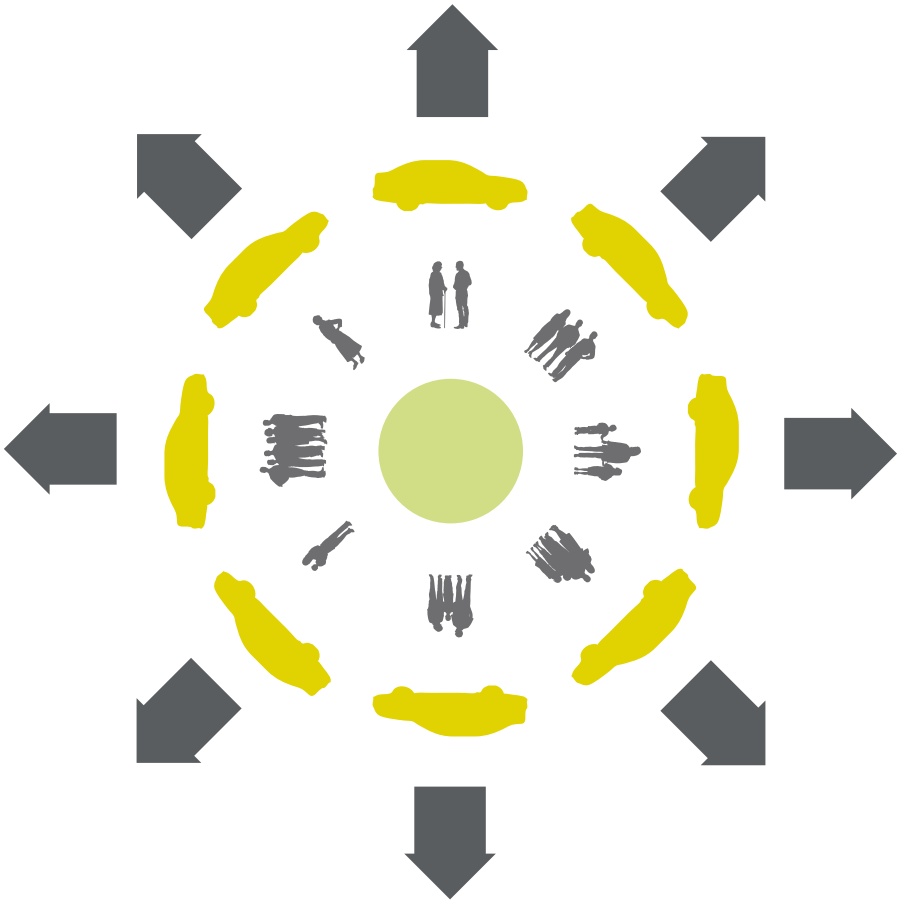
Space to Park



A report by:
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homeimprovements

Arts & Humanities Research Council

Space to Park is a report produced by David Rudlin and John Sampson with help from Susanne Gallenz and Sangeetha Banner of URBED (Urbanism, Environment and Design).

The report has been produced as part of the *Space to Park* research project. This project has involved collaboration between URBED, the University of Edinburgh, Design for Homes and Bob White of Kent County Council Planning Department - a list of all contributers are acknowledged at the end of this document.

Photos courtesy of John Sampson

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For further information please contact John Sampson:
john@urbed.coop

URBED
Fifth Floor
10 Little Lever Street
Manchester
M1 1HR

t. 0161 200 5500
w. www.urbed.coop

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urbed

THE UNIVERSITY OF EDINBURGH

DESIGN FOR HOMES

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Foreword

Car parking is like holiday entitlement. You can always find people who will tell you they don't have enough, but few will admit they have more than they can use (even though many of us don't take off every day we could).

This is mirrored in data compiled by Kent County Council from 402 new-build developments built in the recent era. It identifies that most have a surplus of car parking, with schemes in Canterbury and Shepway having one unused space for every home. Less than 1 in 7 schemes have more cars than bays provided.

So if Kent's raw data suggests more than 6 in 7 schemes are NOT under supplied, why did most respondents (54%) tell Kent that they were 'very unhappy' with their allocation? These people have no other axe to grind – 80% said they 'very happy' with the design of their development. This contradiction is the starting point for '*Space to Park*' which took the Kent' data and revisited 8 developments to interview residents.

This is where the holiday analogy is useful. People tend to complain most when they are obliged to take their holidays at 'the wrong time', when it doesn't suit them. A similar mismatch leads to parking's problems with people being allocated bays that are not convenient to use. The 2006 English Partnerships/ Design for Homes publication "Car Parking: What Works Where" highlighted how inflexible solutions frustrated residents. Poundbury, the model urban extension to Dorchester under the Prince of Wales' patronage, successfully liberated development from standardised highways. However, it introduced a fashion for recreating the intimate street dimensions of historic villages and market towns, delivered with narrow carriageways and remote parking in rear access courts. When these are the only opportunities to park, residents respond by parking their cars on pavements to front of homes and chaos follows. The same story can be found in this report.

Space to Park shows that we need to be more responsive to the size of homes being delivered. However, predicting who will buy homes and how many cars they will own is guesswork, as Kent's data highlights. Relying on the use of the garage for parking rather than storage is also fanciful. One solution proposed is to make shared spaces such as the street more able to accommodate parking. More and more new schemes are adding this as a flexible reserve to their parking strategy. Hopefully research in a few years will tell us whether flexible capacity can calm the anger that relying on garages and rear courts provokes.

David Birkbeck
Design for Homes


A16 BOX

Executive Summary

The last decade has seen a significant improvement in the quality of much of the new housing estates in the UK. A great deal of advocacy by organisations like CABE, design guidance, planning policy and assessment tools like Building for Life have created a new form of suburban development. Unlike the sprawling suburbs of earlier decades, this is denser, more permeable (with fewer cul-de-sacs), has a better quality public realm and higher quality housing. As we will see in this report, all these aspects of design quality are popular with housebuyers. However there remains a problem with the car.

Part of this new design ethos has been a reduction in the impact of the car. In the late 1990s planning policy switched from imposing minimum parking standards – to make sure that cars could be accommodated, to suggesting maximum standards. Planning policy guidance suggested that these maximum standards should be 'part of a package of measures to promote sustainable transport choices and the efficient use of land'. The assumption was that if you provided less parking, you could build to higher densities and people would own fewer cars and so make 'sustainable choices' to walk and use public transport. In this research we have set out to test this assumption.

In doing this we were fortunate to be given access to the results of a survey of new housing in Kent. Since 2007 Kent County Council have surveyed the occupants of new housing schemes around a year and a half after they were completed. More than 400 schemes have been surveyed and the results include details of the level of car ownership, the amount and type of parking and the level of resident satisfaction with the estate.

Surprisingly this data shows an apparent surplus of parking. The average level of car ownership across the schemes was 1.47 cars per household while the average level of parking provision was 2.12 spaces/house. Why then is it that, while 80% of people are happy, or very happy with the attractiveness and friendliness of their estate, 75% are unhappy or very unhappy about parking?

One reason is the fact that a quarter of the parking capacity is in garages many of which are not used for parking, not least because they are too small. The second reason is that the majority of parking is allocated. This means that the provision is unable to deal with different levels of household car ownership.

In order to explore these issues in more detail we selected six case study estates where parking problems seemed particularly apparent. These estates were surveyed early on a Saturday morning (the peak period during the week for parking tensions). We also undertook a door to door survey of just over 200 households and organised two mini focus groups.

The results reinforced the findings from the Kent data. All but one of the case studies had cars parked where they shouldn't be, on pavements, verges, front garden lawns and landscape areas. The exception was within a zone where parking controls were in force. This was the only place where the lack of parking options did seem to be exerting a downward pressure on car ownership, but it also had the highest levels of dissatisfaction and tension.

The survey showed very high levels of overall satisfaction with the estates and the houses. However all of the areas where people were dissatisfied related to traffic safety, road width and design and parking. 80% of people felt that there was inadequate parking on the estate and 63% felt that this had led to neighbour disputes. However only a quarter of people said that lack of parking would put them off from owning a car and virtually no one (7%) agreed with the statement that they would get rid of their car if public transport were improved.

The focus groups reinforced the sense that overall people were happy with their estate. However when asked about the worst aspect the first thing mentioned, spontaneously by all participants was parking. The discussion about parking was vociferous, emotive and the opinions expressed were unanimous. There was almost a sense of people having been tricked since the parking problems only became apparent once the scheme was completed and none of the participants could understand how the designers of the estate had got things so terribly wrong.

From this work we draw four sets of conclusions and recommendations:

- Restricting the amount of parking on new estates is an inefficient way of reducing car ownership and use. It only works if on-street parking is strictly controlled. Otherwise people get around the restrictions by parking 'informally' on the estate. This is unsightly, dangerous and a cause of tension and conflict.
- People on suburban estates regard the car as essential and aspire to one car per adult. This however is the result of a car-based mindset that sees no alternative to the car even when there are facilities within easy reach. One reason for this is that while the layout of the new estates may be walkable they are poorly connected to the surrounding areas.

- The number of allocated spaces should match the average level of car ownership – 1 space for one and two bed units, 1-2 spaces for 3 bed units and 2 spaces for four bed larger units. The number of unallocated spaces should at least be 20% in addition to the allocated spaces.
- These problems are not the result of bad design but are rather caused by the application of design guidance. In building with narrow streets and at densities above 40 units/ha we have created estates that are popular but where parking no longer works. We need to create an alternative model that combines more permeable and integrated street layouts with wider streets designed to accommodate parked cars.

While these findings challenge some of the orthodoxies of sustainable urban design, the reduction of car use remains important for wider environmental reasons. This needs to be addressed as part of the wider policy agenda rather than through the ineffective tool of parking control.

It is important to note that these findings relate to suburban schemes and the results should not be read through to urban situations where average levels of car ownership are lower and where walking and cycling are more prevalent. Our final recommendation is that a sister research project be commissioned to study urban housing schemes.

Introduction

Ever since the advent of mass car ownership, parking has been a fraught issue in the design of new housing estates. The question of where to allow cars to park, how many cars to allow, how to prevent them been stolen on the one hand and causing accidents on the other, has been a source of debate, to put it mildly, between designers, housebuilders, estate agents and of course the people who buy new housing.

In recent years there has been a widely accepted view that cars are a bad thing and should be discouraged. They are seen as intrusive, dangerous and bad for the environment so that public policy has sought to discourage their use. For the planning system one of the main concerns when considering new housing development has been the amount of parking to be provided. The assumption has been that less parking will discourage car ownership, make new neighbourhoods safer and allow for better quality urban design. The *Space to Park* research set out to test this assumption.

It is clear from any review of this subject that parking is an emotive issue. The car is such an unavoidable part of life for many people that the ability to own and park multiple cars next to your house is seen by many as a human right. Indeed the Canmore housing scheme in Edinburgh, the first in the UK to be car-free, has been subject to a successful human rights challenge stating that landlords cannot prevent people from owning a car.

On the other hand people concerned about the sustainability and urban design of housing development have sought to reduce the amount of parking and hide it from view. The hypothesis that has been tested through the *Space to Park* research was that this approach might have been wrong, that the reduction of parking provision (at least in some suburban schemes) might not have reduced car ownership and indeed might have led to a series of unintended consequences for the environment and community relations. Our hypothesis was not that we were wrong to want better housing design, or indeed to reduce car use, but rather that a narrow focus on parking numbers was not perhaps the best means to achieve these ends.

This research is based on a set of suburban case studies in Kent, an area that has seen a great deal of new housebuilding and where a number of authorities have pursued policies to reduce parking numbers. The schemes

covered are outside town centres, relatively poorly served by public transport and are solely residential. However, Kent does have a policy of seeking good quality urban design and the case studies would score reasonably well on criteria such as Building for Life. In other words we have not selected badly designed estates but rather looked at the parking implications of estates that have been designed in line with national planning guidance. The case studies in particular, and Kent more generally, are therefore typical of suburban dormitory housing schemes across the country. We could of course argue that such estates are unsustainable in terms of their location. However they are typical of many of the suburban schemes being brought forward across the country as the housing market recovers.

