the home zone had made no difference to how often they drive along their street (0% more often, 2 per cent less often, 46 per cent no difference, 1 per cent don't know. 51 per cent do not own/have access to a car/van.

Over two-thirds of the car/van users said that they had changed the way they drove on roads within the home zone since it was introduced. The main changes mentioned were more slowly (by 22 respondents), more carefully (by 12 respondents).

About half the car / van users said that the introduction of the home zone had made driving more pleasant and about one sixth said it was less pleasant. The main positive reasons mentioned were the planting (10 respondents), slower traffic (6 respondents), the improved surface (3 respondents) and other cars more aware / respectful (2 respondents). Negative reasons mentioned were an increase in children playing (3 respondents), too many humps (2 respondents) and narrow roads (2 respondents).

5.7.4 Activities in the street / outside the home

Adults

Most adult respondents said that the home zone had made no difference to the amount of time they spent outside the front of their home when the weather was reasonable, 6 per cent more time, 2 per cent less time, 92 per cent no change. In the 'before' survey, up to half the respondents often undertook the following activities in the street / outside their homes chatting to neighbours (46%), gardening (33%), cleaning / decorating (20%), watching over children playing (19%) and washing / mending the car (7%). However, in the 'after' survey fewer respondents reported often undertaking these activities.

Most adult respondents thought that the type of activities that could be carried out within the home zone were unchanged. Just under a quarter of respondents thought that there were things people do in the home zone that they could not do before. The most common items mentioned were: 'children have play area / can play outside' (8 respondents) and 'look after plants' (6 respondents). About a quarter of people also thought that there were things people could not do now that they did do before. The most common items mentioned were 'speeding down the street / drive without restrictions' (10 respondents) and parking/ parking nearby (9 respondents).

Children

The most popular outdoor activities named by children were riding bikes (9 respondents), playing football-type games (8 respondents) and chatting or hanging around with friends (7 respondents). The proportion of children who spontaneously mentioned riding bikes as a regular outdoor activity increased substantially from 22 per cent 'before' to 43 per cent 'after' the home zone was constructed. Use of roller skates and skateboards also increased slightly, 11 per cent 'before', 19 per cent 'after'. The prevalence of other types of outdoor activities, such as skipping, hide-and-seek and 'other' pursuits was unchanged. These 'other' activities included ball games such as kerby and sponge ball, water fights and drawing with chalk on the path.

A list of activities was read to the children and they were asked which ones they had done either yesterday or the previous Saturday. Shopping with adults (4 respondents), friends (6 respondents) or alone (2 respondents) was the activity most often undertaken by children. Going for a walk (8 respondents), visiting adults (8 respondents) or visiting their own friends (9 respondents) were other common activities. Five children mentioned playing outside their homes, and three had visited parks or playing fields.

Four of the children interviewed in the 'after' survey said there were things they could do in the street now that were not possible before the home zone. Three mentioned being able to spend time outdoors more safely and the other said he/she was now allowed to play out in Methley Drive.

None of the children named any activities that were no longer possible following implementation of the home zone. Surprisingly playing football was not mentioned here since, football is not encouraged near the planted areas and it was referred to by one child to in response to a later question (see below). However, the responses to this question may have been influenced by the positive approach adopted by some parents who organised football games in the local park (see also Section 5.1, Note 1).

Children were asked directly whether they found it more or less fun to play or spend time outdoors since the home zone was built. Most (15 respondents, 71%) said it was about the same. One felt it was less fun because, he felt, *'people don't like us to play football'*. Four others enjoyed playing out more now, because there was less traffic, they could stay out longer because it was safer, more children came out to play, and they liked the *'nice bricks'* on the new road surface.

5.7.5 Children in the street

Adults' views

The adult respondents with children, thought that about half their children often played or spent time outdoors in their street and that this proportion had increased slightly since the introduction of the home zone, 'before' 44 per cent, 'after' 54 per cent. They also thought that, while the time spent outdoors had increased for some children, for most of their children there had been no change (23% more time, 0% less time, 77% no change).

Just over half of all adults interviewed thought that children should play in the street now that it was a home zone (57% yes, 20% no, 23% mixed feelings).

The main reasons given by adults for children playing in the street were:

- 'nowhere else for them to play' (25 respondents);
- 'can't play on the pavement now – its too small' (11 respondents);
- 'know that they are safe / slower traffic' (9 respondents);

- ‘good to be outside / its what children do’ (9 respondents); and
- ‘don’t have gardens’ (4 respondents).

The main reasons given for children not playing in the street were:

- ‘traffic amount is unsafe / cars too fast’ (7 respondents);
- ‘children are a nuisance / run riot / cars could get damaged’ (4 respondents); and
- ‘should be a play area’ (3 respondents).

Those with mixed feelings were concerned with the lack of alternative play space for children, the age of children playing in the street, the home zone attracting children from outside the area and danger from traffic.

The age of children was an important factor when considering the impact of the home zone on the safety of unsupervised play in the street. As might be expected, an increasing proportion of adult respondents thought that it was safer for older children and the main change in their views related to junior / middle school children. The proportion of adult respondents thinking it was ‘very’ or ‘fairly’ safe increased between the ‘before’ and ‘after’ surveys as follows:

- from 14 per cent to 27 per cent for pre-school / infant children;
- from 42 per cent to 80 per cent for junior / middle school children; and
- and from 69 per cent to 92 per cent for secondary school children.

When considering pre-school / infant children, the main reason given by adult respondents in the ‘before’ survey thinking that it was unsafe for to play in the street related to traffic issues, speed and the amount of traffic. In the ‘after’ survey, the main reason given was ‘not old enough to look after themselves/too young’. Traffic issues were of less concern to respondents. Similarly, when considering older children, traffic issues were also found to be less of a concern in the ‘after’ survey than in the ‘before’ survey by those adults who thought it was unsafe to play in the street.

Children’s views

Two thirds of the children interviewed (14 respondents) said they sometimes played outdoors near their homes. This proportion had not changed since the first survey (13 respondents, 72%). A substantial minority (7 respondents, 33%) said they never played outdoors near home, instead spending their time indoors (4 respondents) or outdoors in another street or in the city (3 respondents). Of these, six said they had no desire to spend more time outdoors near their homes, either because they felt they were now too old for that sort of thing (5 respondents) or too busy studying (1 respondent). One child wanted to play out but did not *‘because my friends do not live near here’*. For most children, however, availability of playmates was not a problem. More than three-quarters had friends living close by and almost half could name two or more people they spent time with regularly. This was, however, a somewhat smaller proportion than in the ‘before’ survey where all but one child had friends living close by and nearly 90 per cent could name two or more local friends.

Among those who played or spent time outdoors, most (62% of the total sample) did so at least twice a week. This proportion was comparable with the ‘before’ survey in which 10 respondents (55%) played out either daily or two to four times per week. The home zone had apparently had relatively little impact on the frequency of playing out in The Methleys. One child said he/she played outdoors less often than before, the others did so more often (5 respondents) or about the same (9 respondents).

Playing in the street, either outside the child’s own home or elsewhere, was far more common than playing in gardens or open spaces. This was not surprising given that the housing in The Methleys is predominantly Victorian terraced, with small yards rather than gardens.

Children’s responses also reflected the lack of play areas within The Methleys, no child said he or she regularly spent time in a play area although, as reported in Section 5.1, they were quite vocal in their desire for one. More children said they played in the street outside their home (28% ‘before’, 57% ‘after’), elsewhere in their street (6% ‘before’, 38% ‘after’) and in other streets (33% ‘before’, 43% ‘after’). Two children said they had changed where they played since the home zone, one claiming that he/she was now allowed to play on Methley Drive *‘because it is safer’*, the other saying that he/she tended to go into the city more often *‘since I have got older’*.

6 Discussion

The Methleys Home Zone is an example of a home zone introduced into existing streets rather than created as part of a new housing scheme. The area has many positive features promoting its selection as one of the DfT pilot home zone schemes. It was not too large, about 300 households in a compact grid of streets, with residents in the zone having to drive less than 400m to reach the home zone boundary, and walk less than 400m to reach a bus stop. Most of the houses have little or no gardens, most streets have relatively low speeds and very low vehicular flows. There was already a culture of street activity and a desire to improve the safety of children playing in the street. The home zone concept was actively promoted by the local residents association and the City Council and was supported by the majority of the community before and after the implementation of the scheme.

The home scheme was not designed to radically change the look of all the streets within the zone. The aim was to build on the existing home zone characteristics of the area, to formalise the change in expectations of shared road space with boundary signing, to change driver behaviour on the main east/west street through the area by a dramatic change in the streetscape, and to create a community area that would act as a focal point at the centre of the zone.

Home zone boundary signing

A 20mph zone was established at the boundary of The Methleys Home Zone and local home zone artwork was

positioned below the 20mph zone signs (see 3.1). At the time of the implementation of the pilot scheme, the final form of the 'standard' home zone sign to be used in the UK had not been determined and the boundary of the home zone was signed with local artwork positioned below the 20mph zone signs (see Figure 3.3).

Informatory 'home zone' and 'home zone ends' signs (see examples in Figure 6.1) are now included in the Traffic Signs Regulations and General Directions 2002 (TSRGD 2002) and can be used if the home zone is designated according to the Transport Act 2000.

Recent design guidelines (IHIE, 2002) suggest that the target speed of 10mph within home zones will be achieved more easily where there is a stepped reduction in speed created by a 20mph zone surrounding the home zone. If, as in The Methleys, the start of 20mph zone is the same as, or very close to, the start of the home zone, the message to drivers may become confused and the 'home zone' element may be overlooked.

However, it is not clear what currently available signing alternative would have served this design of scheme better. The '20mph zone' element could not be omitted as the 20mph zone was needed to allow the use of traffic calming measures within the home zone, such as ramps and speed cushions, without separate signing. There was also a strong local desire to include the whole of The Methleys within the home zone boundary and not limit it to the section of shared surface on Methley Drive.

The signing arrangement used in this scheme highlights the need for consideration to be to given to changes to the regulations so that traffic calming measures can be used within a home zone, that is signed at the boundary home signs, without the need for any additional signing.

The shared surface

The raised shared surface was installed on Methley Drive to encourage a change in driver behaviour on this road. Due to concerns about the reduction of on-street parking, the shared surface was limited to the western part of Methley Drive where there were side road junctions separated by the gable ends of terraced houses. While many residents travelled along the shared surface on Methley Drive to reach their homes, there were few houses that directly fronted onto it.

The appearance of the shared surface along on the western part of Methley Drive, particularly the planting of trees and shrubs, was liked by almost all the residents who were interviewed (adults and children), some wanted it extended into other streets. Apart from cost considerations, the extension of a similar design into other streets might have resulted in a substantial reduction in overlooked on-street parking spaces.

Vehicles travelling along the shared surface have to negotiate the staggered planting areas and are restricted to single lane working in the narrower portions. These measures reduced mean speeds by about 6mph to about 14mph but a more tortuous vehicular route would be needed to achieve home zone target speeds of about 10mph.

There have been differences of opinion between some residents about the desirability of parking cars on the shared surface area on the western half of Methley Drive. These now appear to have been resolved. However, the legality of parking within this area is not clear cut, there are no designated parking areas, parking on the 'tarmacadam vehicle path' would obstruct other traffic and parking on the blockwork buildouts probably cannot be classed as 'parking on the footway' as the area is now a shared surface and hence available for all road users. Although the management of parking within the shared surface area is not a major issue in this scheme, it is likely to occur in other home zone schemes and does highlight the need for a simple and aesthetically acceptable system that is clear to all.

7 Summary and conclusions

Background

The Methleys Home Zone in Leeds is one of nine home zone schemes in a pilot programme set up by the Department for Transport (DfT). The programme's aim is to evaluate the potential benefits, particularly in regard to shared road space, of a wide range of home zones in different parts of England and Wales.

The Methleys Home Zone is located in Chapel Allerton to the north of Leeds City Centre. The area has a strong local identity and contains about 300 properties in a compact grid pattern of 14 streets. There are about 700 people living in the area with about 30 per cent of

Start of home zone | Start of home zone with name of scheme | End of home zone

Figure 6.1 Informatory home zone signs

households having children under 17 years of age. The houses are mainly Victorian style terraces with little or no garden space. Most of the streets are relatively wide, about 60 per cent of households own at least one car and most parking is on-street. Apart from residential properties the area contains a primary school and a printing shop.

The Methleys has an active residents association, Methley Neighbourhood Action Group (MNA) which has been campaigning for a number of years for better and safer places where local children can play. The residents have organised various events including turfing over sections of a street and annual outdoor 'Screen on the Wall' film shows.

In 1999, Leeds City Council took the opportunity of the DfT pilot home zone programme to back the residents' proposals for an improved streetscape and undertook an extensive consultation process, initially about whether people favoured the home zone in principle, and later regarding the concept design and the detailed design. During the consultation process, residents generally showed very positive support for all aspects of the scheme. The main criticism of the proposals was that only a relatively small part of the area was to be radically changed. However, most residents were aware that their parking requirements were constraining more radical changes to other streets. The results from 'after' interview surveys with home zone residents showed that over two-thirds of those interviewed thought that there had been sufficient consultation before work began and about half thought that the views of residents were adequately taken into account.