We would nevertheless sound a note of caution. The findings here are not necessarily applicable to urban locations; within existing towns and cities; with access to a range of employment; served by public transport and with a locally available Car Share scheme. Indeed we would hypothesise that where viable alternatives to the car are available, households might very well react to the nudge factor of making parking more difficult by asking whether they need a second car or even whether they need to own a car at all. We suggest that a sister piece of research on these more urban estates is undertaken to test this.

The research has been undertaken as part of a wider project entitled ‘Home Improvements: Improving quality and value in the provision of volume house building through architectural knowledge exchange ’ which was funded by the Arts and Humanities Research Council (AHRC) and initiated by senior architecture staff at Sheffield, Edinburgh and Kingston Universities.

The aim is to build links between academic research, professional practice and developers to drive innovation in the housebuilding supply chain. Three research projects were funded, one to explore custom-build housing, one looking at the design of the public realm and this one to explore residential parking. Each project is a collaboration between an architecture practice (in this case URBED) and a University (in this case the Edinburgh School of Architecture and Landscape Architecture (ESALA)). The Home Improvements project has also benefitted from the input of Taylor Wimpey Homes, Design for Homes, and the RIBA.

David Birkbeck of Design for Homes has played an important part in helping to guide this project, along with Bob White from Kent County Council who has helped us hugely with the case studies in Kent. The fieldwork and focus group have been undertaken by the research company Progressive. We are grateful for all of the people who have helped with the project. Outputs include good practice case studies, a literature review and an academic paper which is being developed. These, together with this report are available on a good-practice web site:

www.spacetopark.org


The party is here!
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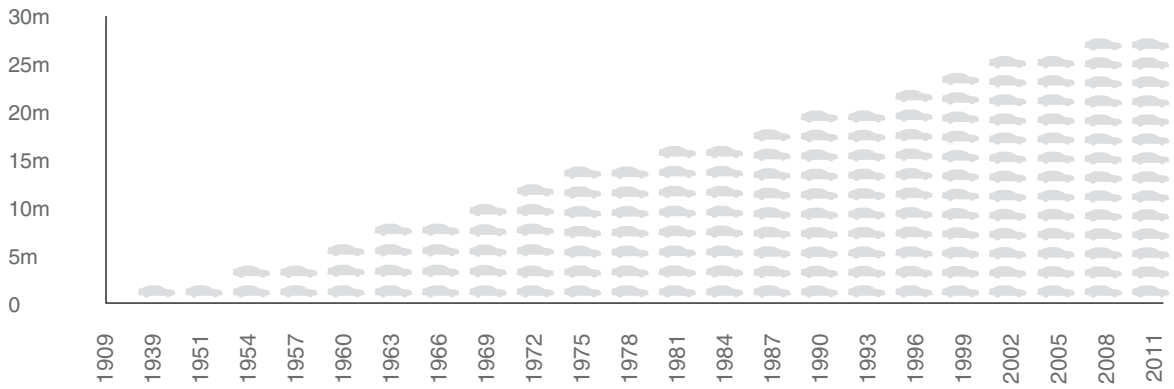
Parking and the Home

1 Parking and the Home

The history of housing design in the 20th century is also a history of our relationship with love-for and fear of the car. Virtually no one owned a car at the start of the century. It was the preserve of the rich and certainly of no consequence in the design of housing. The roads in housing schemes were there to accommodate delivery vehicles, bin trucks, ice cream vans and hearses, most of which were horse drawn.

Figure 1 **Car ownership levels 1909-2011**



Private car ownership in England (Office for National Statistics)

The explosion of housebuilding in the 1920s, which saw the sprawl of 'Metroland' into the countryside around cities was initially also largely unconcerned with the car. The impetus was the expansion of public transport, trams, buses (and the Tube in London) which created development value within walking distance of the bus stops and stations. The ice cream vans and hearses may now have been petrol powered but in all but the most affluent suburbs they had little competition from cars.

However, just as mass suburbia was taking off in the UK, the era of mass car ownership was dawning in the US. The mass production of the Model T Ford in the US and a little later the Austin 7 in the UK made car ownership available to the middle classes. Housing brochures from the 1930s start to show driveways and garages for the display of this new consumer leisure item. However for most it remained just that, a leisure toy, for holidays and day trips. Public transport remained the preferred means of commuting to work while shopping was done on foot in the local high street.

After the war the levels of car ownership were still tiny compared to today's figures. Private car ownership was not much more than 5 Million vehicles by 1960 compared to 27.3 million today, while the total number of vehicles on the road (including commercial vehicles) rose from just under 9 Million in 1961 to 34.5 Million in 2012. The rise in car ownership over that period has averaged 3% a year, dropping to 0.5% in times of recessions but always bouncing back. It is not at all clear that all of the policy measures to reduce car use in the last 10 years have had any perceivable effect on this rate of increase.

This rise in car ownership was predicted, with remarkably accuracy, in 1963 by Sir Colin Buchanan in his report Traffic in Towns[1] for the Ministry of Transport. He wasn't far off in suggesting that car ownership would quadruple to 40 Million vehicles by 2010. His report draws the following conclusion from these figures:

> *'It is impossible to spend any time on the study of the future of traffic in towns without at once being appalled by the magnitude of the emergency that is coming upon us. We are nourishing at immense cost a monster of great potential destructiveness, and yet we love him dearly. To refuse to accept the challenge it presents would be an act of defeatism'.*

He predicted that the day was coming when people would take a car 'as much for granted as an overcoat' and suggested that there were only two options open to us; to restrict the use of the car, or to entirely redesign our towns and cities to avoid them becoming clogged with congestion. In a quote that could apply to some of the housing estates covered in this research the report states that inaction will mean that *'either the utility of vehicles in towns will decline rapidly, or the pleasantness and safety of surroundings will deteriorate catastrophically – in all probability both will happen'.*

Buchanan made a complex series of recommendations balancing restrictions on the car with measures to accommodate the growth in traffic that was seen to be inevitable. The former were however largely forgotten and policy-makers focussed on Buchanan's suggestion that towns and cities should rebuild themselves with modern traffic in mind.

Buchanan was not directly concerned with residential development. However the dire warnings of growing car ownership were also troubling residential planners. The high-density council housing estates of the era, inspired by the writings of Corbusier and the Bauhaus, sought to apply similar solutions to those suggested by Buchanan. Parking was in basements and undercrofts while pedestrian streets were in the sky, safe from the ever-increasing traffic.

In the suburbs and new towns it was also seen as vital to separate cars and pedestrians. The model for this was Radburn, a housing estate in New Jersey designed by Clarence Stien and Henry Wright in 1929. This was the 'Garden City' redesigned for the motor age, with a vehicle route at the front of the house and a pedestrian route to the rear, the idea being that pedestrians could move around without coming into contact with cars.

1 Colin Buchanan, Traffic in Towns Report (1963)

So popular did this model become that Radburn layouts became the norm for most low-rise social housing and new towns in the UK from the early 1960s until as late as 1980. It was taught in architecture and planning schools as the correct way to do things, although in a change from the original, houses were supposed to face onto the pedestrian route and back onto the car route and parking bay.

Private builders were much less keen on Radburn layouts. House builders were interested in 'kerb' appeal so that their houses needed to face onto the street, preferably with a driveway and garage where the family car could be displayed and, of course, washed at the weekend. The developers of private estates were however equally keen to avoid through-traffic and to create quiet, safe environments, hence the attraction of the cul-de-sac. The fundamentals of this type of residential layout were codified in 1977 with the first publication of Design Bulletin 32 (DB32)[2] by the Department of Transport. This was based on the idea of a hierarchy of 'Distributor' streets; Primary, District and Local, leading to 'Residential Roads' serving the dwelling. Restrictions on frontage access to distributor roads and the avoidance of through traffic on residential roads created the dendritic cul-de-sac structure of many housing schemes of the era.

What is common to these schemes from the 1960s through to the early 1990s is an acceptance that car ownership would continue to rise and that this was not a particularly bad thing. The main job of policy makers was to cater for the safe and efficient movement and the adequate parking of this increasing number of cars. DB32 leaves parking standards to be set by each local authority based on local circumstances. However it does give guidance suggesting that *'few drivers are prepared to use parking spaces more than a few metres from their destination'.*

While it accepted that unallocated communal provision would mean that the total amount of parking only needed to match the projected number of cars, it suggested that parking should ideally be within the dwelling curtilage. It conceded however that, if all spaces are allocated, *'the number of spaces provided within each curtilage would need to match the maximum number of cars that the different sizes and types of household that would be likely to occupy the dwelling would be likely to own'.* Based on this, some authorities set parking standards as high as 400% for larger houses and 2-300% became the norm in suburban areas. The result of these policies tended to be low-density, car-dominated housing layouts that were widely criticised as lacking in character and impossible to serve with public transport.

The late 1990s saw a significant change in government policy towards housing. The incoming Labour government signalled a major policy initiative in a statement to Parliament in February 1998 by the Deputy Prime Minister John Prescott[3] . This was to become known as the Urban Renaissance and included setting up the Urban Task Force Chaired by Richard Rogers (Lord Rogers of Riverside) which reported in 1999[4] ,

2 DoE, Design Bulletin 32 (May 1992)

3 Prescott statement to Parliament (February 1998)

4 Urban Task Force, Towards a Strong Urban Renaissance (1999)

followed by an Urban White Paper in 2000[5] and the establishment of the Commission for Architecture and the Built Environment (CABE) with a remit to improve the quality of design.

As part of this new approach, planning policy was updated. Planning Policy Guidance Note 3 on Housing[6] had originally been published in 1992 but was updated in March 2000 to include policies on; the proportion of housing to be built on brownfield land, increasing housing densities and improving design. It also recast the standards for parking provision, suggesting that parking standards, especially for off-street car parking impact significantly on housing density and the amount of land required for new housing. It stated that *'car parking standards for housing have become increasingly demanding and have been applied too rigidly, often as minimum standards. Developers should not be required to provide more car parking than they or potential occupiers might want'.*

The policy instructed local authorities to revise their parking standards to allow for 'significantly lower levels of off-street parking provision'. It went on to say that *'Car parking standards that result, on average, in development with more than 1.5 off-street car parking spaces per dwelling are unlikely to reflect the Government's emphasis on securing sustainable residential environments'.* This represented a reversal in policy. Instead of minimum standards catering for the worst-case scenario, planning authorities were told to set maximum standards regardless of anticipated car ownership. The reasons were partly the efficient use of land, but also a belief that a reduction in parking would support wider government policy to reduce car use.

This wider government policy was articulated in The Transport Act 2000 and its planning policy equivalent PPG13 (Transport) first published in March 2001[7] . This set out a range of land-use policies to reduce car use and promote public transport. This included policies to concentrate new house-building in existing towns and cities or new settlements likely to reach a population of 10,000 within ten years. PPG 13 echoed the parking policies in PPG 3 stating that: *'Standards should be designed to be used as part of a package of measures to promote sustainable transport choices and the efficient use of land'.* The implication being that an over provision of car parking within new housing schemes will encourage car use and undermine public transport.

Alongside this change in policy there was a move to address the design of residential areas with regard to the car. In 1997, Alan Baxter Associates were commissioned to rewrite DB32 to create a design guide for housing areas that were less car dominated.

5 ODPM, Our Towns and Cities - the Future - Urban White Paper (2000)

6 DCLG, Planning Policy Guidance 3: Housing [England and Wales] (2000)

7 DCLG, PPG 13: Transport [England and Wales] (2001)

This was a fraught exercise because of the issue of liability – highways engineers who followed DB32 couldn't be held liable for any traffic accidents. Eventually it was agreed that Baxter's report, published in 1998 as 'Places Streets and Movement' [8] would be a 'guide' to the implementation of DB32 rather than its replacement. The report did nevertheless recast much of the guidance on the design of residential roads and had a major influence on many of the case studies in this report.