Construction of the home zone started in June 2001 at a total cost of £220,000 that included the cost of the traffic calming and streetscape improvements with the necessary regulatory signing and special home zone notices. Site work was completed in December 2001 and planting was completed in March 2002. The residents association organised an official opening on May 2002 with live music, stalls, games, children's entertainment, street performers, maypole dancing, and an outdoor evening movie show at 'The Screen on the Wall'.

TRL was commissioned by the Charging and Local Transport Division of the DfT to assess the effectiveness of the pilot home zone schemes in achieving the aims of home zones. As part of this process, TRL carried out 'before' and 'after' monitoring including interview surveys with adults and children, collection of traffic flow, traffic speed and accident data, video recording and air quality and noise monitoring. The 'before' surveys were carried out between June-November 2000 and the 'after' surveys between May and November 2002.

Home zone measures

The home zone measures included:

- gateway treatments, with road narrowing, 20mph and home zone signing, at the principal entry points to the home zone to make non-local drivers aware of the changed environment;
- a new shared road surface, incorporating coloured block paving and extensive planting, on the western section of Methley Drive to encourage street based activity and change driver behaviour on this wide straight road through the zone; and
- traffic calming on key streets to manage speeds in these areas.

At the time of the implementation of the pilot scheme, a final decision on the form of the 'standard' home zone sign to be used in England had not been taken and the boundary of the home zone was signed with local artwork positioned below the 20mph zone signs.

The new shared surface has been raised to the pre-existing footway level and is accessed by short ramps. It is made up of four main elements, buff paved areas, plant beds containing trees, smaller plants and shrubs, coloured concrete blockwork at the junctions and sections of tarmacadam in between. Some of the trees have also been planted in the buff paved areas and are protected by metal tree-guards. The incursion of vehicles on to plant beds is prevented by complementary knee-rails. The trees were planted, and will be maintained, by Leeds City Council. Species chosen were all suited to street planting. The plant beds contain a variety of shrubs and herbaceous perennials planted and are maintained by the local community.

Vehicles travelling along the shared surface have to negotiate the staggered planted areas. These have been arranged to substantially reduce the forward 'free view' width. Vehicles can pass each other at or near the junctions but are restricted to single lane working in the narrower near the planted areas.

The linear nature of the tarmacadam vehicle path has been further broken up by the contrasting circular patterns of coloured concrete block paving at the junctions with the adjoining streets. These circular patterns add visual appeal, and contain bricks that have been imprinted with designs produced by local children and adults. Other artwork emphasising the changed nature of the area has been mounted on the walls of properties around the zone.

Apart from the western section of Methley Drive, the appearance of many of the streets in The Methleys Home Zone was substantially unchanged.

Residents support for the home zone scheme

Residents were positive about their street as a place to live and support for the home zone was consistently high in both the 'before' and 'after' surveys. Three quarters of the adult residents interviewed were in favour of the home zone and many more people mentioned advantages than disadvantages. The most commonly perceived advantages of the home zone were that it made the area look better, traffic was slower, there was less traffic, it was safer for children, it brought the community together and it increased property values. The main disadvantages mentioned were that it attracts children / gangs from outside the area and that there is less parking.

Residents' perceptions of the advantages of the home zone changed between the 'before and 'after' surveys. In particular, in the 'before' survey, people tended to under estimate the impact of the home zone on the appearance of the area and over estimate the impact on the amount of traffic and traffic safety.

There were only small variations in support across the different streets within the home zone and across the different age groups. Support for the home zone did not appear to be affected by the presence / absence of children under 17 years living in the household.

About half the adult respondents thought that the changes to the streets were sufficient to make the home zone work and about a third thought that they were not. Additional things that were thought to be needed included a safe area for children to play in, further traffic calming / traffic restrictions, more planting and more streets to have a shared surface. Overwhelmingly, the children interviewed said that The Methleys needed a play area. Most of the children specifically mentioned the need for the play area to be free of traffic and some suggested blocking off part of a street so that motorists could not drive through or park there.

Almost all the adult respondents interviewed in the 'after' survey thought that the home zone had made the appearance of the streets more attractive. The main attractive elements mentioned were the trees and shrubs, and the paved surface. As with the adults, almost all the children interviewed said they thought the street looked nicer now that it was a home zone. Most popular with the children was the planting of flowers, trees and shrubs, and the patterned brick paving on the new road surface.

Community atmosphere has been developing within The Methleys over a long period and the completion of the home zone is only part of this process. When adults were asked whether their street was more friendly or less friendly since it became a home zone, most of them thought that it had not changed greatly. However, 'bringing the community together' was mentioned by 13 per cent as one of the main advantages of the home zone and as one of the reasons they liked living in their street. About a quarter of the children interviewed said that they found the street a friendlier place. The remaining children said that it was about the same as before.

Impact of the home zone on the availability of on-street parking spaces

One of the main concerns raised by residents during the home zone consultation process was that of parking, particularly regarding the space available for on-street parking and desire to park vehicles near the home for fear of crime. As a consequence, careful consideration was given to the likely effect on the numbers of on-street parking spaces when designing the changes to the home zone streets. The home zone measures reduced the total on-street parking availability within the home zone by about 60 places (16%) but still left enough to cater for the current demand. Most of this loss of on-street parking spaces has occurred where parking is generally not directly overlooked by houses (at the shared surface on the western end of Methley Drive, at the narrowings in Blake Grove and at the chicane on Zermatt Street).

Over half of the respondents who drove cars thought that the home zone had made no difference to parking outside their home. Just under a third thought that parking was more of a problem and of these, some said that it was because 'some parking has been taken away', while others mentioned 'more cars' and 'children playing in the road'.

Impact of the home zone on traffic speeds and traffic flow.

For many adult respondents, the home zone made a positive impact on their perception of traffic using the street, particularly regarding the speed of vehicles. In the 'after' survey, the percentages of respondents who thought that speeding vehicles and the amount of traffic had decreased on their street since the home zone were greater than those who thought they had increased. As a result, substantially fewer respondents were bothered by these issues in the 'after' survey than in the 'before' survey.

The staggered planting areas on the shared surface at the western half of Methley Drive and the speed cushions in the eastern half were successful in reducing the mean speed by about 6mph to about 15mph at the speed cushions, and 14mph on the shared surface. However, the speeds were still higher than the home zone target of 10mph, with only 20 per cent of vehicles travelling at or less than 10mph.

The mean speed on a typical side road, with no measures, remained largely unchanged at about 14mph. On Blake Grove, a north / south route on the eastern edge of the zone, the speed cushions and buildouts reduced the mean speed by about 5mph to about 17mph.

Traffic flows on most roads within the home zone were relatively low, typically less than 250 vehicles per day, apart from Methley Drive (the main east / west route across the home zone) and Blake Grove at about 1,200 vehicles per day. After the home zone was introduced, the daily two-way traffic flow on these two roads was reduced by about 10 per cent. Flows on Hennconner Lane, a road outside the western edge of the zone, increased slightly, probably due to a transfer of some traffic from Methley Drive.

Ideally, home zone streets should have two-way traffic flows of no more than about 100 vehicles per hour in the afternoon peak hour. This is usually the time of day when there is most conflict between vehicles and people, including children playing. Peak flows of less than 100 vehicles per hour were achieved for all the streets where flow was measured within the home zone, except for Blake Grove, 130 vehicles per hour. While the overall level of weekday traffic had been reduced on Blake Grove, the maximum flows in the morning and evening peak periods had increased slightly.

Impact of the home zone on driver behaviour and perceived safety

Most of the adults interviewed thought that poor driving standards / behaviour had neither increased nor decreased since the home zone was introduced. However, this issue was less of a concern to respondents in the after survey.

About half the adults interviewed thought that motorists were now more considerate to children playing in or near the street and over two-thirds of those who were car/van users said that they had changed the way they drove on roads within the home zone since it was introduced. The

main changes mentioned were driving more slowly and driving more carefully. Less than a third of all the adults interviewed said that motorists took priority in the home zone streets.

To some extent, the children shared adults' views about motorists. Almost half the children said they believed drivers had not changed the way they drove within the home zone. Of the children who felt drivers had changed, most said they had slowed down, although some also felt drivers were more careful. Nevertheless, some negative comments about faster driving were mentioned.

The perceived reduction in traffic speeds, and the greater consideration by motorists to adults and children using the street was reflected in the adult respondents' assessment of the danger from road traffic. In the 'after' survey, two-thirds of respondents thought that the home zone had made it safer for children walking or cycling. However, over half the children interviewed felt the safety of the street had neither improved nor declined since the construction of the home zone.

Just over half of all adults interviewed thought that children should play in the street now that it was a home zone and about a quarter had mixed feelings. Those with mixed feelings were concerned with the lack of alternative play space for children, the age of children playing in the street, the home zone attracting children from outside the area and danger from traffic. The age of children was an important factor when considering the impact of the home zone on the safety of unsupervised play in the street. As might be expected, an increasing proportion of adult respondents thought that it was safer for older children and the main 'before' to 'after' change in their views related to junior / middle school children.

With regard to danger from crime, most of the adults interviewed thought that the home zone had not changed the perceived danger from crime for children or adults when walking or cycling. There was also little change, 'before' to 'after', in the proportion of children who were worried about issues such as danger from strangers and bullying when playing outside.

Impact of the home zone on adult journeys and activities

Over two-thirds of adult respondents thought that the ease of day to day journeys within the home zone had not changed but walking, driving and cycling were all felt to be more pleasant by most people. The main positive reasons mentioned were the planting and paving on Methley Drive, slower traffic and less traffic. Negative reasons mentioned by some drivers were an increase in children playing, too many humps and narrow roads.

In the 'before' survey, the predominant modes of travel for the adult respondents along their street were walking and driving. About half the respondents owned or had access to a car or van, and about a quarter of respondents owned a bicycle. However, cycle use was very low in both the 'before' and 'after' surveys with few respondents using their bicycle on a regular basis. For most respondents the introduction of the home zone made no difference to how often they walked, drove or cycled along their street.

Most adult respondents said that the home zone had made no difference to the amount of time they spent outside the front of their home when the weather was reasonable and that the type of activities that could be carried out within the home zone were unchanged. Just under a quarter of respondents thought that *there were* things people do in the home zone that they could not do before. The most common items mentioned were 'children have play area / can play outside' and 'look after plants'

Impact of the home zone on outdoor activities and journeys to school

The home zone appeared to have made relatively little impact on the proportion of children playing outside and the frequency of outdoor play. More than three-quarters of the children interviewed had friends living close by and almost half could name two or more people they spent time with regularly. Among those who played or spent time outdoors, most did so at least twice a week.

Two thirds of the children interviewed in the 'after' survey said they sometimes played outdoors near their homes. This proportion had not changed since the 'before' survey. The adults with children, thought that about half their children often played or spent time outdoors in their street and that this proportion had increased slightly since the introduction of the home zone.

The adults also thought that, while the time spent outdoors had increased for some children, for most of their children there had been no change. This was supported by the views of the children. One child said he/she played outdoors less often than before, others said they did so more often, but most of the children interviewed said that they played outdoors about as often as before.

Playing in the street, either outside the child's own home or elsewhere was far more common than playing in gardens or open spaces. This is not surprising given that the housing in The Methleys is predominantly Victorian terraced, with small yards rather than gardens. In the 'after' survey, the percentages of children who said that they played 'in the street outside their home', 'elsewhere in their street', and 'in other streets' were higher than in the 'before' survey. However, few children said that they had changed where they play since the home zone was introduced.

The most popular outdoor activities named by children were riding bikes, playing football-type games and chatting or hanging around with friends. The proportion of children who spontaneously mentioned riding bikes as a regular outdoor activity increased substantially after the home zone was constructed. Use of roller skates and skateboards also increased slightly. The prevalence of other types of outdoor activities, such as skipping, hide-and-seek and 'other' pursuits was unchanged. Children were asked directly whether they found it more or less fun to play or spend time outdoors since the home zone was built. Most said it was about the same.

Just over half of the children interviewed in the 'after' survey owned bicycles. The most common use of bikes was for 'just riding around'. While some children said they used their bikes more often, most said they rode about as

often as they did before the home zone was implemented and that it was neither less fun nor more fun than before.

Most of the children felt the school journey was neither better nor worse since the home zone was constructed. Only two said the journey had changed, both thought it was now better because traffic had slowed.

Impact of the home zone on noise levels and air quality

The home zone appears to have had little impact on noise levels or local air quality. Measurements of maximum vehicle noise and overall traffic noise on Methley Drive indicate that there was a small reduction in daytime traffic noise levels since the introduction of the home zone scheme. Kerbside measurements of benzene and NO_2, before and after the installation of the home zone scheme, indicates that there was little change in the concentrations of these air pollutants in the area.

The lack of substantial changes in measured noise levels and air pollutant concentrations are supported by the results of the interview survey. About two-thirds of the respondents living in the home zone thought that traffic noise and traffic pollution in the street had not changed since the home zone was introduced. However, more of the remainder thought noise and pollution had decreased than increased and noise and pollution appeared to be less of a concern to residents in the 'after' survey than in the 'before' survey.

Road traffic injury accidents

In the five years before the home zone was introduced, there were two road traffic injury accidents reported on roads within the home zone boundary. The two accidents involved child cyclists who failed to give way at a junction, both accidents resulted in slight injury. In the year after the zone was installed, there were no injury accidents within the home zone. Further 'after' accident data will be sought as it becomes available but any change in accident frequencies are unlikely to be statistically significant because of the small numbers of accidents involved.

Conclusions

1 The Methleys Home Zone has provided evidence of improvement in the quality of life for the majority of residents particularly in regard to the appearance of the new shared surface area, and in perceived changes in traffic speeds, driver behaviour and danger from traffic.
2 There is less evidence of greater friendliness, increased outdoor activities by adults or greater outdoor play by children. However, when considering a lack of change on these issues between the 'before' and 'after' surveys, we need to take into account the limited nature of the home zone measures, the existing culture of outdoor play in the street and the gradual development of the community atmosphere that has been in progress for a number of years before the home zone was introduced.
3 This pilot scheme has highlighted the importance (and limitations) of providing for the existing demand for on-street parking and the need to formalise the provision of parking arrangements on shared surfaces.
4 The scheme has illustrated the lack of clarity in the message given to drivers at the home zone boundary when the start of the home zone is the same as the start of a 20mph zone. This has highlighted the need for consideration to be given to changes to the signing regulations regarding the use of road humps within a designated home zone.
5 The design of the shared surface has restricted traffic to single lane working and reduced mean speeds to about 14mph but further measures will be needed if a home zone target speed of 10mph is to be achieved.

8 Acknowledgements

The work described in this report was carried out in the Transport Operations Unit of TRL Limited. The authors are grateful to Wayne Duerden from the Department for Transport, Andrew Hall and Andrew Merckel from Leeds City Council, and to Adrian Sinclair from The Methleys Neighbourhood Action Group for their help during the monitoring of the home zone scheme. Thanks is also given to Lynn Basford who carried out the quality review and auditing of this report.

9 References

ANWB (1980). *Woonerf, a new approach to environmental management in residential areas and the related traffic legislation.* The Hague: ANWB Traffic Department.

ASVV (1998). *Recommendations for traffic provisions in built up areas*. ASVV Manual. The Netherlands: Centre for Research and Contract Standardisation in Civil Engineering (CROW).

Children's Play Council (1998). *Home zones, reclaiming residential streets*. London: Children's Play Council.

Institute of Highway Incorporated Engineers (IHIE) (2002). *Home zone design guidelines*. London: Institute of Highway Incorporated Engineers.

Preston B (1992). *Cutting pedestrian casualties, cost effective ways to make walking safer*. London: Transport 2000.

TSRGD (2002). Traffic Signs Regulations and General Directions 2002 (Statutory Instrument 2002 No 3113). London: The Stationery Office

Webster DC and Mackie A M (1996). *Review of traffic calming schemes in 20mph zones*. TRL Report TRL215. Crowthorne: TRL Limited.

Appendix A Traffic flows by time of day

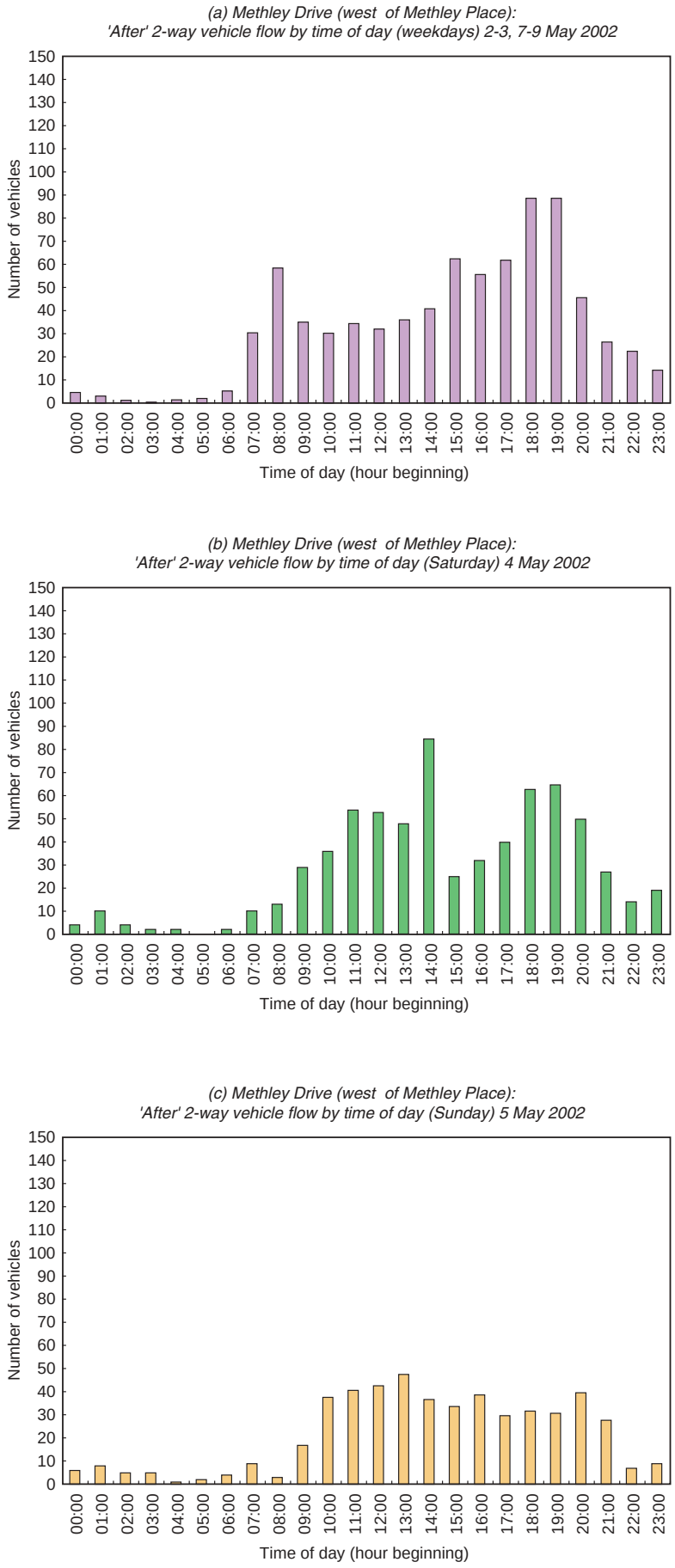


Figure A.1 Methley Drive (on shared surface): vehicle flows by time of day – 'after'

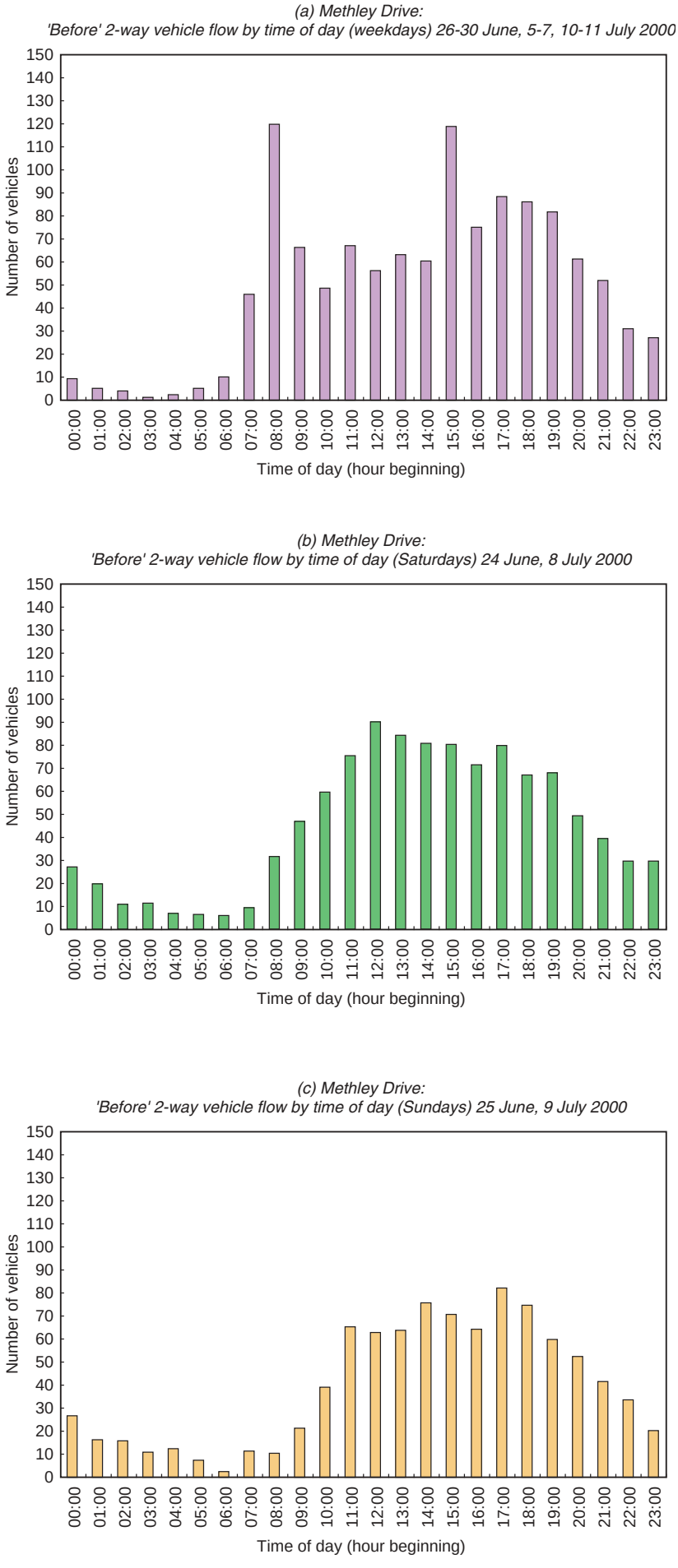
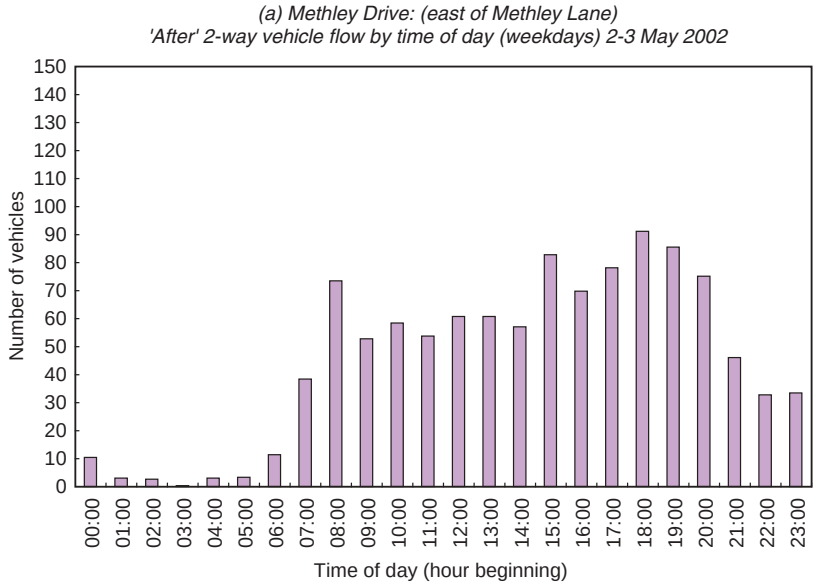
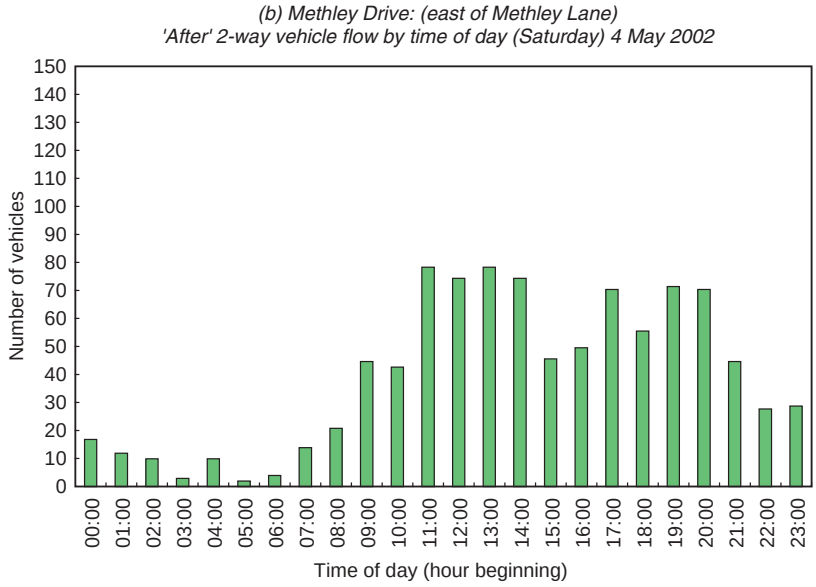


Figure A.2 Methley Drive (east of Methley Lane): vehicle flows by time of day – 'before'