On parking the report states:

> *'Where and how cars are parked is critical to the quality of housing areas, new or old. The location of parking is something which can arouse immensely strong feelings. A very careful balance has to be struck between the expectations of car owners, in particular the desire to park as near their houses as possible, and the need to maintain the character of the overall setting'.*

The report suggests that parking can be included in layouts in three ways: parking courts to the rear of property, provided that they are overlooked, in-curtilage parking either down the side or at the front of the house, provided that it doesn't '*break up the street frontage'* and on-street parking. Rather optimistically they suggest that *'In curtilage parking spaces can be grassed over if not needed'.* The reality in our case studies is that gardens are more likely to be pressed into service as a second car parking space.

DB32 was eventually replaced with the publication of 'Manual for Streets' in March 2007 [9]. This was developed by a team led by WSP and finally grasped the nettle by creating guidance that, if followed, would absolve highways engineers of liability. The section on parking starts with a statement –that in new housing estates *'the availability of car parking is a major determinant of travel mode'.*

However it also recognises the potential adverse consequences of under provision of parking:

> *'Local planning authorities will need to consider carefully what is an appropriate level of car parking provision. In particular, under-provision may be unattractive to some potential occupiers and could, over time, result in the conversion of front gardens to parking areas. This can cause significant loss of visual quality and increase rainwater run-off, which works against the need to combat climate change'.*

The guidance draws heavily on the main previous piece of research on parking 'Parking – What Works Where' by English Partnerships and Design for Homes published the previous year [10]. This draws on work by Alan Young and Phil Jones on the 1991 census to show that the average household level of car ownership was 1.1 for a house with 5 habitable rooms. If all

8 DETR, Places Streets and Movement (1998)

9 DfT, Manual for Streets (2007)

10 English Partnerships, Car Parking: What works where (May 2006)

parking spaces were unallocated a row of ten houses would require 11 parking spaces (as pointed out in the original version of DB32). However if each house were given an allocated parking space, inefficiency would be introduced into the process. 19% of houses wouldn't have a car and so their space would be empty while some would have two cars. They calculated that in this case the ten houses would need 13 spaces to accommodate the same number of cars (an 18% inefficiency). Further more in the unallocated scenario the spaces would double up as visitor parking, while in the allocated scenario a further 2 spaces (15 in total) would be required. 'Manual for Streets' picks up on this and while it does not suggest a level for in-curtilage parking, it suggests that a significant amount of unallocated, on-street parking be provided in preference to in-curtilage parking.

The *What Works Where* research includes data from Alan Young and Phil Jones based on the 2001 Census that calculates the level of car ownership in different types of housing by tenure, size and type. The headlines are that the main factor affecting car ownership is the size of the house, a house with 8 habitable rooms typically has twice as many cars as a 4 room house. Owner-occupiers have 0.5 more cars than social tenants in all house sizes and types, but flats only have marginally fewer cars (0.1-0.2) than the equivalent sized house. The following table is calculated from the figures in this report.

From a Scottish perspective, Scottish Government Policy Statement ' Designing Streets' (2010) places an emphasis on the integration of parking which, 'should be accommodated by a variety of means to provide flexibility and lessen visual impact.' In level surface areas, such as 'home zones' the aim is to 'de-clutter streets' by the provision of sufficient parking, distributed evenly and clearly allocated.

A recent study carried out by Architecture + Design Scotland and researchers from the University of Edinburgh, 'A Housing Values Study' looked at the influence of housing

Figure 2 **Household Car ownership from the 2001 Census**

Habitable Rooms	% of households with…					Implied Parking ratio
	0 cars	1 car	2 cars	3 cars	4+ cars	
1 Room	25%	49%	20%	4%	2%	108%
2 Rooms	28%	56%	14%	2%	1%	92%
3 Rooms	26%	55%	16%	2%	0%	95%
4 Rooms	24%	56%	18%	2%	0%	99%
5 Rooms	16%	53%	26%	4%	1%	121%
6 Rooms	13%	48%	32%	6%	1%	134%
7 Rooms	6%	39%	43%	9%	3%	163%
8 Rooms	3%	26%	51%	14%	6%	193%

Source 2001 Census data collated by Alan Young (WSP Group) and Phil Jones

density, housing design and housing type/ format on where people choose to live and what they think about their neighbourhood. While parking issues were not specifically studied, the study does indicate that the early physical manifestations of Designing Streets are not universally supported by residents living in these schemes as they 'scored very low on almost all items about neighbourhood.'

The final chapter of this story relates to the current coalition government and its stated intention to "end the war on motorists" [11]. In doing this they removed the national policy limits on Parking in PPG/PPS 3. The National Planning Policy Framework published in March 2012[12] states that parking standards should be set by local planning authorities with reference to the accessibility of the development and the availability of public transport, the size and type of the property and local levels of car ownership. As quoted in the CIHT guidance note on parking[13] , the government's view is that *'significant levels of on-street parking had caused congestion and danger to pedestrians'* and urged local authorities *'to make the right decisions for the benefit of their communities'*. The clear implications being that the right decision would be an end to unrealistic restrictions of people's right to park their car.

The issue of car ownership, use and parking has been an important part of housing design for more than 50 years, yet the area remains remarkably under researched. For the first thirty of these years the emphasis was on accommodating the growing levels of car ownership and for the second twenty the focus shifted to reducing car use. The third phase is just beginning with the removal of national restrictions on residential parking provision. Given that this happened so recently there has been no time for it to filter down into local planning policy and the impact is therefore unclear. It could however herald a return to the low-density car-dominated housing estates of the 1980s. Alternatively it might lead to a reassessment of the way that the car is accommodated in housing development in a way that recognises likely levels of car ownership without undermining the quality of the place.

Throughout much of this period the policy has been based on the assumption that reducing the level of car parking reduces car use. However, there is remarkably little research to back this up. One of the few pieces of work that found a positive correlation between the amount of parking provided and the level of car use was a Transport for London research report published in 2012[14] . Like the 'What Works Where' report it identified correlations between household size, tenure and car use. However the research also found correlations between parking provision and car ownership, and between car use and the home's PTAL Rating (Public Transport

11 Philip Hammond, Announcement at the DfT, May 2010

12 Announcement reported on CLG website and corresponding CLG letters to Chief Planning Officers (14 January 2011) and Clive Betts MP (3 January 2011)

13 CIHT, Guidance Note - Residential Parking, 2012

14 Transport for London, Residential Parking Provision in New Developments (2012)

Accessibility Level). Given that planning policy in London also links the allowable level of parking to the PTAL Rating, cause and effect becomes unclear. However it does suggest that the situation in urban locations may be different. Other than this research is very limited. The CIHT even state in their 2012 guidance note that there is *'no clear evidence to show that access to existing and/or proposed public transport measures and the distance from key facilities, including the quality of the walking and cycling infrastructure that provides the links, affects car ownership'.*

The remainder of this report explores these issues in more detail in relation to Kent. Chapter 2 analyses a data set collected on 402 recent developments in Kent comparing parking provision, car ownership and customer satisfaction. Chapter 3 details findings from a survey and focus groups with the residents of these estates. Chapter 4 looks in more detail at six case studies drawn from the Kent data to look at the reality on the ground of parking provision and actual parking patterns. This allows us to draw a series of conclusions in Chapter 5.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2.0
The Kent Data

3 The Kent Data

Since August 2007 Kent County Council has been undertaking surveys of new housing schemes in the county. The data, which has been made available for this study, includes 402 housing schemes on 315 separate estates (some of which are made up of multiple phases which are treated as separate schemes)[1] . This data represents a large proportion of housing schemes developed in the county in the last 10 years. They were surveyed once they were completed and substantially occupied. The data produced includes the number of parking spaces provided for each property (as reported by the occupants), the number of cars owned by each household and the level of satisfaction with parking as an issue. This valuable resource has enabled us to test some of the issues raised in the previous chapter.

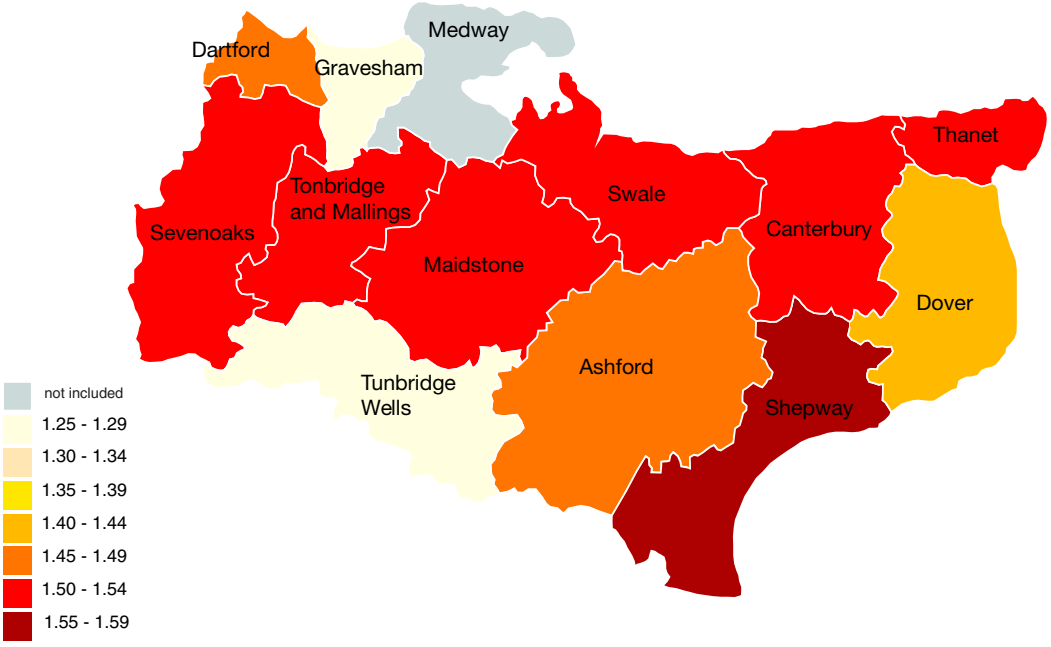


Figure 3.1 – **Average cars per household by district in Kent**

1 Data made available by Bob White at Kent County Council, representing every housing scheme in the county since 2007. The original data set has been stripped of any scheme with incomplete data which has removed around 60 schemes.

Figure 3 **Car ownership by district in Kent**

		Number of schemes	Average cars/ household
<<< Distance from London	Dartford	34	1.48
	Sevenoaks	26	1.51
	Gravesham	51	1.26
	Tonbridge & Malling	51	1.52
	Maidstone	44	1.50
	Tunbridge Wells	29	1.27
	Swale	24	1.52
	Ashford	46	1.45
	Canterbury	65	1.52
	Shepway	21	1.57
	Dover	20	1.44
	Thanet	22	1.52
			1.47

The data covers the 12 districts within the Kent County Council area (excluding Medway which is a unitary authority). These range from Dartford on the edge of London through the leafy commuter belts of Sevenoaks and Tunbridge Wells, and the free-standing towns of Canterbury and Ashford to the coast at Shepway and Dover. This is clearly a diverse range of places. Five schemes within the database have less than 0.5 cars per unit – probably flats in central locations – while at the other end of the spectrum there are 19 schemes with an average car ownership of more than 2 cars a unit.

Car ownership

The first question that the data allows us to address is the level of car ownership and the accuracy of the figures derived from the 2001 census described in the last chapter. The average car ownership across the whole sample of schemes in Kent is 1.47 cars per household. This is broken down by district in the table below ranging from an average of 1.57 cars per household in Shepway to 1.26 in Gravesham. It is difficult to see any real pattern in terms of accessibility, distance from London and affluence in these figures. However they are all substantially higher that the 1.1 cars per household derived from the 2001 Census data described above.