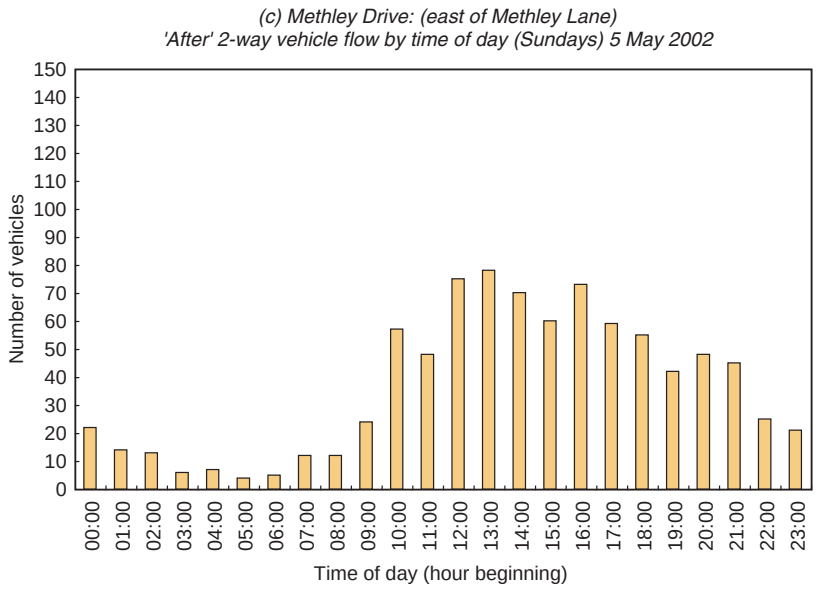


Figure A.3 Methley Drive (east of Methley Lane): vehicle flows by time of day – 'after'

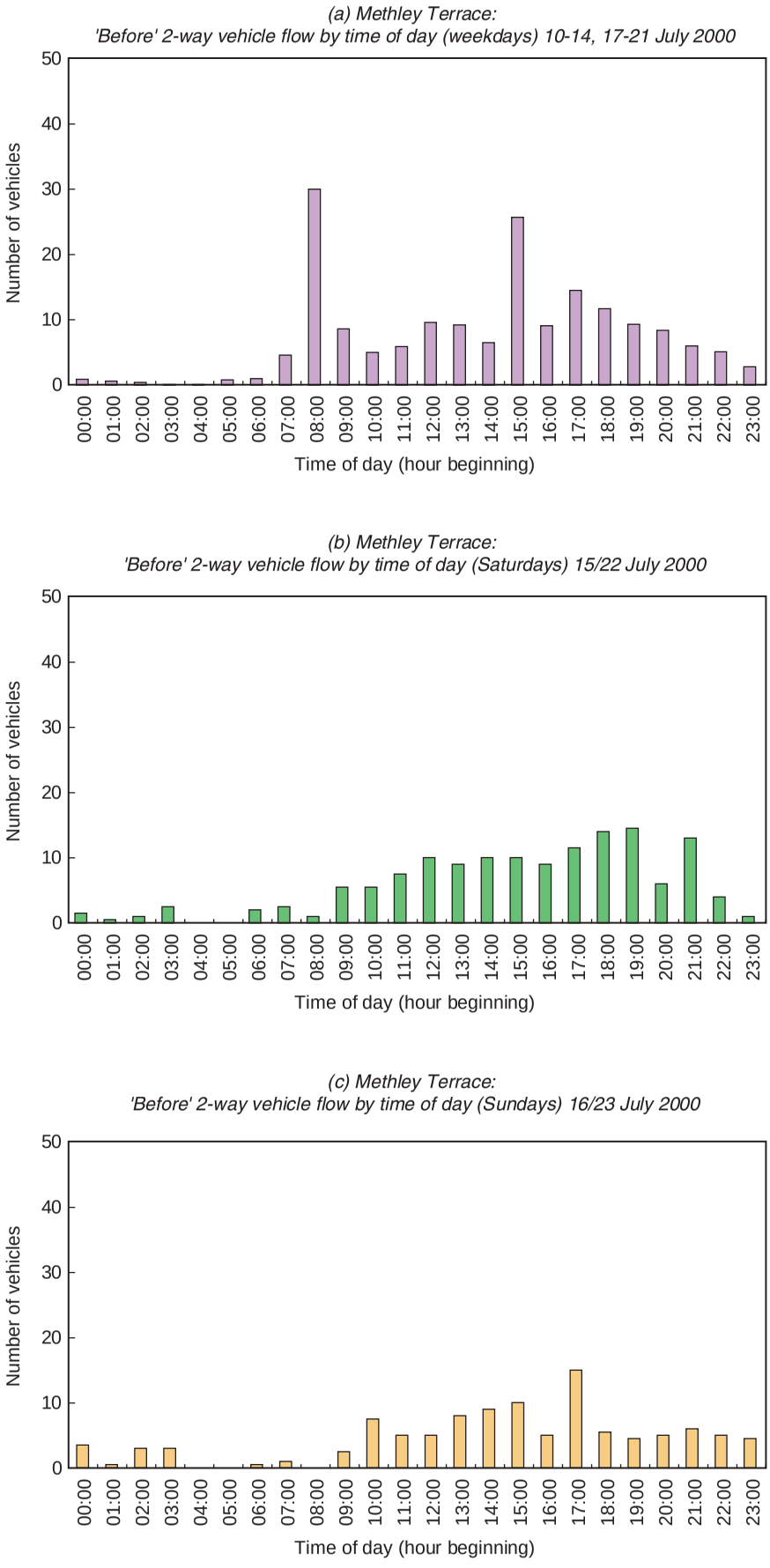
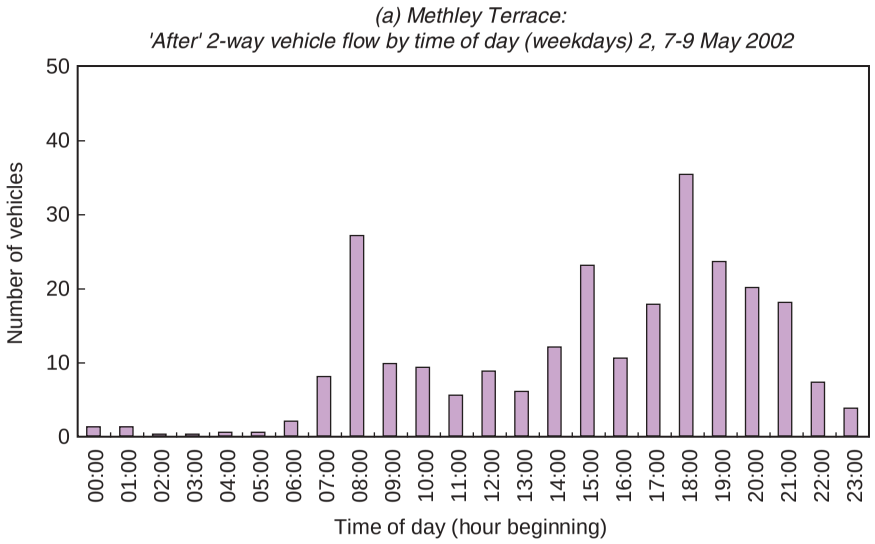
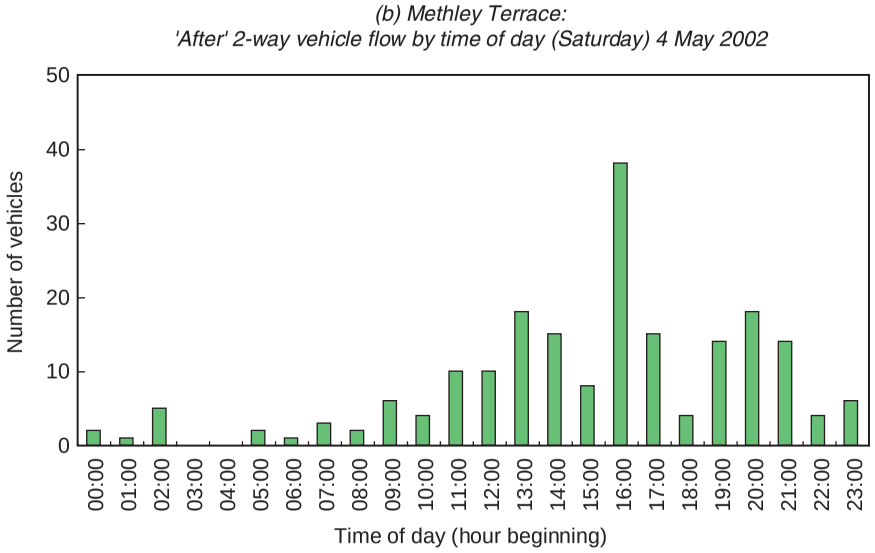


Figure A.4 Methley Terrace: vehicle flows by time of day – 'before'





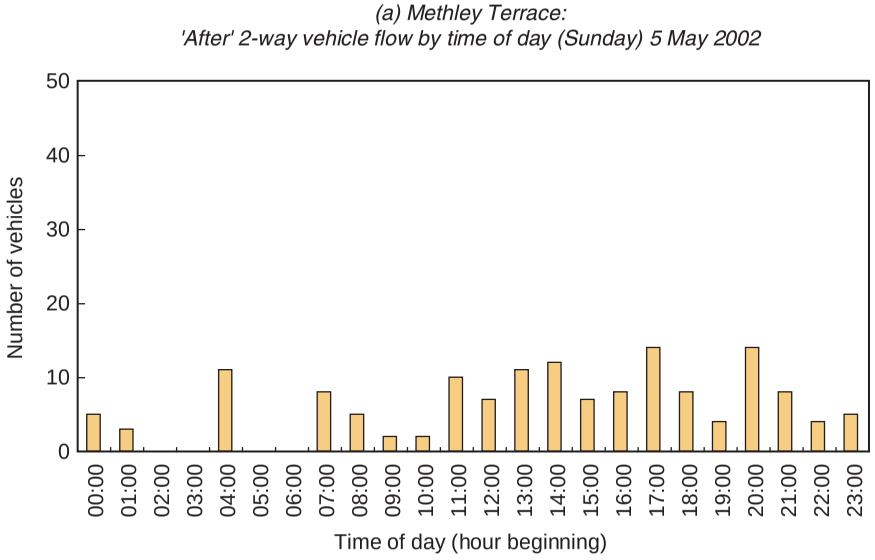
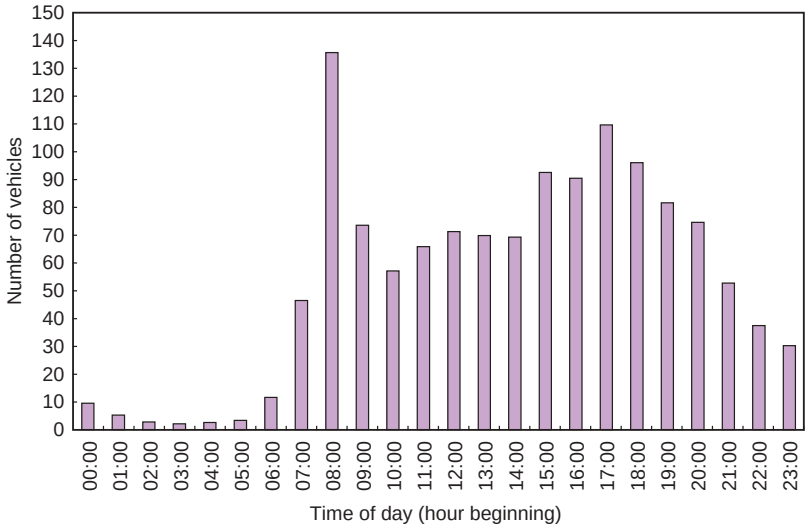
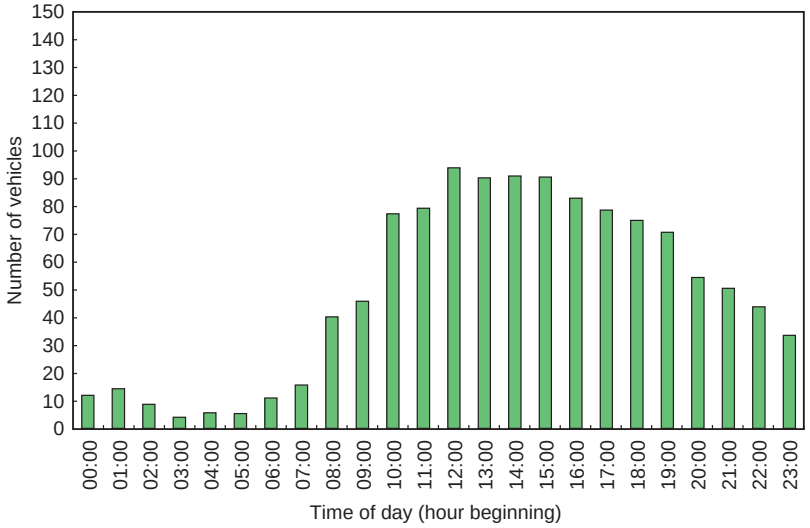


Figure A.5 Methley Terrace vehicle flows by time of day – 'after'

(a) Blake Grove:
'Before' 2-way vehicle flow by time of day (weekdays) 26-30 June, 5-7, 10-11 July 2000



(b) Blake Grove:
'Before' 2-way vehicle flow by time of day (Saturdays) 24 June, 8/15 July 2000



(c) Blake Grove:
'Before' 2-way vehicle flow by time of day (Sundays) 25 June, 9/16 July 2000

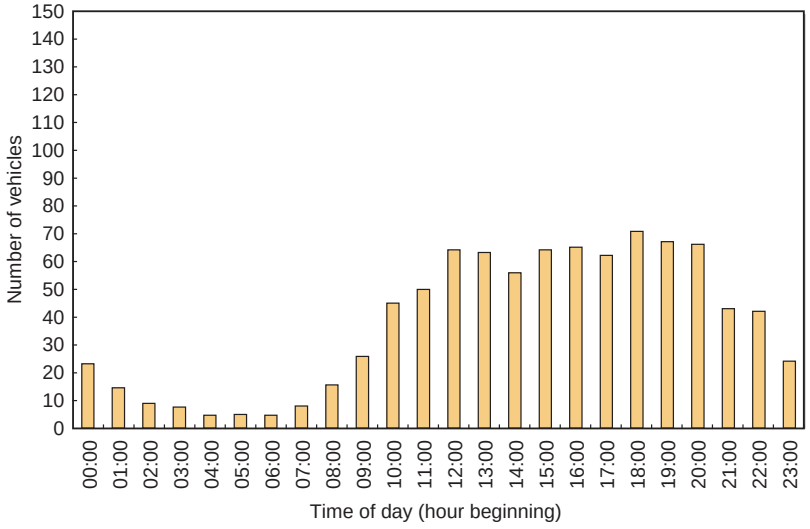


Figure A.6 Blake Grove: vehicle flows by time of day – 'before'

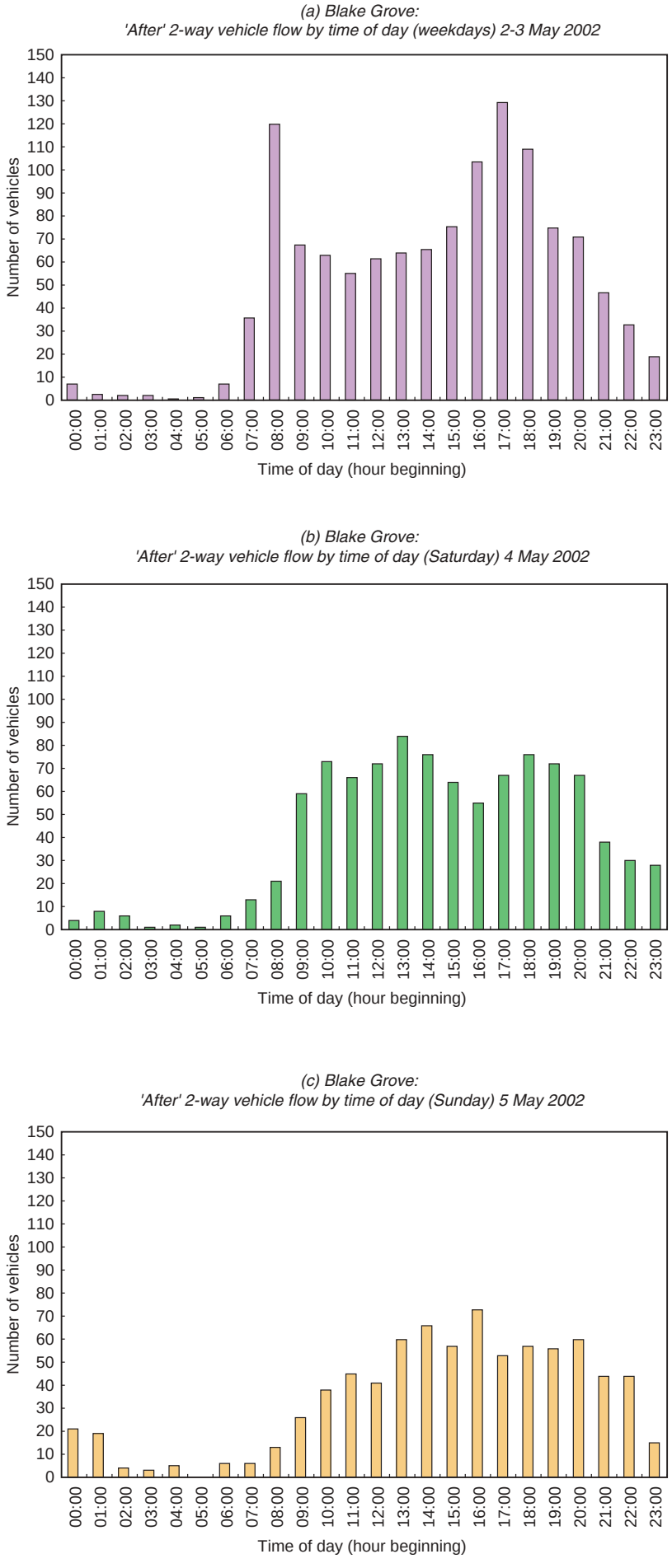
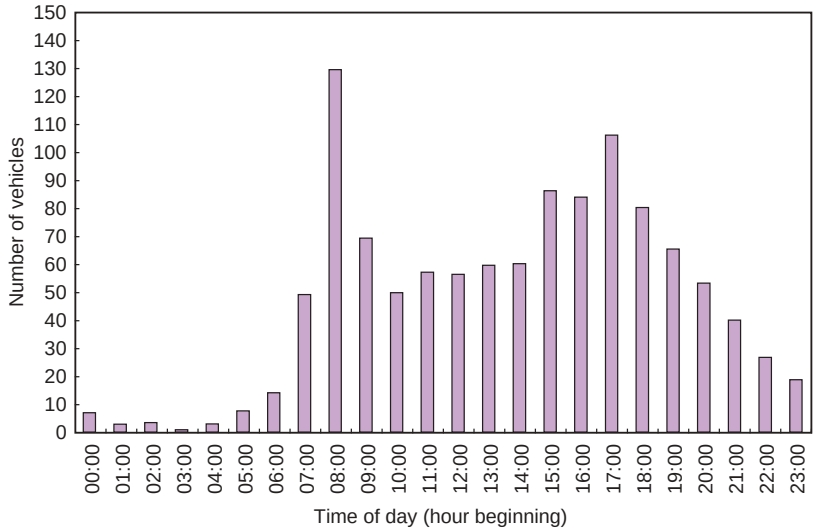
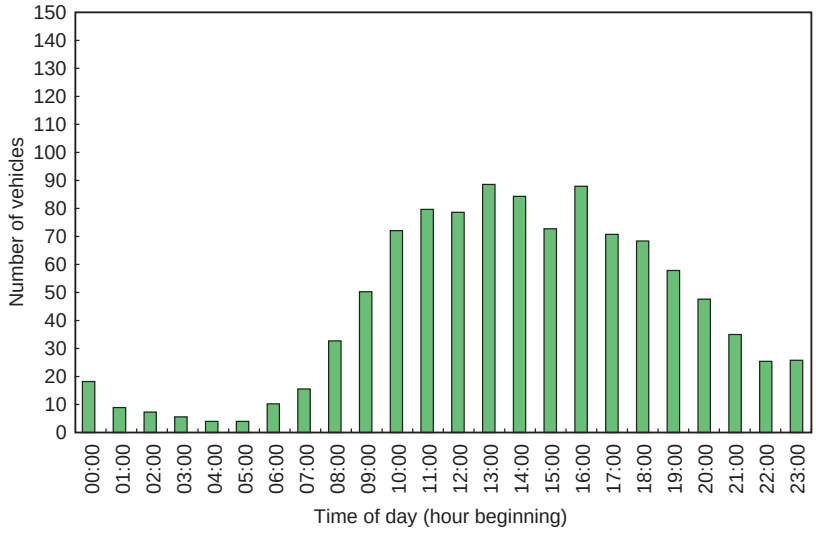


Figure A.7 Blake Grove: vehicle flows by time of day – 'after'

(a) Henconner Lane:
'Before' 2-way vehicle flow by time of day (weekdays) 26-30 June, 5-7, 10-14, 17-18 July 2002



(b) Henconner Lane:
'Before' 2-way vehicle flow by time of day (Saturdays) 24 June, 8/15 July 2002



(c) Henconner Lane:
'Before' 2-way vehicle flow by time of day (Sundays) 25 June, 9/16 July 2002

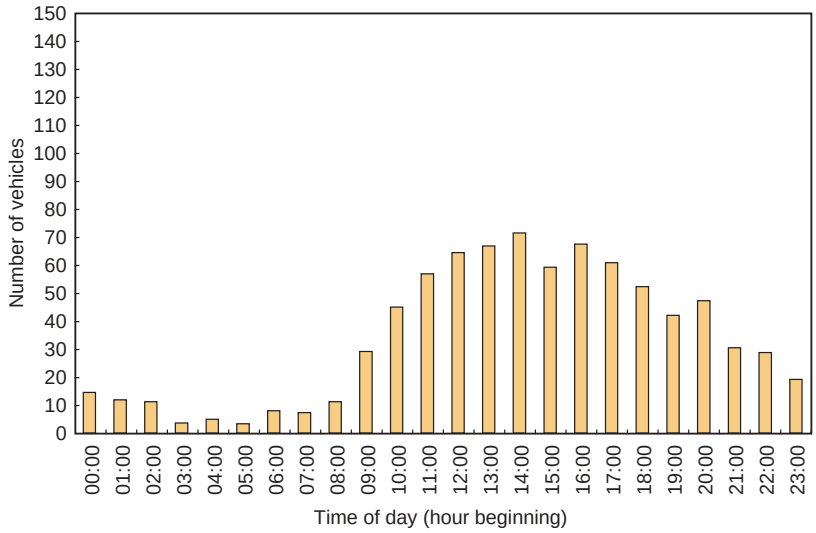
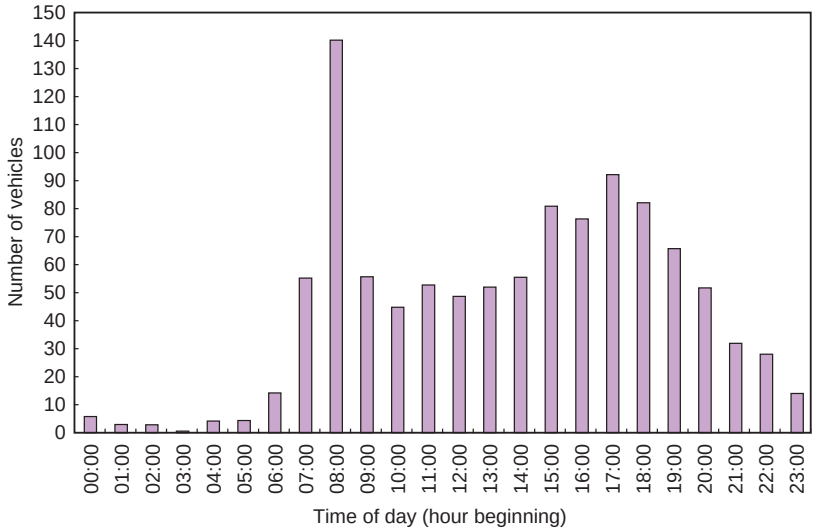
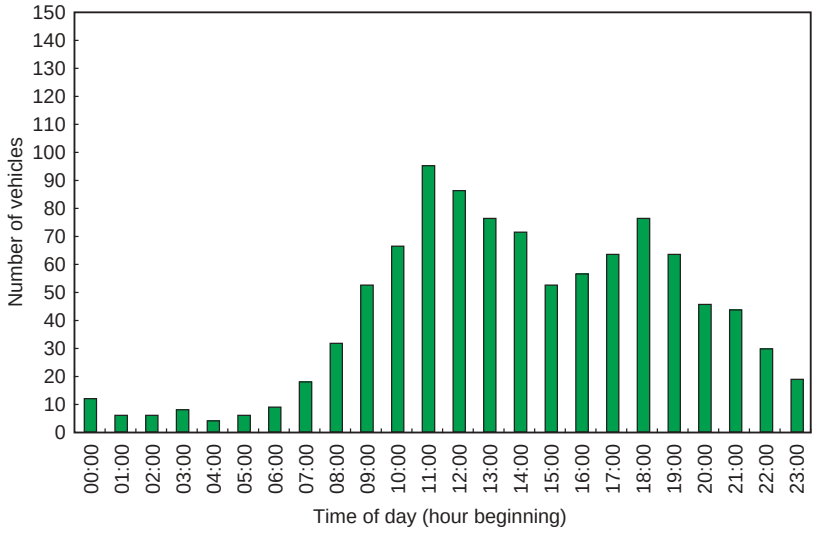


Figure A.8 Henconner Lane: vehicle flows by time of day – 'before'

(a) Henconner Lane:
'After' 2-way vehicle flow by time of day (weekdays) 2-3, 7-9 May 2002



(b) Henconner Lane:
'After' 2-way vehicle flow by time of day (Saturday) 4 May 2002



(c) Henconner Lane:
'After' 2-way vehicle flow by time of day (Sunday) 5 May 2002

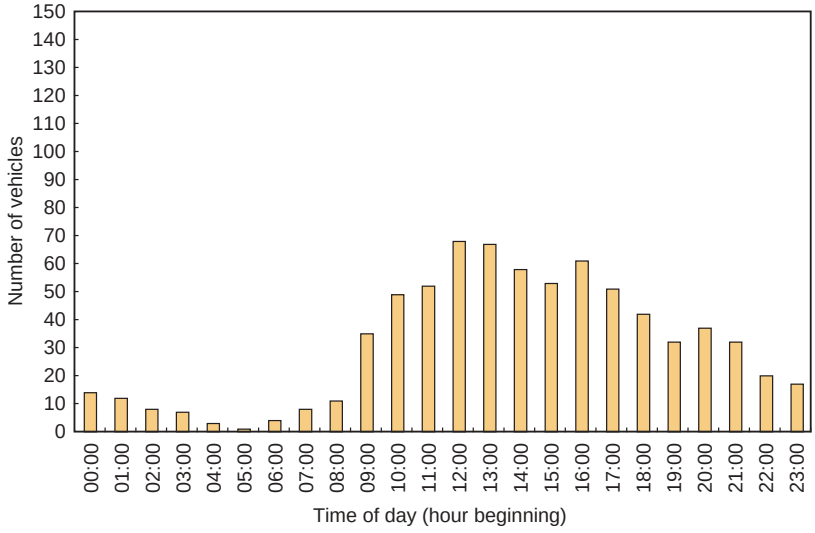


Figure A.9 Henconner Lane: vehicle flows by time of day – 'after'

Appendix B: Road traffic injury accidents

Information on the number and type of reported road traffic injury accidents (STATS19) was obtained from Leeds City Council. The 'before' period covered the five years prior to scheme installation (June 1, 1996 to May 31, 2001), the 'after' period was for 1 year following scheme installation (January 1 to December 31, 2002).