The data from Kent does include the average number of bedrooms per property on each scheme and we have created a rough estimate of habitable rooms by doubling this figure (in order to align the Kent data to the census data - which is based on habitable rooms). This is shown in Figure 4 as a comparison with the 2001 census figures from Figure 2. What it shows is that the car ownership figures for new property in Kent are similar to the 2001 census figures for

Figure 4 **Car ownership/habitable rooms**

Habitable rooms (estimate)*1	Number of schemes	Average level of car ownership	Data from 2001 Census (Fig 2)	Difference
<3	6	1.07	1.00	0.07
3	41	1.04	0.95	0.09
4	69	1.26	0.99	0.27
5	116	1.43	1.21	0.22
6	82	1.58	1.34	0.24
7	48	1.75	1.63	0.12
8	40	1.92	1.93	-0.01

*1 This is a rough estimate based on double the average number of bedrooms on the estate

Figure 5 **Car parking provision**

		Number of schemes	Parking provision						Average parking provision	Average cars/ household	Surplus (visitor) parking /unit
			400%+	3-400%	2-300%	150-200%	100-150%	<100%			
<<<Distance from London	Dartford	34	0	2	10	9	11	1	1.84	1.48	0.36
	Sevenoaks	26	1	3	8	4	7	3	2.06	1.51	0.55
	Gravesham	51	0	1	4	4	8	3	1.56	1.26	0.30
	Tonbridge and Malling	51	2	6	19	15	7	1	2.21	1.52	0.69
	Maidstone	44	1	7	13	11	7	2	2.05	1.50	0.55
	Tunbridge Wells	29	0	3	5	5	10	4	1.65	1.27	0.38
	Swale	24	1	1	13	5	4	0	2.15	1.52	0.63
	Ashford	46	1	4	13	13	11	3	1.96	1.45	0.51
	Canterbury	65	7	15	17	15	7	3	2.52	1.52	1.01
	Shepway	21	0	6	12	1	0	1	2.64	1.57	1.07
	Dover	20	0	0	12	3	4	1	2.02	1.44	0.58
	Thanet	22	4	2	5	5	3	2	2.40	1.52	0.88
		402	**17**	**50**	**131**	**90**	**79**	**24**	**2.12**	**1.47**	**0.65**

the smallest and largest properties but are significantly higher for mid sized properties. The schemes with an average of 4-6 habitable rooms (which equates to 2 and 3 bedroom homes) make up 66% of the schemes in the sample. These have car ownership levels which are 0.25 cars per household above the census figures, with a parking ratio of 142%. There are probably a number of reasons for this. Car ownership levels have risen since 2001 and the situation in Kent in terms of the availability of public transport and the local demographics will be different. It is also possible that the purchasers of new housing have different levels of car ownership to the general population. It is possible that they are younger households with two earners needing to commute some distance to work.

Parking provision

The Kent data details the parking provision for each of the schemes as set out in Figure 5 below. This shows that the average parking provision across the 402 schemes is 2.12 spaces per unit (or 212%). 17 schemes have more than 400% parking and 24 have less than 100%. Only a quarter of schemes have a parking ratio below the 150% suggested by government policy until recently while 55% fall into the 150-300% range.

The table also shows the equivalent average car ownership figures from Figure 3. This shows that the average level of parking provision of 2.12 spaces per unit is significantly above the average car ownership figure of 1.47 cars per unit. Indeed in all of the districts there is an apparent surplus of parking in excess of the 20% extra normally provided for visitors. In Canterbury and

Figure 6 **Overall level of satisfaction by scheme**

	Very Unhappy	Unhappy	Happy	Very happy	TOTAL
Parking	221	85	45	49	402
Safety	54	76	115	155	402
Attractiveness	18	46	95	241	402
Friendliness	19	59	109	213	402

Figure 7 **Overall level of satisfaction by district**

	Parking	Safety	Attractiveness	Friendliness	Overall satisfaction (excluding parking)	Overall satisfaction (with parking)
Dartford	-35%	27%	52%	44%	41%	22%
Sevenoaks	10%	53%	60%	56%	57%	45%
Gravesham	12%	33%	33%	23%	30%	25%
Tonbridge and Malling	-23%	34%	60%	49%	48%	30%
Maidstone	-21%	28%	48%	45%	40%	25%
Tunbridge Wells	4%	47%	57%	47%	50%	39%
Swale	-32%	15%	48%	50%	38%	21%
Ashford	-15%	22%	41%	41%	37%	24%
Canterbury	10%	46%	53%	50%	50%	40%
Shepway	19%	51%	57%	58%	55%	47%
Dover	-5%	33%	57%	56%	48%	35%
Thanet	2%	49%	70%	56%	58%	44%

-100% - 0% 1% - 30% 31% - 50% 51%-100%

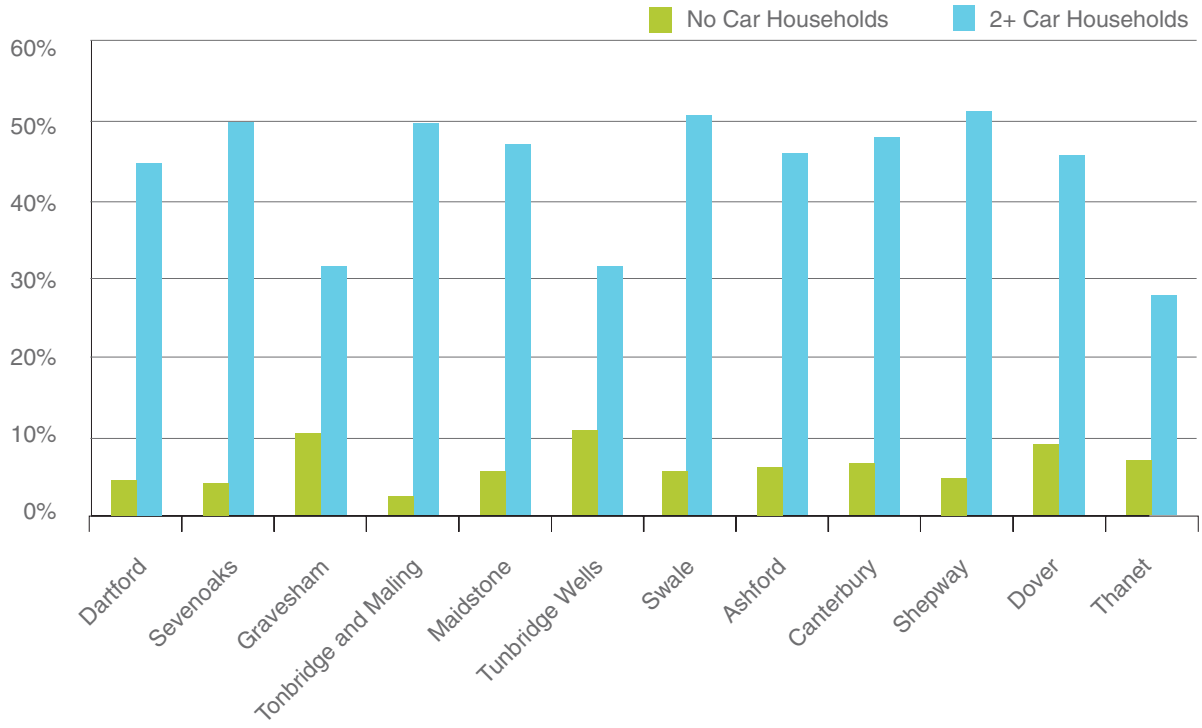
Shepway it would appear from these raw figures that there is an unused parking space for every unit.

Throughout all of the schemes there are only 56 schemes (14%) where the number of cars owned per unit exceeds the parking spaces provided per unit. Only 13 of these under provided schemes have parking ratios greater than 150%. By contrast there are another 53 schemes with parking ratios below 150% which have a parking surplus even if it is only 0.15 cars/unit.

Customer satisfaction

This data seems to suggest that there is an over provision of parking in Kent. It is therefore strange that people are so unhappy about the issue. The data includes the responses to surveys undertaken of residents of the estates some time after they had moved in. In these surveys the residents were asked to rank their level of satisfaction with the scheme based on four issues; the safety of the scheme; its attractiveness; happiness; and parking.

Figure 8 **No car and 2+ car households**



The results as shown in Figure 6 are striking. In 54% percent of schemes surveyed, the average resident rating of their level of satisfaction with the parking situation of the estate was 'Very unhappy'. Yet 60% of the responses were 'Very Happy' with the attractiveness of the estate with only a few less giving the same rating for friendliness. Figure 7 shows the overall level of satisfaction across the 12 districts and highlights the stark difference between satisfaction with parking and other issues. While dissatisfaction with parking does drag down the overall level of satisfaction with the estate, the survey responses suggest that people will put up with parking problems if they are very happy with other aspects of the estate.

The efficiency of parking provision

We therefore need to understand why an apparent surplus of parking on most estates exists alongside such a high level of dissatisfaction. The answer lies in the issue first highlighted in the 1977 version of DB32. This pointed out that if parking on an estate was entirely unallocated then the total number of parking spaces would only need to match the needs of the residents. On the other hand if all the parking was allocated then each house would need to have sufficient parking to accommodate the maximum possible rather than the average needs of its residents. The figures quoted above relate entirely to allocated off-street parking and the reason for the high level of dissatisfaction relate to the inefficiency of use.

The first problem is that different households have different needs. As Figure 8 shows, a proportion of households in all areas don't have a car. This is between 5 and 10% in all of the districts. These households may be in

Figure 9 **Use of garages**

	Vehicles / unit	Spaces per unit	Spaces / unit in garage	Surplus parking inc garages	Surplus / deficit without garages	Percentage use of garage*
Dartford	1.48	1.84	0.60	0.36	-0.24	13%
Sevenoaks	1.51	2.06	0.52	0.55	0.03	18%
Gravesham	1.26	1.56	0.23	0.30	0.07	22%
Tonbridge and Malling	1.52	2.21	0.70	0.69	-0.01	9%
Maidstone	1.50	2.05	0.56	0.55	-0.01	0%
Tunbridge Wells	1.27	1.65	0.43	0.38	-0.05	-4%
Swale	1.52	2.15	0.61	0.63	0.02	14%
Ashford	1.45	1.96	0.51	0.51	0.00	21%
Canterbury	1.52	2.52	0.71	1.01	0.29	13%
Shepway	1.57	2.64	0.87	1.07	0.20	29%
Dover	1.44	2.02	0.57	0.58	0.01	37%
Thanet	1.52	2.40	0.71	0.88	0.17	14%

* This is not the percentage of people who use their garage. The survey asked whether people used their garage for parking all the time, regularly, rarely or not at all. +100 would mean everyone uses their garage all the time -100 that they never did.

the social housing elements of the scheme or perhaps are elderly people. The problem is that the spaces allocated to these units are not used and are not available to other households

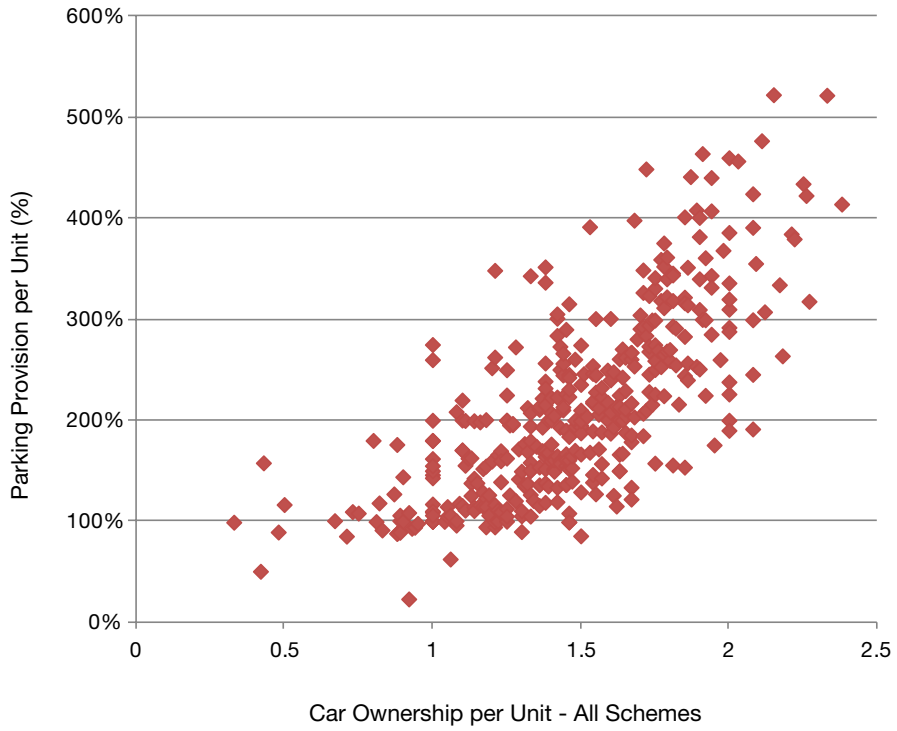
At the other end of the spectrum Figure 8 shows the number of households with 2 or more cars. For all but three of the areas this averaged between 40 and 50%. In households that don't feel that they have access to convenient public transport and where both partners work, two cars are unavoidable. As we shall see from the focus groups, at a time when young people are struggling to get a house of their own, it is not unusual to have households with adult offspring living at home, also needing their own car. In estates where most spaces are allocated there is nowhere for these surplus cars to go which is when tensions start to arise.

The other issues that comes out of the figures regarding the efficiency of parking use is the garage. Figure 9 shows that overall 28% of parking spaces are provided in garages although in some areas virtually every house (as opposed to flats) has a garage. If you take these garage spaces off the total provision then the parking surplus largely disappears and indeed becomes a parking deficit in four of the districts shown in Figure 9.

This is important because many people don't use their garage even when they are struggling for somewhere to park. Research in Dorset suggested that only 50% of residents use their allocated parking garages for car parking[2] and our own survey work described in Chapter 5 suggests an even lower figure of 40%. The Kent data is a little harder to interpret because residents were asked how regularly they use their

2 Dorset County Council, Residential Car Parking Provision: Local Guidance for Dorset (May 2011)

Figure 10 **Parking provision perunit as a percentage against car ownership per unit, for all 402 schemes surveyed**



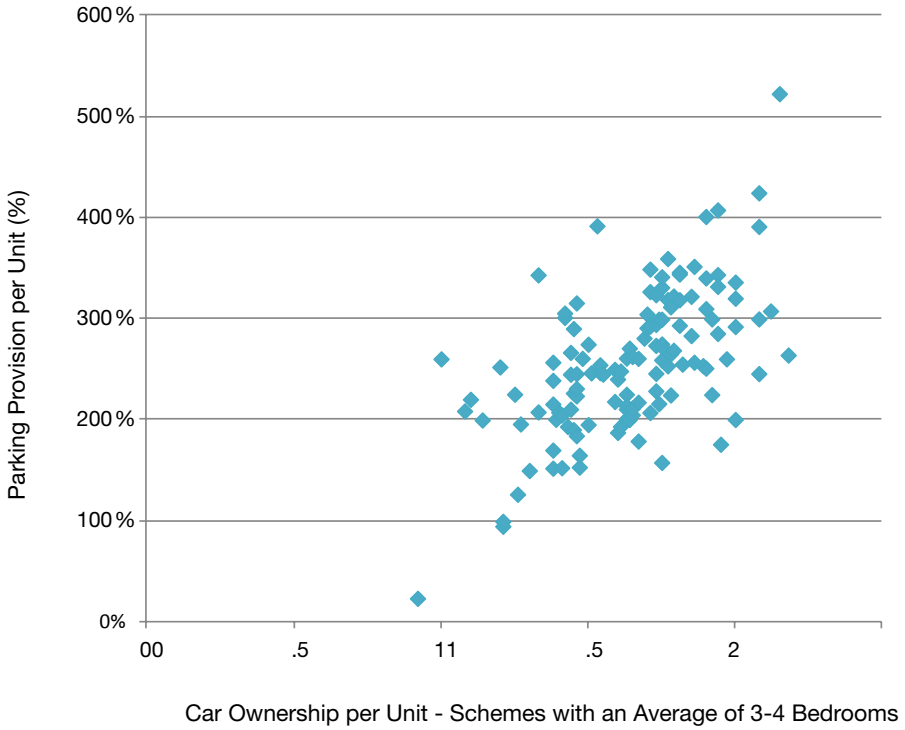
garage for parking and the results turned into a percentage of plus or minus 100. Nevertheless it is clear that the level of garage use is relatively low. There are a number of reasons for this. In our subsequent survey work (detailed in Chapter 3) residents complained that the garages were too small for modern cars, which in any case no longer need to be garaged in order to start on a frosty morning. Some modern houses also lack storage space or bike parking and the garage gets pressed into service making it unavailable for the car.

Parking and car ownership

The Kent data does allow us to test one of the assumptions behind parking policy in recent years, namely that reducing car parking spaces is associated with a reduction in the level of car ownership. Figure 10 plots the relationship between the level of parking provision and the level of car ownership for all 402 of the units surveyed in Kent. There clearly is a rough correlation between parking levels and car ownership.

This however doesn't tell us very much about cause and effect. There is also likely to be a correlation with the size of the house, the size and nature of the household, the location of the estate etc. The Kent data allows us to control the size of the house, so that Figure 11 is plotted from the 129 estates where the average number of bedrooms is between three and four. This again shows a very rough correlation but also significant variations;

Figure 11 **Parking provision per unit as a percentage against car ownership per unit for all 129 schemes with an average number of bedrooms between 3-4**



there are estates with twice as much parking but the same level of car ownership. This bears out the conclusion that we come to in the following chapters, that the restriction of parking is a very inefficient tool to reduce levels of car ownership.

Conclusions

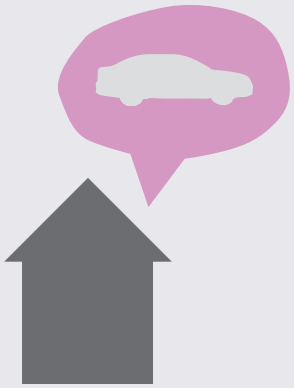
The data from Kent provides a valuable insight into the parking situation in the county. It is important to remember that there are a huge variety of schemes in the survey and that the averages that we have used in this chapter can only tell us so much about the situation on the ground. However it would appear that in overall terms the level of parking provided in Kent at 212% has been higher than the 150% recommended in government guidance and also higher than the 147% average level of car ownership across all of the schemes. Yet it is clear that despite this apparent surplus there are huge parking tensions in the new housing schemes covered.

This is partly the result of an inability to accommodate households with different car ownership levels and partly because the garages that make up over a quarter of provision are used very inefficiently. These inefficiencies largely cancel out the apparent surplus, which accounts for the problems even on the estates that exceed 150% parking provision and make up three quarters of the schemes surveyed.

In order to understand what these issues mean on the ground we go on to look at six case study estates in the next three chapters. These were selected from the data as places that had been built in line with policy and where the survey work had identified particular parking tensions.


28
NO
PARKING
OWNERS
HAVE RIGHT
OF
ACCESS

3.0
Resident Views



3 Resident Views

In order to understand the background to the case-study site observations, a door-to-door survey of residents was undertaken along with two mini focus groups. The survey and focus groups were led by Progressive, a market and social research agency. In this chapter we describe first the survey and then the findings of the focus group .

The survey

The door-to-door survey was undertaken in June 2013 and included 204 responses from people living in estates built in Kent since 2006. The case studies described in Chapter 4 focussed on the some of the estates surveyed .

The survey started by asking people how satisfied they were with their neighbourhood. The overall level of satisfaction was very high with 85% either satisfied or very satisfied and 79% would recommend the estate to a friend. Only slightly fewer people 75% were satisfied with the physical layout of the estate. However when asked specifically about the road layout the figure dropped further and 41% were dissatisfied or very dissatisfied.

In order to explore these responses people were asked to rank issues in order of importance when considering their neighbourhood and then to rate their neighbourhood against these same issues. As the table shows people considered all of the issues to be more or less important. Many of the issues ranked as most important were those that you would expect; general location, proximity to open space and the size and quality of the house. However of the nine issues ranked by as important or very important, five concerned cars; traffic safety, width of road, pavement width and accessibility, availability of parking, and road design. The lesser-ranked issues were; proximity to public transport, schools and work, the mix of houses and, interestingly, having a garage.

Figure 12 shows the way that people rated each of these issues for their estate. The two tables (Figure 12 and 13) can be compared to show that they are very satisfied with many of the issues that they consider to be most important.

These are all issues that could be assessed when they were considering which house to buy. However the issues ranked important, where people were less happy, largely relate to the car and may have been less evident at the point of purchase particularly for people who bought before the estate was complete.

Figure 12 **Importance of issues**

Issue	Important or very important	Satisfied or very satisfied
Traffic Safety	96%	54%
Width of Roads	94%	39%
Pavement width and accessibility	93%	48%
Availability of parking	92%	43%
Road Design	92%	49%
Location of their home	95%	89%
Proximity to open space	92%	79%
Size of Home	93%	88%
Quality of build	92%	77%

Figure 13 **How important are the following issues when assessing satisfaction with your neighbourhood and environment? (0 being Very Unimportant, 100 being Very Important)**

	Very Unimportant	Fairly Unimportant	Neutral	Fairly Important	Very Important
Traffic safety on the street	0	1	2	25	71
Width of the roads	0	2	2	33	61
Pavement width and accessibility	0	1	5	34	59
General location	0	2	3	30	65
Proximity to schools/children's clubs	3	10	13	17	58
Proximity to main roads and trains	0	11	8	25	55
Availability of public transport	1	10	8	25	56
Proximity to trains and public transport	1	13	9	24	52
Proximity to work	2	14	16	24	44
Having open space near by	1	2	5	28	64
Available parking space	1	1	0	23	75
Mix of house types	2	11	20	28	39
Size of my home	0	2	4	40	53
Having a garage	2	10	10	29	49
Quality of house build	0	0	2	24	72
Road design	0	3	4	33	59

0 - 9 people
10 - 19 people
20 - 29 people
30 - 39 people
40 - 49 people
50 - 59 people
60 - 69 people
70+ people

Figure 14 **How satisfied are you with the quality of the following elements?**

	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
Traffic safety on the street	11	29	6	44	10
Width of the roads	21	34	6	32	7
Pavement width and accessibility	12	29	10	38	10
General location	1	5	5	67	22
Proximity to schools/children's clubs	0	2	30	45	22
Proximity to main roads and trains	0	4	10	62	24
Availability of public transport	0	5	13	55	26
Proximity to trains and public transport	0	7	15	52	26
Proximity to work	0	2	28	46	24
Having open space near by	4	14	2	51	28
Available parking space	32	22	3	26	17
Mix of house types	0	5	17	60	18
Size of my home	0	4	7	59	29
Having a garage	10	19	21	26	24
Quality of house build	1	10	12	57	20
Road design	15	31	5	42	7

0 - 9 people | 10 - 19 people | 20 - 29 people | 30 - 39 people
40 - 49 people | 50 - 59 people | 60 - 69 people | 70+ people

Figure 15 **To what extent would you agree with the following statements?**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Not applicable
There is adequate parking in this neighbourhood	56	24	1	12	7	0
The roads are too narrow	5	19	3	28	44	1
Lack of parking space leads to neighbour disputes	9	13	10	30	33	6
Parking on the verges makes it unsafe for pedestrians	4	5	2	33	55	0
Lack of parking space would put me off from owning a car	30	42	3	12	12	1
Parking space was an important factor when I was thinking about buying this house	5	10	6	37	39	2
The look of the street is negatively affected by lack of parking space	3	17	5	24	49	2
Visitors find it easy to park here	49	22	5	10	13	1
I try not to move my car in the evening for fear of losing my parking space	15	24	7	20	28	8
If public transport improved I would get rid of my car	50	33	4	4	3	5
Parking space is an important factor when thinking about selling a house	1	3	9	34	50	3
The road layout in the street in which I live is poorly designed	9	21	9	26	34	1

The survey then delved deeper into people's attitudes to these car related issues as shown in Figure 15. This shows that 80% of people felt that there was inadequate parking on the estate and 63% felt that this had led to neighbour disputes. Almost three quarters of people felt that the roads on the estate were too narrow and that parked cars negatively affected the appearance of the street with 88% feeling that cars parked on verges made the area unsafe for pedestrians.