The 'before' injury accident frequencies were 0.4 accidents per year within the home zone, 2.2 per year at the junctions leading into the zone and 2.2 per year on the perimeter roads. In the year after the zone was installed, there were no injury accidents within the home zone, one accident at the junctions leading into the zone and no injury accidents on the perimeter roads

Details of the accidents recorded during the 'before' period are given in Table B1. A total of 24 injury accidents were studied in the 'before' period, 2 were within the home zone boundary, 11 at the junctions leading into the zone and 11 on the perimeter roads outside the zone. Of these 24 accidents, 5 were serious and 19 were slight. There were no recorded fatal accidents. Four of the five serious accidents involved serious pedestrian injury, the fifth serious accident involved serious injury to a passenger in a car that hit another car waiting to turn right.

In total, there were six pedestrian accidents and three accidents involving cyclists. Six accidents involved children aged 16 or under. The only two accidents occurring in the 'before' period within the home zone boundary both involved child cyclists who failed to give way at a junction, both accidents resulted in slight injury.

Only one injury accident has so far been reported in the 'after' period and resulted from a collision between a car and an adult pedal cyclist at the junction of Harrogate Road and Methley Drive. This accident occurred outside the home zone and the pedal cyclist was slightly injured.

Further 'after' accident data will be sought as it becomes available but, even if there are changes in the 'after' accident frequency, any changes in accident frequencies are unlikely to be statistically significant because of the small numbers of accidents involved. However, the data may help in the understanding of the types of accidents that may occur after the installation of a home zone and highlight any problems associated with the zone operation.

Table B1 Details of reported injury accidents during the five year 'before' period

	Within home zone	*At home zone boundary*	*Outside home zone*
By severity			
Slight	2	9	8
Serious	0	2	3
Total	2	11	11
By type			
Pedestrian	0	2 (includes 1 serious	4 (includes 3 serious
Pedal cyclist (at junction)	2	1	0
Shunt	0	0	2
Shunt with queued vehicles or vehicles waiting to turn at junction	0	3 (includes 1 serious)	2
Other collision at junction	0	4	2
Single vehicle (bus)	0	0	1
Loss of control	0	1	0
Total	2	11	11
By actual location			
Zermatt St. j/w Methley Terrace	1		
Methley Drive j/w Methley Terrace	1		
Potternewton Lane j/w Blake Grove		6 (includes 1 serious)	
Methley Drive j/w Harrogate Road and Montreal Avenue		5 (includes 1 serious)	
Along Harrogate Road (not jct)			3
Potternewton Lane j/w Henconner Lane and Riviera Gardens			4 (includes 2 serious)
Along Potternewton Lane (not jct)			4 (includes 1 serious)
Total	2	11	11

Appendix C: Measurements of vehicle and traffic noise

C.1 Background

Measurements of vehicle noise and overall traffic noise were taken at one location in The Methleys in Leeds before and after the installation of the home zone scheme. It is well established that the level of noise from roads is directly proportional to the volume and speed of the traffic and the proportion of heavy vehicles (Department of Transport and Welsh Office, 1988). It was anticipated that there would be a reduction in mean vehicle speeds resulting from the traffic calming measures that would normally be expected to cause a decrease in overall traffic noise levels. However, studies have shown that the presence of some designs of traffic calming measures can cause slight increases in the level of noise or changes to the character of the noise (Harris, Stait, Abbott and Watts, 1999).

Overall traffic noise exposure on Methley Drive, the main east / west route across the home zone, was monitored outside one residential property before and after the installation of the scheme. This was located at the junction of Methley Drive and Methley Terrace. The location of the site was not ideal due to noise from a nearby school in Methley Terrace but permission to monitor at more suitable properties could not be obtained. However, the site chosen was positioned where a ramp was to be installed as part of the scheme and would therefore likely to be exposed to changes in pass-by vehicle noise.

C.2 Vehicle and traffic noise surveys

The exact location where noise surveys were carried out is shown in Figure 4.2 in the main body of the text The 'before' survey was conducted during May 2001 with the 'after' survey taking place in May 2002. Arranging the surveys to be carried out at the same time of year enabled any seasonal effects on traffic noise to be minimised.

C.2.1 Road traffic noise surveys

During each survey traffic noise measurements were conducted with a microphone positioned at a distance of 1m from the facade of the property at a height of approximately 4m to minimise any screening effects of low walls or other obstructions. The microphone was positioned to the side of the house in Methley Drive and was approximately 12m from the centre of the road. The road at this point was straight with slight downhill gradients to either side of the site. Noise levels were recorded using an environmental sound level meter configured to record various noise indices continuously over the measurement period.

Although weather conditions during the day were dry for both surveys in the 'after' survey there was some rain and conditions were windier than the 'before' survey during the night time period.

The main indices used to described the noise level are L_{A10} and L_{A90}, which are, respectively, the noise level exceed for 10 per cent and 90 per cent of the measurement period. In general, the L_{A10} scale is used for assessing the impact of traffic noise from new or altered road schemes and the L_{A90} scale a measure of background noise (DETR, 1999). These are calculated using the A-weighted scale, which gives the noise measurement instrument a frequency response approximately equivalent to that of the human ear. The noise indices described above are usually calculated over a one hour period. However, due to the locality of a primary school, the monitoring period was reduced to 15 minutes in order to reduce the number of periods that would be lost due to contamination from the school.

C2.2 Vehicle noise surveys

Vehicle noise surveys were also carried out at the monitoring site. The Statistical Pass-by (SPB) method was used to measure vehicle noise before and after the installation of the home zone. Essentially the method allows a normalised noise level for different types of vehicle to be determined. Generally, in urban areas, the microphone is placed 5m from the centre of the nearside lane, however, at this site the layout of the area proved too restrictive. Therefore, the microphone being used to monitor the traffic noise was also used to measure the vehicle noise. Since only a comparison between the 'before' and 'after' surveys was required, it was considered acceptable to use this variation of the standard SPB method.

During the vehicle noise survey the microphone was connected to a DAT recorder which stored noise levels of vehicles as they travelled through the site. The operators recorded the speed and time of passing vehicles, which could then be analysed with the DAT recordings to determine the maximum pass-by noise level of each selected vehicle. Vehicles chosen for measurement were sufficiently separated in the traffic stream so the noise from other vehicles or other extraneous noises did not influence the recordings.

Due to the generally low traffic flows in The Methleys it was only possible to obtain a sample of light vehicles, i.e. cars. For each survey, these vehicles were recorded travelling in either direction.

Weather conditions throughout both surveys were dry so that vehicle noise levels could be compared under similar weather conditions.

C.3 Noise survey results

C.3.1 Vehicle noise

An analysis of the vehicle noise measured using the SPB method was undertaken, and the correlation between the logarithm of vehicle speed and maximum pass-by noise levels were calculated for data obtained before and after the installation of the home zone scheme. The regression relationships were used to calculate the maximum noise level for a vehicle travelling at the average speed for the site. To increase the sample size in both surveys, vehicles were measured travelling in both directions along Methley

Drive. Vehicles on the near side of the road would generally have a higher noise level than those on the far side, since they are closer to the microphone. However, in the 'before' survey, due to the presence of parked vehicles and the road having no centre markings, single vehicles tended to travel along the centre of the road. Therefore, the effect of distance on noise levels from vehicles travelling in either direction would be small. During the 'after' survey, the paved blockwork buildout features within the shared surface only allowed single lane working thus vehicles from either direction were again occupying the centre of the road and therefore compatible with those vehicles selected in the 'before' survey.

Table C.1 gives the maximum light vehicle noise levels for a vehicle travelling at the average speed for the survey site. The noise levels shown in the table have been calculated from the corresponding regression statistics shown in Figure C.1.

Table C.1 Maximum noise levels for light vehicles

'Before'	*'After'**	*Difference after - before*
Mean site speed (mph)		
20.1	14.5	-5.6
Maximum vehicle noise level at mean site speed, dB(A)		
62.4	60.5 (57.9)	-1.9 (- 4.5)

** Value in brackets shows maximum noise level calculated using speed / noise relationship obtained during 'before' survey.*

The mean speeds used for the analysis are those recorded from automatic traffic counters at the site. These speeds are slightly slower than those recorded during the SPB measurement as the automatic counters would have sampled those vehicles that were either slowing down for or speeding up from negotiating nearby junctions. This type of vehicle was not sampled during the vehicle noise measurement.

A statistical analysis has shown that the correlation between light vehicle noise and the logarithm of vehicle speed for each of the surveys was significant at the 5 per cent level. Further statistical analysis has concluded there is a significant difference between the data sets from the two surveys.

At the measurement site, the mean speed for light vehicles was reduced by 5.6mph with a reduction in noise of 1.9 dB(A). The change in noise level just as a result of the reduction in speed can be calculated by using the speed level function obtained during the 'before' survey with the average speed measured during the 'after' survey. This gives a reduction in noise level of 4.5 dB(A). The influence of the ramp may therefore have increased vehicle noise levels on average by about 2.6 dB(A) when normalised for speed. However, it should be noted that this estimate is derived from extrapolating the regression line outside the range of data points in the 'before' survey and may have resulted in an overestimation of the influence of the ramp on vehicle noise.

C.3.2 Road traffic noise

The traffic noise surveys were analysed and a range of hourly noise indices was calculated throughout the monitoring period. Average values corresponding to each 15-minute period over a 24 hour period were then determined. Overall daytime and night time noise levels recorded before and after the installation of the home zone scheme are shown in Table C.2.

The daytime level, $L_{A10,18h}$, has been calculated from averaging the 15-minute values over the period 06.00-00.00 hours. Similarly, the night-time level is calculated from averaging the 15-minute values over the remaining period 00.00-06.00 hours. Also shown in the table are the changes in noise level that occurred between the 'before' and 'after' surveys. The periods where the noise from the road was influenced by noise from the school (i.e. playtimes) have been removed from the analysis so that the impact of the scheme on road traffic noise could be assessed.

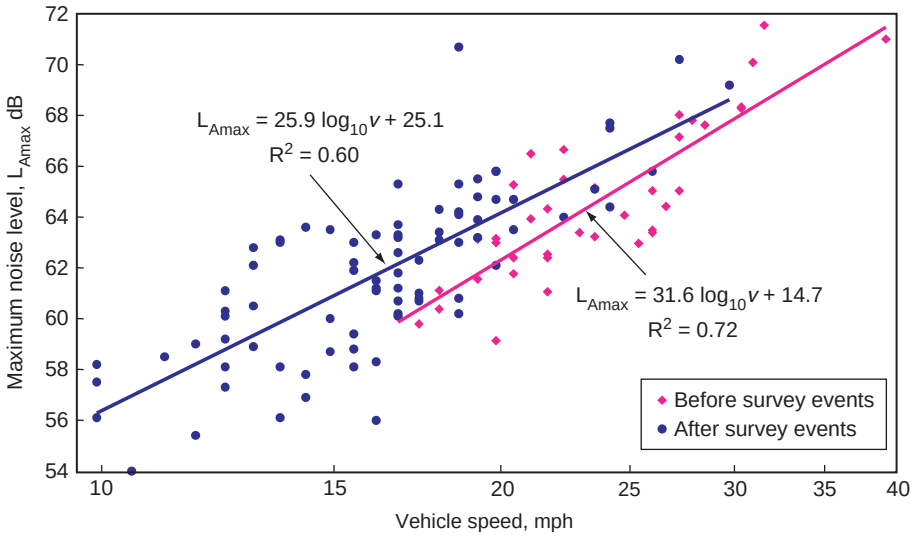


Figure C.1 Light vehicle noise

Table C.2 Daytime and night-time traffic noise levels

	Noise level		
Noise index	*'Before'*	*'After'*	*Difference (after – before)**
Daytime			
$L_{A10,18h}$	55.8	54.9	-0.9
$L_{A90,18h}$	43.5	45.7	2.2
Night-time			
$L_{A10,6h}$	42.0	46.1	4.1
$L_{A90,6h}$	35.3	39.5	4.2

** Negative numbers indicate a reduction in noise level.*

The results in Table C.2 show that the $L_{A10,18h}$ noise levels were reduced by 0.9 dB(A) throughout the daytime period after the installation of the home zone scheme. Traffic noise predictions using the Department for Transport's recommended method (Department of Transport and Welsh Office,1988) together with the appropriate input data on the changes in traffic flows, speed and composition before and after the installation of the scheme would predict a reduction of 0.9 dB(A) in good agreement with the measured results. Estimates of the change in traffic noise levels based on the reduction in vehicle noise described in the previous section would indicate a reduction of 1.9 dB(A). However, this estimate does not include vehicles turning into Methley Terrace which although few in number would be closer to the microphone and therefore provided some contribution to overall traffic noise levels.