Despite this only a quarter of people said that lack of parking would put them off from owning a car and virtually no one (7%) agreed with the statement that they would get rid of their car if public transport were improved.

Three quarters said that parking had been an important issue when buying their house increasing to 84% of people who felt that it would be an important factor when they came to sell. Half suggested that they would try and avoid using their car in the evening for fear of losing their space and only 23% said that visitors found it easy to park. Overall 60% felt that the street layout of their estate was poorly designed.

The survey went on to ask people about where they parked. As Figure 16 shows just over half of the respondents were able to park one car off road on their property while 37% could park 2 or more. This suggests an actual off street parking ratio of 1.41 vehicles per unit. When asked how many vehicles they would like to be able to park off street just over half wanted to be able to park two cars and 14% wanted more than this. The desired off street parking ratio was therefore 1.77 vehicles per unit.

These figures are increased by the answers to the question about parking on-street. 59% of people parked one car on the street outside their home and half of respondents wanted the ability to park two or more cars on the street. This would raise the actual parking ratio to 2.3 vehicles per unit and the desired ratio to a huge 3.28 vehicles per unit.

42% of respondents had a garage but of these only 41% used it to park their car. The main reasons cited by those people for not using their garage was that it was too small (48%) or that they preferred to use it for other uses (44%).

Figure 17 indicates the times of the day when the parking problems are most apparent. It is clear that evening and weekends are the most difficult times with 70% of respondents having problems finding a parking space at these times.

When asked to prioritise possible improvements the results were evenly spread with the greatest number of people giving top priority to leaving the estate as it is. However the greatest number of priorities 1 and 2 were given to increasing the amount of off street parking.

Figure 16 **How many cars can you park off road and on your own property here in this street?**

	0 Cars	1 Car	2 Cars	3 Cars	More
IN CURTILAGE					
How many cars can you park off road and on your own property here in this street?	8%	55%	29%	5%	3%
Within reason how many cars would you like to park off road and on your own property here in this street?	6%	28%	51%	12%	2%
ON-STREET					
How many cars can you park legally, on your side of the road, outside your property and inline with your property boundary?	26%	59%	14%	1%	0%
Within reason how many cars would you like to park legally, on your side of the road, outside your property and inline with your property boundaries?	8%	41%	44%	5%	1%

Figure 17 **How easy is it to find on road parking during the following times?**

	Very Difficult	Difficult	Neither difficult or easy	Easy	Very Easy	Don't know
Between 6.30 and 8.30 am	11	27	7	33	14	7
Between 12 noon and 2pm	16	16	6	41	16	5
Between 5 and 7pm	29	41	5	17	6	2
After 8pm	33	40	6	13	6	2
During the week days	16	31	21	22	7	3
At weekends	44	29	5	11	8	2

0 - 9 people
10 - 19 people
20 - 29 people
30 - 39 people
40+ people

Figure 18 **Please rank the following improvements to planning design in order of importance to you (1st = most important, 5th = least important)**

	1st	2nd	3rd	4th	5th
Increase the size of garages	8	25	17	36	14
Widen roads to accommodate cars parked on either side with enough room for wide vehicles to pass in the middle	21	16	32	19	12
Create off road parking for cars	19	30	20	16	15
Create special visitor parking spaces	12	21	22	17	28
Do nothing leave as it is	44	1	2	7	45

0 - 9 people
10 - 19 people
20 - 29 people
30 - 39 people
40+ people

Focus Groups

The two focus groups involved 9 individuals drawn from the estates described in Chapter 4. The discussions took place in May 2013 in Maidstone Kent and were moderated by Progressive.

The nine individuals involved in the groups represented households containing 22 adults and 9 children. The reason for the high number of adults was the fact that four of the households had adult children still living at home. In total the nine households owned 21 cars, pretty much one for every adult. Indeed one household had four cars for the mother, father and their two grown-up sons and also had to find two further parking spaces for the sons' girlfriends when they visited.

The individuals had lived in their homes for between 18 months and six years. One lived in a terraced house, one in an apartment and the remainder in a mix of semi detached and detached units, all had bought the house new from the developer. The initial part of the discussion focused on the reasons why they had bought their house and how they felt about their neighbourhood.

The main reason for buying a new house was that there was no maintenance and it was seen as being more energy efficient than a second-hand property. They were attracted to the ease of buying without worrying about there being a chain of buyers and sellers and felt that the price had been competitive. Many mentioned the size of the houses as well as the fact that the house had a garage.

They chose the estate for a combination of privacy and convenience. They liked the fact that it was out of London, was quiet and had parkland and countryside on the doorstep. On the other hand they mentioned proximity to friends and family, to schools, to a train station or motorway junction and also accessibility to a local town centre. When asked about the best aspect of their estate they mentioned space, landscape and countryside. When asked about the worst aspect the first thing mentioned, spontaneously by all participants was parking.

One of the households had bought their house off plan and all of the others had moved in before the estate was completed. The extent of parking problems was not therefore apparent when they were considering whether to buy. The discussion of parking was vociferous, emotive and the opinions expressed were unanimous. They considered that fundamentally there were not enough parking spaces allocated for each house. As a result of this cars were forced to park on the streets, which were not wide enough to accommodate this. This resulted in parking chaos with vehicles parked partly on pavements, verges and landscaped areas. This had a range of consequences:

- Pavements were blocked and couldn't be used by buggies or wheel chairs.
- Landscaped areas were churned up and muddy
- Streets became dangerous particularly for children who therefore couldn't play out.
- Cars had difficulty manoeuvring leading to accidents and scrapes.

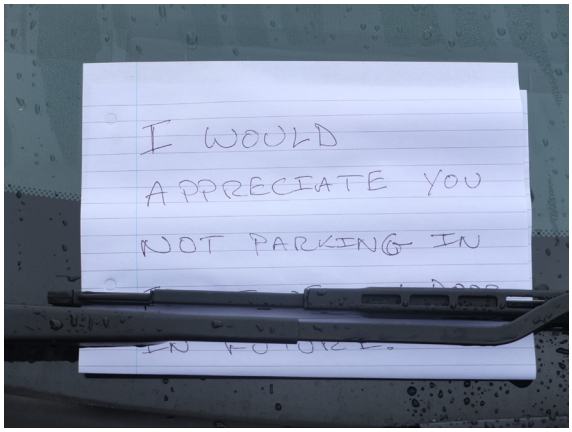
- Sometimes parked cars made it difficult to get into legitimate parking spaces.
- Bin trucks and emergency vehicles couldn't get through (two cases were mentioned where it was claimed that people had died because ambulances couldn't get to them).
- Garages were under-used because they was no space to get out of their car once they had driven in.

The lack of parking had become the major cause of stress on the estate. Some people said that they were reluctant to go out in the evening because they knew that this would mean losing their parking space. Others said that they would leave work early to make sure they found a parking space and that they would discourage visitors from coming a weekends because they knew that they would not be able to park.

Inevitably this leads to tensions and neighbour disputes as people try and protect their spaces and get annoyed at others parking outside their home, in their spaces. Participants reported tactical parking (across two spaces) to protect a space for another household member. People were parking on their lawn, in some cases even encroaching on their neighbour's garden. They were double parking in drives and parking courts, parking on turning heads, on corners and junctions obscuring visibility, on pathways and on communal landscape areas. All of the workshop participants considered this behaviour to be antisocial however they all admitted to doing many of these things themselves suggesting that they had no choice.

There were however some parking sins that were considered unacceptable, which the participants reported happening on their estate but did not admit to doing themselves. These included blocking access to other people's allocated parking spaces and garages, blocking emergency vehicle access points, parking too far from the kerb, parking inefficiently by leaving too much space in front or behind the car, parking large vehicles that take up more than one space, and having multiple cars that have to be parked in front of other people's homes.

These issues seriously undermined people's enjoyment of their home. A number of participants suggested that the parking situation had prevented them from selling



their house and meant that it was now worth less than they had paid for it. They said that they would never arrange a viewing at the weekend because the parking situation would be too obvious. The majority said that they would not have bought their house if they had known what they know now about the parking situation.

Many of the participants were bewildered about why this should have happened. Some had come from Victorian streets in London with notorious parking problems but said that the current situation was worse. They suggested that their estates were not fit for modern households with adult children at home and couldn't understand, when so much effort had been put into the design of the home, how the situation with the roads could have been allowed.

Most saw the problem as being greedy developers in cahoots with the council cramming too many homes into schemes and thereby creating problems of which parking was the most obvious. Their suggestions included creating wider roads so that people could park on both sides, building bigger garages, developing at lower densities, providing less open space, and (obviously) providing more parking. They all rejected the idea of resident parking schemes that they saw as penalising them for the mistakes of others.

In a sense this is an inevitable consequence of the type and location of the housing. All of the participants were dependent on their car. Despite them citing access to public transport as one of the reasons for choosing the estate none of them used it. Only one participant had commuted to work by train but even he now drove like every other member of the group. The group saw it as inevitable that every adult needed access to a car if you lived outside London. They were very resistant to the idea that they should give up their car, even if public transport were available. It was clear that the restrictions on parking are having no influence on decisions about car ownership, particularly since they suggested that car accessibility to the estate was very good and congestion not a problem (until you arrived home).

The focus groups were useful in two respects; to gain an understanding of the issues, and inform the development of the questionnaire for subsequent extensive survey.

4.0
The
Case Studies

4 The Case Studies

The data on 402 schemes in Kent described in the previous chapter suggests a high level of dissatisfaction with the level of parking on new estates in the county despite a notional surplus of parking spaces compared to car ownership. In order to understand what this means on the groups we have looked in more detail at six case studies. Edinburgh University developed a methodology to select these case studies from the wider data set. They did so by focussing on West Kent, excluding schemes with a high proportion of flats, and focussing on places where there were high levels of dissatisfaction with the parking situation.

Each of the case studies below details the findings of the survey carried out by Kent County Council. The average parking satisfaction rating for the schemes is -83%. This is based on a question asking residents to rate ease of parking as 'very bad' (-100), 'bad (-50)', neither (0) 'good' (50) or 'very good (100)' and taking an average of responses. It means that the majority of people rated parking as very bad.

The six case studies, shown on the plan below, include two schemes on the edge of the London Conurbation in Dartford and Gravesend. Two further schemes are in the new village of Kings Hill south of Malling and the final two are on the outskirts of Maidstone.

We undertook site surveys of each of the estates in September 2013 early on a Saturday morning. It had become clear from an earlier visit that we needed to wait until the end of the school holidays and to look at the situation over night at the weekend when the problems are at their most severe. Even during the survey period it became clear that the situation eased as the morning progressed so in each case study we indicate the time of the survey.

Baker Crescent
Dartford

Quarry Close, Gravesend
Gravesham

Hazen Road, Kings Hill
Tonbridge and Malling

Figure 19 – Case study locations.

Milton Lane, Kings Hill
Tonbridge and Malling

Roman way
Maidstone

Edelin Road, Bearstead
Maidstone

Case study 1: Baker Crescent Dartford

Survey undertaken – 1.00-2.00pm
Saturday 7th September 2013

Parking on the Pavement

Garden Parking

Bollards recently added to stop parking on corners

FIELD DATA

Number of homes	**91**	Allocated parking ratio excluding garages	137%
PARKING PROVISION		Total parking ratio (all designated spaces)	164%
Garages	19	% Unallocated	3%
Allocated (excluding garages)	125	**OBSERVED PARKING**	
Unallocated bays	5	Observed Parking	76
TOTAL	149	Of which - parked outside designated spaces	18

FROM THE KENT DATA

Vehicles/unit	1.35	Residents park on-street	8%
No car households	4%	Visitors park on the street	73%
2+ car households	35%	Garages used for parking	-60%
Parking Rating*	-88%	Parking problems	-60%

Baker Crescent is the most urban of the schemes surveyed. It was developed on a former school site within 600m of the centre of Dartford. As a result it is well served with facilities with good bus services, shops services and schools within a 5 minute walk of the site.