The daytime measures of background noise, $L_{A90,18h}$, and both the night-time indices, $L_{A10,6h}$ and $L_{A90,6h,}$ showed increases of about 2 and 4 dB(A) respectively. These indices can be influenced by both distant extraneous noise sources and by weather conditions. It was reported earlier that particularly during the night time period rain and windy conditions did prevail during the 'after' survey and would have influenced the noise recordings.

C.4 Conclusions

The results of the noise surveys on Methley Drive showed that on average maximum pass-by noise levels from light vehicles have reduced by about 1.9 dB(A) after the home zone Scheme was introduced. The influence of a ramp up to the shared surface may have prevented a larger reduction in vehicle noise given the reduction in vehicle speeds of 5.6mph.

Overall day time traffic noise levels, $L_{A10,18h}$, have reduced by 0.9 dB(A) and were in good agreement with predicted values using standard prediction methods.

The daytime measures of background noise, $L_{A90,18h}$, and both the night-time indices, $L_{A10,6h}$ and $L_{A90,6h,}$ showed increases of about 2 and 4 dB(A) respectively. These indices can be influenced by both distant extraneous noise sources and by weather conditions. During the night time period rain and windy conditions did prevail during the 'after' survey and would have influenced the noise recordings.

The main conclusion from these surveys is that measured and predicted changes in daytime traffic noise levels, $L_{A10,18h}$, at the junction of Methley Drive and Methley Terrace indicate reductions of about 1 dB(A) after the scheme was in operation. Reductions in traffic noise levels of less than 3 dB(A) are unlikely to be perceived. The introduction of the home zone scheme based on this limited survey would indicate no expected change in people's perception of road traffic noise for those living in this area.

C.5 References

Department of Transport and Welsh Office (1988). *Calculation of Road Traffic Noise*. London: The Stationery Office.

Department of the Environment, Transport and the Regions (DETR) (1999). *Design Manual for Road and Bridges: Volume 11, Environmental Assessment*. London: The Stationery Office.

Harris G J, Stait R E, Abbott P G and Watts G R (1999). *Traffic calming: Vehicle generated noise and ground-borne vibration alongside sinusoidal, round-top and flat-top road humps*. TRL Report TRL416. Crowthorne: TRL Limited.

Appendix D: Measurements of air quality

D.1 Introduction

The major sources of air pollution are road traffic, commercial sources and domestic heating. Within the study area there are no significant industrial sources and so local traffic will be the largest local contributor to ambient pollutant levels. The exhaust emissions from a stream of traffic is dependent principally on the volume of traffic, the types of vehicle present and their individual emission rates but also on the vehicle speed and style of driving. The introduction of the home zone has caused changes in some of these factors (see Section 5.5) and this may result in a change in overall exhaust emissions and local air quality.

D.2 The air quality surveys

D.2.1 Methodology

The choice of sampling apparatus and pollutants to be measured was based on the contribution that traffic makes to emissions and also the availability of a relatively cheap but effective method. Of most interest in terms of the Air Quality Strategy (DETR, 2000) is the pollutant nitrogen dioxide (NO_2). There is evidence in some areas that NO_2 concentrations regularly exceed the health related air quality standards adopted in the Air Quality (England) Regulations 2000, and may continue to do so in the future. NO_2 is a secondary pollutant and as such is not directly emitted from vehicle exhausts but road traffic produces significant amounts of NO_x, which is a precursor to NO_2. Benzene was also included in the surveys as vehicle exhausts are one of the main sources and it is a pollutant in terms of local air quality.

Sampling of NO_2 and benzene was carried out using diffusion tubes. The tubes were mounted on lamp posts approximately 2.5m above ground such that they were in the region where people are exposed to air pollution but were also relatively inconspicuous and less likely to be stolen. Positions where the samplers would be sheltered by bushes or trees were avoided.

The benzene diffusion tubes were analysed with a mass spectrometer using gas chromatography and the NO_2 tubes were analysed using an UV spectrophotometer. The analytical error on each procedure is ±5 per cent and ±10 per cent respectively.

Other pollutants associated with road traffic such as PM_{10} and CO are also important in terms of local air quality but were not included in the surveys. This was due to the high cost of the instrumentation required to achieve adequate coverage of the area.

D.2.2 Location of air quality samplers

To assess the impact of the installation of the traffic management scheme in The Methleys on local air quality the monitoring sites were located at the kerbside close to where the installation of safety measures were proposed. The sites were located at the kerbside close to the emissions source. This enabled any changes in air quality resulting specifically from changes in emissions to be detected. Four sites were chosen (see Figure 4.2 in main body of report), two locations with a site on each side of the road:

Site 1 - Methley Drive south side (between Potternewton Gardens & Henconner Lane).

Site 2 - Methley Drive north side (West of Methley Grove).

Site 3 - Blake Grove east side (opposite Methley Mount).

Site 4 - Blake Grove west side (corner of Methley View).

A control site was also required to enable a distinction to be made between changes in air quality due to the traffic management measures (i.e. driver behaviour) and changes due to other effects such as a greater proportion of cleaner vehicles in the fleet and meteorological conditions. At the start of the study in 2000 there was an automatic air pollution monitoring station at the edge of the study area, located in the car park for the council buildings. This site, Potternewton, was part of the Governments' hydrocarbon monitoring network and was classed as an urban background site. The car park was therefore chosen as the location for the control site for this study. The hydrocarbon monitoring was decommissioned at the end of 2000 and currently the council is using the site to house its own particulate and nitrogen oxides monitoring equipment. In addition the Department for Environment, Food and Rural Affairs (DEFRA) is using the it to operate a site within the TOMPS (Toxic Organic Micropollutants Survey) network which determine environmental levels of suspended and deposited dioxins, PCBs and PAHs.

D.2.3 Monitoring periods

Diffusion tubes are usually deployed for between one and four weeks depending on the ambient concentrations found at that location. For this study the tubes were exposed for two weeks. This was to allow as much detail on temporal variation as possible without the risk of levels being undetectable. Monitoring was carried out before the installation of the home zones calming schemes and again after the work had been completed. Each monitoring period was continued for at least three months in order to be confident that the data was representative. The 'before' and 'after' periods were also undertaken at the same time of year in order to limit any seasonal effects. The periods when monitoring was undertaken were as follows:

'Before' survey - May 31, 2000 to November 7, 2000.

'After' survey - May 29, 2002 to November 4, 2002.

D.3 Results

This section compares concentrations at each of the monitoring sites with the control and also between the 'before' and 'after' studies. To determine the significance of the differences observed, t-tests were employed which

assumed concentrations at each of the locations and within each study were independent of each other. In each test the null hypothesis, that there is no difference between two means, was rejected at a probability of less than 0.05, i.e. the difference is said to be significant at the 5 per cent level.

D.3.1 Benzene concentrations

The benzene concentrations at each of the sites over the 'before' and 'after' survey periods are shown in Figure D.1. In both periods there is evidence of seasonal variation, a trend at all sites towards higher values as the year progresses. The raw data for each site are presented in Table D.1. During the 'before' survey the sampling tubes from Site 1 were repeatedly stolen and so 'before' monitoring at the site was discontinued from September 21, 2000. It is important to note that all of the concentrations measured, as parts per billion, were well below the Air Quality Standard of 5 ppb, which is for a running annual mean of hourly values, with the highest concentration measured being 0.8 ppb during the 'after' study at Site 3.

Mean benzene concentrations before and after the installation of the scheme are shown in Table D.2. Also shown are the differences in concentrations between the two surveys and their significance. The raw data showed no consistent trend in changes in benzene concentration between the 'before' and 'after' studies with the control site showing a decrease in concentration of 0.02 ppb (5%), three kerbside sites showing an increase in concentration, ranging from 0.1 ppb (43%) to 0.01 ppb (2%), and one kerbside site showing a decrease of 0.04 ppb (-10%). None of these changes, however, were statistically significant. The largest of the increases in concentration was at Site 1, Methley Drive (south side), and was likely to be due to the 'before' data for this site being limited to the earlier part of the 'before' survey because of the diffusion tubes being stolen.

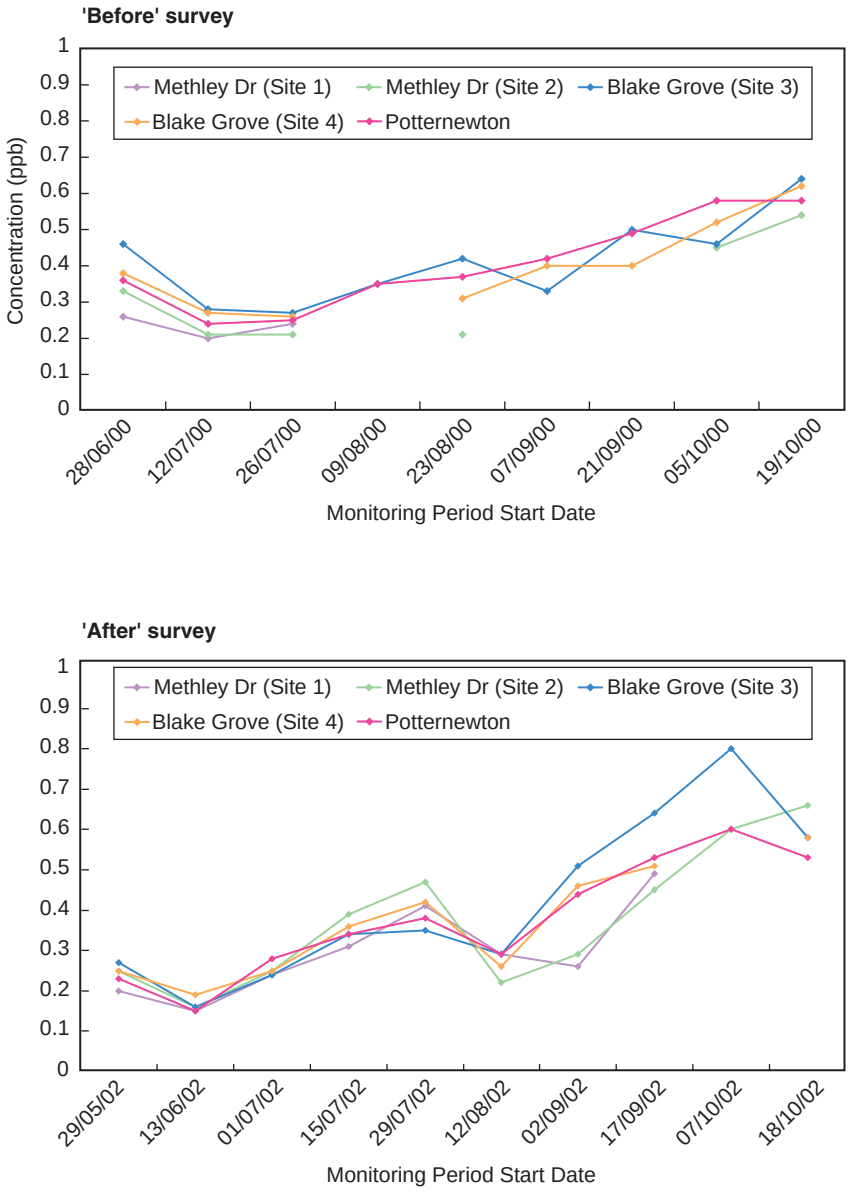


Figure D.1 Mean benzene concentrations at each site from the 'before' and 'after' surveys

Table D.1 Benzene concentrations (ppb) for each two-week exposure

'Before'						*'After'*					
Start date	*Site 1**	*Site 2*	*Site 3*	*Site 4*	*Control*	*Start Date*	*Site 1*	*Site 2*	*Site 3*	*Site 4*	*Control*
31/05/00			Data invalid			29/05/02	0.20	0.25	0.27	0.25	0.23
14/06/00						13/06/02	0.15	0.16	0.16	0.19	0.15
28/06/00	0.26	0.33	0.46	0.38	0.36	01/07/02	0.24	0.25	0.24	0.25	0.28
12/07/00	0.20	0.21	0.28	0.27	0.24	15/07/02	0.31	0.39	0.34	0.36	0.34
26/07/00	0.24	0.21	0.27	0.26	0.25	29/07/02	0.41	0.47	0.35	0.42	0.38
09/08/00			0.35		0.35	12/08/02	0.29	0.22	0.29	0.26	0.29
23/08/00		0.21	0.42	0.31	0.37	02/09/02	0.26	0.29	0.51	0.46	0.44
07/09/00			0.33	0.40	0.42	17/09/02	0.49	0.45	0.64	0.51	0.53
21/09/00			0.50	0.40	0.49	07/10/02		0.60	0.80		0.60
05/10/00		0.45	0.46	0.52	0.58	18/10/02	0.58	0.66	0.58	0.58	0.53
19/10/00		0.54	0.64	0.62	0.58						

** Due to the sampling tubes repeatedly going missing 'before' monitoring at this site was discontinued from 21/9/00.*

Table D.2 Mean Benzene concentrations (ppb) before and after scheme installation

			Change		*Statistically significant change?*
	'Before'	*'After'*	*ppb*	*%*	
Methley Drive South (Site 1)	0.23	0.33	0.1	+43	No
Methley Drive North (Site 2)	0.33	0.37	0.04	+12	No
Blake Grove East (Site 3)	0.41	0.42	0.01	+2	No
Blake Grove West (Site 4)	0.40	0.36	-0.04	-10	No
Potternewton (Control)	0.40	0.38	-0.02	-5	No

The differences in mean benzene concentration between each kerbside site and the background control site (for similar matched periods - without missing data) are shown in Table D.3. In the 'before' survey, benzene concentrations at Methley Drive (sites 1 and 2) were about 18 per cent less than at the control site and benzene concentrations at Blake Grove (sites 3 and 4) were very similar to the control site. Benzene concentration, relative to the control site, increased slightly between the 'before' and 'after' surveys by about 0.05 ppb at sites 1 and 2 and about 0.03 ppb at sites 3 and 4. These changes are small and not statistically significant.