The scheme includes 91 homes all of which are houses although there are adjacent phases of the development that include apartments. The case study site covers 1.56 ha and is therefore built at a high density of 58 units/ha since most of the houses are terraced.

Securing your space


Securing your space

19 of the properties have integral garages and all of these also have a driveway in front of the garage. Because the garages were closed it wasn't possible to assess whether they were used for parking. However, the fact that most of the garages had cars parked in front of them, were blocked by bins or appeared too small to use, suggested that very few were used for parking. In two properties with garages cars were parked on the property's front lawn.

The remainder of the allocated parking is in parking courts most of which are at the rear of properties. The scheme includes a mews housetype with accommodation on the first floor and three bays on the ground floor. One of these bays is used to provide vehicle access to a parking court to the rear and the other two are open car ports. Because these were double spaces they did appear to be used. There are only five designated unallocated on-street spaces.

On the site visit we observed 76 cars parked on the estate. However this was one of the last sites to be surveyed by which time many vehicles may have left the estate. Almost a quarter of these parked cars were parked outside allocated spaces. Bollards appeared to have been retrofitted on the corners to prevent people parking there suggesting that this unregulated parking had caused problems in the past although on the day we visited the informal parking was not causing any obstruction.

The amount of informal parking suggests either there had been far more cars parked over night and the parking overflowed onto the street, or people prefer to park informally outside their home rather than in parking courts that are not well overlooked and in some cases quite distant from their home. From our observations, the parking courts do appear underused and we suspect the latter.

Case study 2: Quarry Close Gravesend

Survey undertaken – 11.30-12.10pm
Saturday 7th September 2013

Short terraces along Quarry Close

Garage Blocks

All bays are allocated with a house number of visitor parking

FIELD DATA

Number of homes	**59**	Allocated parking ratio excluding garages	100%
PARKING PROVISION		Total parking ratio (all designated spaces)	161%
Garages	22	% Unallocated	15%
Allocated (excluding garages)	59	**OBSERVED PARKING**	
Unallocated bays	14	Observed Parking	43
TOTAL	95	Of which - parked outside designated spaces	6

FROM THE KENT DATA

Vehicles/unit	1.26	Residents park on-street	16%
No car households	5%	Visitors park on the street	42%
2+ car households	26%	Garages used for parking	50%
Parking Rating	-68%	Parking problems	79%

Quarry Close is a backland development site along a railway line that has been opened up by the acquisition of a property to create a road access. It is located close to the centre of Gravesend, about 800m from the town centre and within five minutes walk of bus stops and two primary schools.

The scheme includes 60 homes, with 42 houses and 19 apartments. Part of the site along the railway remains undeveloped and it is clear from the planning history that there have been misgivings about the development of the site. The initial application was only allowed on appeal and a subsequent application to develop the land along the railway was refused. With this undeveloped land the density of the scheme is 42 units/ha, without it the density rises to 50 units/ha. The apartments are in two, three storey blocks and the houses built as short terraces.

The scheme includes 22 garages. Ten of these are in garage blocks separate from the houses and the remainder are integral to the houses. These garages are clearly too small for most of the cars on the site, something confirmed by residents during the site visit.

There are 60 allocated parking spaces within the scheme plus 14 unallocated spaces. Each of the spaces, even those in front gardens, is marked with road paint either with the owner's house number or as 'visitor'. The road is unadopted and is subject to parking enforcement. Cars parked illegally are clamped by a private company, something that is apparently rigorously enforced. As a result there are signs of severe parking stress on the estate. A couple of the people that we spoke to during the survey suggested that parking was a major issue, that they were no longer talking to their neighbours and that there was no community as a result. Because of the clamping there were only three cars parked on the street but many of the houses were parking on their front garden. One of the residents reported that it was impossible to have a party because there was nowhere for guests to park.

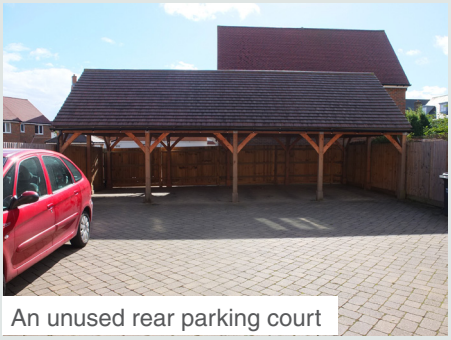
We observed 43 cars parked on the estate although it was late morning by the time of the survey and many cars will have left. Unlike case study one it would appear that the stresses are due to the overall lack of spaces rather than the unattractiveness of allocated spaces. The parking controls remove one of the main safety valves for parking, creating severe tension.

Case study 3: Hazen Road Kings Hill

Survey undertaken – 09:45-10:30am
Saturday 7th September 2013

Parking on the Pavement

Mews leading to parking court



An unused rear parking court

FIELD DATA

Number of homes	**122**	Allocated parking ratio excluding garages	116%
PARKING PROVISION		Total parking ratio (all designated spaces)	192%
Garages	88	% Unallocated	2%
Allocated (excluding garages)	141	**OBSERVED PARKING**	
Unallocated bays	5	Observed Parking	101
TOTAL	234	Of which - parked outside designated spaces	27

FROM THE KENT DATA

Vehicles/unit	1.65	Residents park on-street	17%
No car households	9%	Visitors park on the street	70%
2+ car households	65%	Garages used for parking	59%
Parking Rating	-80%	Parking problems	83%

This and the next case study are part of the Kings Hill new village to the south of Malling in the Tonbridge and Malling District. The scheme is one of a number of new villages planned in Kent in the late 1980s, the most well known being New Ash Green. Kings Hill has been developed on a former RAF Airfield and was started in 1989 when there were plans for 2,750 homes of which 2,000 have been built so far.

The village includes two supermarkets, two primary schools (but not yet a secondary school) and a reasonable range of local services.The Hazen Road scheme is just north of the local centre and is within 5 minutes walk of the Asda and Waitrose supermarkets, bus stops and employment premises. The two primary schools are slightly further away but are within a 10 minute walk. Although these are closeby, the whole design of the area, the wide roads and roundabouts and extensive grass verges mitigate against walking, and it would appear that most journeys are made by car.

The Hazen Road scheme includes 122 homes most of which are terraced houses and semi detached units with a few mews units over garages. The layout is very tight with a density of just under 46 units/ha. Hazen Road is designed as a tight winding village street that varies in width but is often little more than 10m wide between properties.
There are 88 garages in the scheme none of which are integrated into the houses. A number of houses have attached garages and there are also garages under mews blocks and in covered parking court areas. The garages seemed to be slightly larger that those in the town-house schemes but nevertheless many had cars parked in front of them implying that they were not being used.

There are 141 allocated parking spaces on the scheme (excluding the garages). Most of these are in quite large rear parking courts, which are accessed via narrow side streets. The parking courts appear to be accessible from back gardens and most also have houses and mews units facing onto them. There are virtually no unallocated visitor parking spaces, just five in individual bays on-street that take up a huge amount of space.

In the visit, which took place mid morning, there were 101 cars parked in the estate. More than a quarter of these were parked in undesignated spaces including many along Hazen Road. Because of the width of the road these cars were all parked partly on the pavement, which in many cases was entirely blocked by the car. This is despite the fact that the deeds of the houses apparently do not allow parking on this street and the fact that it is a point of frustration for some residents. By contrast some of the rear parking courts were quite underused.

As with the first case study it is difficult to know how much of the informal parking is the result of undersupply and how much is the result of people's aversion to using rear parking courts. Observations and discussions on site suggest the latter is probably the more important factor.

Case study 4: Milton Lane Kings Hill

Survey undertaken – 09:45-10:30am
Saturday 7th September 2013

Dense housing and tight streets

Notes on cars highlight tensions


Narrow pedestrian footpath

FIELD DATA

Number of homes	**58**	Allocated parking ratio excluding garages	103%
PARKING PROVISION		Total parking ratio (all designated spaces)	150%
Garages	27	% Unallocated	0%
Allocated (excluding garages)	60	**OBSERVED PARKING**	
Unallocated bays	0	Observed Parking	68
TOTAL	87	Of which - parked outside designated spaces	34

FROM THE KENT DATA

Vehicles/unit	1.57	Residents park on-street	42%
No car households	0%	Visitors park on the street	75%
2+ car households	52%	Garages used for parking	59%
Parking Rating	-74%	Parking problems	89%

This is second scheme within Kings Hill. It is located just to the south of the local centre and so is within an easy five minute walk of a range of local facilities as well as being directly adjacent to one of the primary schools. There are also bus stops a short walk to the south of the scheme.


Undercroft parking


Parking bays under a trellace


A car parked directly outside the house

The scheme is similar to Hazen Road being designed as a narrow country lane only 10-11m wide between houses with even tighter lanes branching off to either side.

The element of the scheme we have looked at includes 58 homes including one block of 5 flats. These are built at a density of 44 units per hectare, however they are part of a wider estate which is probably built at slightly higher density than this. This scheme is incredibly dense, with a fine grain, many of the houses having little or no garden.

The main difference with Hazen Road is that the parking courts are smaller and much of the allocated parking is within the curtilage of the property . There are more garages and most of the garages also have a parking space in front of them.

This probably means that all of the larger units have two spaces including the garage, and the smaller houses have one allocated space. It was again not possible to assess the number of cars parked in the garages but it seemed likely that these were not used for parking, as in the other estates. There is no unallocated visitor parking on the site at all.

At the time of the visit there were 68 vehicles parked on the estate, more than the number of homes. Further more, half of these were parked on the street despite the deeds of the houses supposedly forbidding this.

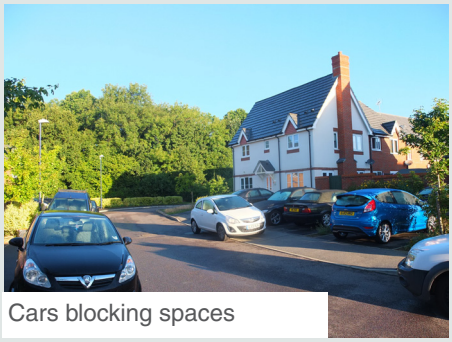
This is likely to be due to a preference, as in other schemes, for parking in front of the property. The fact that there are no unallocated spaces and limited spaces in garages, also means that households with more than one car have no choice but to park on the street.