Table D.3 Comparison between benzene concentrations at the kerbside sites and background site for similar periods without missing data

	Number of periods	*Site ppb*	*Control ppb*	*Difference*	
				ppb	*%*
'Before' survey					
Site 1 - Control	3	0.233	0.283	-0.050	-18
Site 2 - Control	6	0.325	0.397	-0.072	-18
Site 3 - Control	9	0.412	0.404	0.008	2
Site 4 - Control	8	0.395	0.411	-0.016	-4
'After' survey					
Site 1 - Control	9	0.325	0.352	-0.027	-8
Site 2 - Control	10	0.374	0.377	-0.003	-1
Site 3 - Control	10	0.418	0.377	0.041	11
Site 4 - Control	9	0.364	-0.041	0.012	3

D.3.2 Nitrogen dioxide concentrations

The NO_2 concentrations at each of the sites over the 'before' and 'after' survey periods are shown in Figure D.2. In both periods there is evidence of seasonal variation with external factors such as weather conditions affecting concentration levels at all of the sites. The raw data for each site are presented in Table D.4. As with benzene, during the 'before' survey the sampling tubes from Site 1 were continually stolen and so 'before' monitoring at the site was discontinued from September 21, 2000.

All of the NO_2 concentrations measured were well below the annual mean Air Quality Standard of 40 mg/m^3 with the highest concentration measured being 26.12 mg/m^3 during the 'before' study at Site 4.

Mean NO_2 concentrations before and after the installation of the home zone are shown in Table D.5. Also shown are the differences in concentrations between the two surveys and their statistical significance. The control site showed a decrease in NO_2 concentration of 0.81 mg/m^3 (6%), three kerbside sites showed a decrease in concentration, ranging from 2.12 mg/m^3 (12%) to 3.19 mg/m^3 (20%), and one kerbside site showed an increase of 1.62 mg/m^3 (14%). None of these changes, however, were statistically significant. The increases in concentration was at Site 1, Methley Drive (south side), and was likely to be due to the 'before' data for this site being limited to the earlier part of the 'before' survey because of the diffusion tubes being stolen.

The differences in mean NO_2 concentration between each kerbside site and the background control site (for similar matched periods - without missing data) are shown in Table D.6. In the 'before' survey, the mean NO_2 concentration at Methley Drive (sites 1 and 2) was about 5 per cent greater than at the control site and the mean NO_2 concentration at Blake Grove (sites 3 and 4) was about 27 per cent greater than the control site. NO_2 concentration, relative to the control site, decreased slightly between the 'before 'and 'after' surveys by about 1.2 mg/m^3 at sites 1 and 2 and about 1.6 mg/m^3 at sites 3 and 4. These changes are small and not statistically significant.

Figure D.2 Mean NO_2 concentrations at each site from the 'before' and 'after' surveys

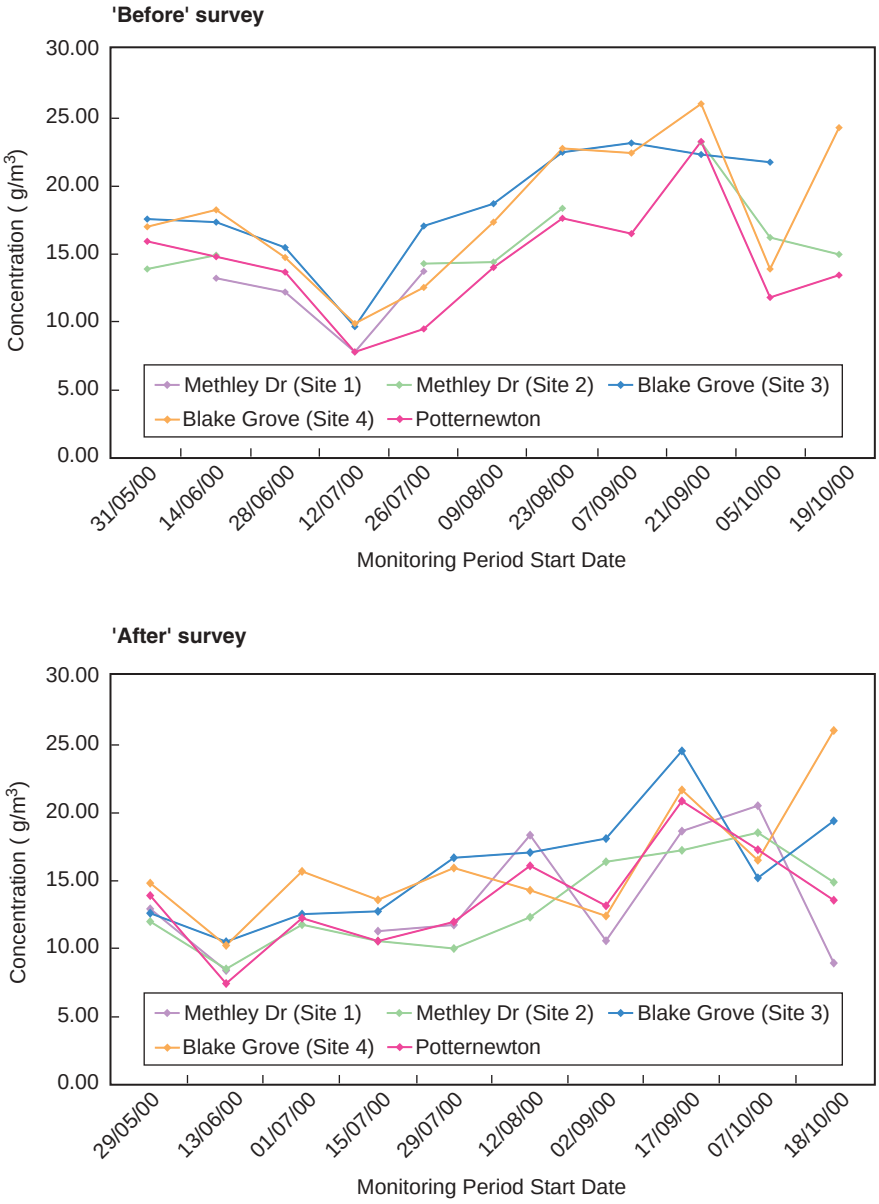


Figure D.2 Mean NO_2 concentrations at each site from the 'before' and 'after' surveys

Table D.4 Nitrogen dioxide concentrations (mg/m³) for each two-week period

'Before'						*'After'*					
Start date	*Site 1**	*Site 2*	*Site 3*	*Site 4*	*Control*	*Start date*	*Site 1*	*Site 2*	*Site 3*	*Site 4*	*Control*
31/05/00		13.95	17.59	17.02	15.96	29/05/02	12.86	11.91	12.52	14.73	13.83
14/06/00	13.27	14.95	17.36	18.27	14.83	13/06/02	8.32	8.44	10.45	10.18	7.37
28/06/00	12.25		15.52	14.79	13.72	01/07/02		11.69	12.45	15.59	12.17
12/07/00	7.84		9.66	9.91	7.84	15/07/02	11.21	10.49	12.66	13.50	10.48
26/07/00	13.75	14.32	17.08	12.59	9.52	29/07/02	11.67	9.93	16.59	15.84	11.88
09/08/00		14.43	18.76	17.35	14.06	12/08/02	18.26	12.23	16.97	14.21	15.99
23/08/00		18.40	22.56	22.79	17.68	02/09/02	10.50	16.30	18.01	12.33	13.08
07/09/00			23.19	22.50	16.52	17/09/02	18.53	17.13	24.42	21.57	20.74
21/09/00		23.26	22.35	26.12	23.32	07/10/02	20.39	18.43	15.12	16.41	17.18
05/10/00		16.26	21.78	13.93	11.85	18/10/02	8.87	14.80	19.30	25.91	13.47
19/10/00		15.03		24.36	13.47						

** Due to the sampling tubes repeatedly going missing, 'before' monitoring at this site was discontinued from 21/9/00*

Table D.5 Mean nitrogen dioxide concentrations (µgm³) before and after the scheme

		Change		Statistically significant change?
'Before'	*'After'*	*µgm³*	*%*	
Methley Drive South (Site 1)				
11.78	13.40	1.62	+14	No
Methley Drive North (Site 2)				
16.32	13.13	-3.19	-20	No
Blake Grove East (Site 3)				
18.58	15.85	-2.73	-15	No
Blake Grove West (Site 4)				
18.15	16.03	-2.12	-12	No
Potternewton				
14.43	13.62	-0.81	-6	No

Table D.6 Comparison between NO_2 concentrations at the kerbside sites and the control site for similar periods without missing data

				Difference	
	Number of periods	*Site µgm³*	*Control µgm³*	*µgm³*	*%*
'Before' survey					
Site 1 - Control	4	11.78	11.48	0.30	3
Site 2 - Control	8	16.32	15.09	1.23	8
Site 3 - Control	10	18.58	14.53	4.05	28
Site 4 - Control	11	18.15	14.43	3.72	26
'After' survey					
Site 1 - Control	9	13.40	13.78	-0.38	-3
Site 2 - Control	10	13.13	13.62	-0.49	-4
Site 3 - Control	10	15.85	13.62	2.23	16
Site 4 - Control	10	16.03	13.62	2.41	18

D.4 Air quality summary and conclusions

A comparison of local air quality data for benzene and NO_2 before and after the installation of The Methleys Home Zone indicates that there has been little change in the concentrations of these air pollutants in the area.

The concentrations of kerbside benzene during the 'before' study were close to urban background levels and well below the Air Quality Standard for benzene of 5 ppb. This indicates that any sources of benzene emissions in the area were not significantly effecting local air quality. Benzene concentration at the background control site decreased slightly between the 'before' and 'after' surveys. Benzene concentration, relative to the background control site, increased at the kerbside sites on Methley Drive and Blake Grove between the 'before' and 'after' surveys. However, these changes were small and not statistically significant.

As with benzene, the concentrations of kerbside NO_2 were close the urban background levels and below the Air Quality Standard for NO_2 of 40 mg/m³. NO_2 concentration at the background control site decreased slightly between the 'before' and 'after' surveys. NO_2 concentration, relative to the background control site, also decreased at the kerbside sites on Methley Drive and Blake Grove between the 'before' and 'after' surveys. However, these changes were small and not statistically significant.

D.5 References

Department of the Environment, Transport and the Regions (DETR) (2000). *The air quality strategy for England, Scotland, Wales and Northern Ireland - working together for cleaner air*. London: The Stationery Office.

Abstract

Home Zones are residential areas where the streets are designed to be places for people, not just traffic. Their intention is to change the way that streets are used thereby improving quality of life. This is achieved through a series of works, which typically include gateway treatments, new shared road space and traffic calming interwoven with and hard and soft landscaping. The Home Zone concept originates from the Netherlands.

In order to assess the appropriateness of the home zones to the UK, the Department for Transport set up a pilot programme of nine home zones which included the Methleys Home Zone in Leeds. TRL was commissioned by the Department for Transport to assess the effectiveness of each pilot home zone scheme in achieving its aims. In order to determine their impact, a comprehensive 'before' and 'after' monitoring programme was devised. This included attitudinal surveys of residents both adults and children, collection of traffic flow, speed and accident data, video recording and air quality and noise surveys. This report presents a comparison of the results of these 'before' and 'after' surveys and through comparison reaches a conclusion regarding the impact the home zone has had upon resident's lives.

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