Case study 5: Roman Way Maidstone

Survey undertaken – 7.00-7.45am
Saturday 7th September 2013

Cars fully blocking the pavement

Extra security on Garages



Cars blocking spaces

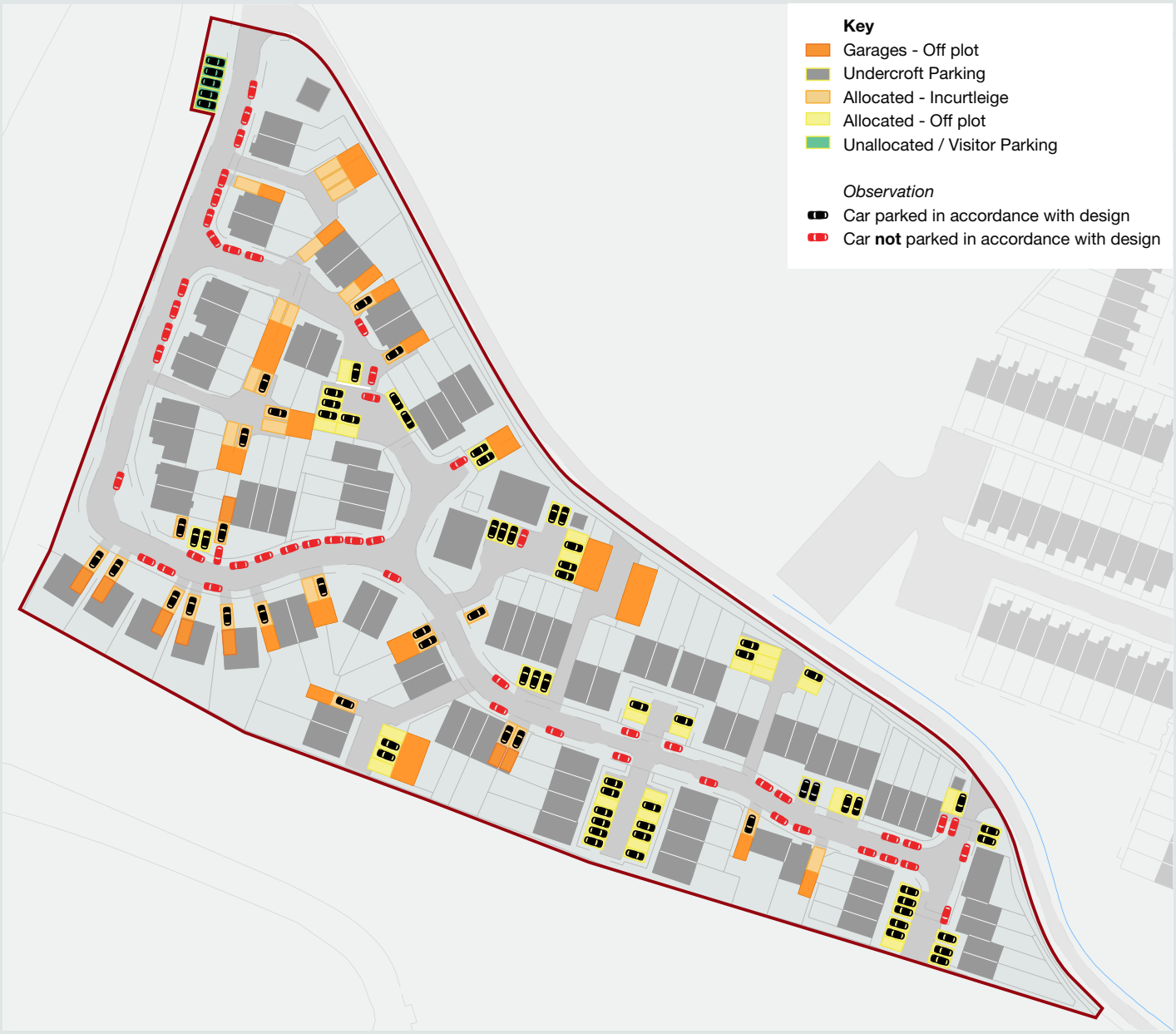
FIELD DATA

Number of homes	**122**	Allocated parking ratio excluding garages	116%
PARKING PROVISION		Total parking ratio (all designated spaces)	192%
Garages	88	% Unallocated	2%
Allocated (excluding garages)	141	**OBSERVED PARKING**	
Unallocated bays	5	Observed Parking	101
TOTAL	234	Of which - parked outside designated spaces	27

FROM THE KENT DATA

Vehicles/unit	1.63	Residents park on-street	28%
No car households	0%	Visitors park on the street	78%
2+ car households	59%	Garages used for parking	29%
Parking Rating	-100%	Parking problems	100%

This is part of a modest urban extension on the southern edge of Maidstone. The scheme was previously fields and sits next to a large social housing estate. This estate is well served by facilities with bus routes, a local parade of shops and a primary school. However the road layout, the connections between these facilities and Roman Way are not particularly clear.



The estate includes 96 houses most of which are either semi detached or in short terraces. The estate consists of one long cul-de-sac and is built at a reasonably high density of 46 units/ha.

Just over half the units are provided with garages and of these, around half were attached to houses and the other half were in parking courts. The latter were not well overlooked and some had been fitted with additional locks suggesting security problems. The garages were the same size as in other schemes and many appeared to be unused. At the entrance to the site there are a series of detached houses with integral garages that were almost certainly not being used for parking.

There are 109 allocated parking spaces within the scheme. There are two rear parking courts but most of the allocated parking is in front of the housing directly off the street. All of the allocated parking is marked with the relevant house number, an indication perhaps that there have been tensions in the past. There are only five designated visitor parking spaces at the entrance to the estate, clearly visitors are expected to park here and walk the rest of the way.

This scheme was visited before eight in the morning so that the actual number of cars parked is probably a better indication of demand than those sites visited later in the day. At the time of the visit there were 126 cars parked on the estate which exceeded the number of available spaces (excluding garages). As you would expect most of the allocated spaces were occupied and cars were parked everywhere on the street including some entirely on the pavement and others blocking visibility on corners.

Case study 6: Edelin Road Bearstead

Survey undertaken – 6.30-7.00am
Saturday 7th September 2013

The scheme lies next to a railway line


Parking on the road


Allocated on-street spaces

FIELD DATA

Number of homes	**32**	Allocated parking ratio excluding garages	100%
PARKING PROVISION		Total parking ratio (all designated spaces)	156%
Garages	18	% Unallocated	0%
Allocated (excluding garages)	32	**OBSERVED PARKING**	
Unallocated bays	0	Observed Parking	44
TOTAL	50	Of which - parked outside designated spaces	21

FROM THE KENT DATA

Vehicles/unit	1.46	Residents park on-street	53%
No car households	2.5%	Visitors park on the street	88%
2+ car households	39%	Garages used for parking	-38%
Parking Rating	-90%	Parking problems	93%

This small estate lies on the north east edge of Maidstone near the village of Bearstead. While it is within a 7 or 8 minute walk of Bearstead Train Station and is opposite a pub, it is otherwise quite isolated from facilities with no nearby shops, bus services and more than a ten minute walk to the local junior school.


Undercroft parking


Double parking infront of garages


Parking over the footpath

The scheme consists of 32 homes on a long cul-de-sac. The houses on the main road are substantial properties which back onto this cul-de-sac and have garages accessed from the rear. The other properties are mostly large houses with two mews units built over garages.

As with all of the schemes the garages appear to be too small and unused. Indeed there have been planning applications for at least two of them to be turned into living accommodation. The other allocated spaces are in driveways, in two small parking courts and uniquely for this scheme on-street. The road presumably is not adopted because the on-street parking spaces on the bend are marked with house numbers indicating that they are allocated.

There were 44 cars parked on the estate at the time of our visit just under half of which were not in allocated spaces. These cars did make the estate feel congested and made manoeuvring difficult. The road on the bend does not have a pavement meaning that cars are parked partly on the verges causing damage and meaning that residents need to walk in the roadway.

Conclusion from the case studies

The six case studies give an insight into what is happening on these estates. Each of the estates showed signs of parking stress; cars parked where they shouldn't be, defensive parking to protect spaces, niggly notes left under windscreen wipers or in the windows of houses and cars parked on pavements, grass verges and front garden lawns.

It is clear that the level of observed parking was very dependent on the time of day. Case studies 5 and 6, that were visited before 8am on a Saturday morning had actual numbers of parked cars (excluding garages) at 1.31 and 1.37 vehicles per unit. Case study 4 had 1.17 and the other schemes between 0.72 and 0.90. These figures can be compared to the car ownership figures reported in the Kent data which suggests that only in Case Study 6 does the level of observed parking (137%) come close to the reported parking level of 146%. It is reasonable to assume that the case studies visited later in the morning had higher levels of parking overnight. They certainly showed similar symptoms of cars parked in unallocated spaces on the street.

The exception to this was Quarry Close where parking control was in force and where residents ended up with nowhere to park additional cars. It is true that this estate did have the lowest number of parked cars – 0.7 vehicles/unit (excluding garages) and also the lowest car ownership levels in the Kent Data 1.25 cars/unit. It is likely that in this case the difficultly of parking was having a deterrent effect on car ownership. However this was at the expense of what appeared to be the highest levels of tension.

The great unknown in all of the case studies was the extent to which garages are used. All of the garages appeared to be of a similar size and all appeared to be suitable only for small cars. There were plenty of circumstances where there were cars parked outside garages, bins blocking garage doors, extra locks being fitted and in some cases (where the door was open) evidence of other uses taking place. The Kent data for garage use suggests that the lowest level of garage usage is in Case Study 1 - Baker Crescent and Case Study 6 – Edeline Close. In the other case studies the level of garage usage in the Kent survey data was higher than average but this was not particularly apparent from the site visits.

The only case study with an absolute deficit of parking was Milton Grove with a car ownership level of 1.57 vehicles per unit and a parking ratio of 1.5 spaces/unit. All of the others had a surplus of parking if garages and visitor spaces were counted. Yet, as we recall, they were selected because the Kent survey identified them as having some of the highest levels of parking tensions.

This reinforces the conclusion of the last chapter that the issue is not the total level of parking provision but the inefficiency of allocated spaces and the underuse of garages.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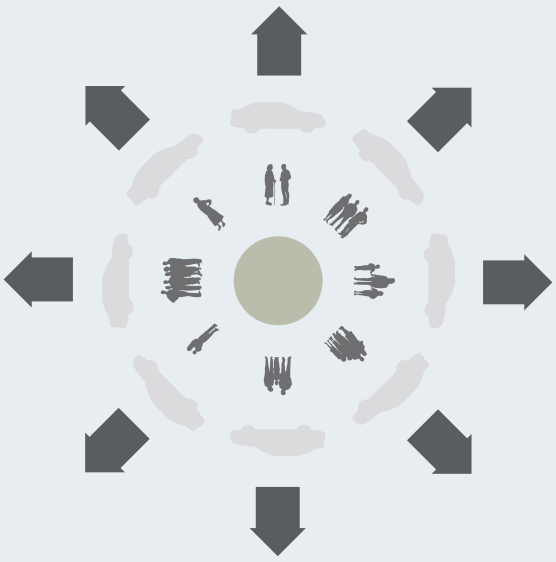
5.0 Conclusions & Recommendations



5 Conclusions & Recommendations

We have shown in this research that the problem on suburban housing estates is not that there are too few parking spaces, there are in fact a surplus. However the low level of garage use and the inflexibility of the way that parking is allocated means that this apparent surplus can exist alongside huge levels of reported parking tension. On all of the estates that we surveyed, car parking spaces remain unused by one household while their neighbours are parking on pavements and verges and even their own front lawn much to the annoyance of everyone involved.

Parking and car ownership levels: The first question that we have sought to answer is whether the amount of parking has an impact on the level of car ownership. Figures 10 and 11 suggest that there is a rough correlation between the amount of car parking provided with a house and the number of cars owned. At the margins if people can't find a convenient parking space they might question whether to buy a second or third car.

However our survey work, focus groups and case studies suggest that this effect is limited. In only one of our case studies did we observe an apparent reduction in car ownership as a result of parking restrictions. This was the scheme where parking enforcement was in place so that there was literally nowhere to park other than in allocated spaces. This however was achieved at the expense of the highest levels of parking tensions. In other schemes where on-street parking was allowed, or where restrictions were not enforced, the surplus cars simply spilled onto the street undermining the deterrent effect.

Recommendation 1: Reducing car parking on suburban estates should not be regarded as an effective way of reducing levels of car use and ownership.

Car reliance: In the minds of the residents of these estates a car is an essential part of their daily lives. The prediction made by Colin Buchanan that cars would be taken for granted as much as an overcoat appears to have come true. Most of the people we surveyed see life without a car as impossible and many aspire to have as many cars as there are adults in their household. This suggests that on certain suburban estates we have reached a point similar to many American suburbs where walking is considered an aberration and where people without access to a car, such as the elderly, find it impossible to live.

However when we looked at the context of the six case study estates it was not true that they were so isolated that walking was impossible. In most cases there were shops, bus stops and schools within a five minute walk (400m). Yet it is almost certainly the case that residents were undertaking trips to all of these places by car. Part of the reason for this is the economics and psychology of car ownership. Once you have invested in a car it is economically sensible to use it as much as possible. And once the car is sitting on your drive it takes a force of will to squeeze past it, walk to the local shops or take your kids to school. Pretty soon it feels like there is no choice but to use the car for most trips.

However the design of the case study estates does not always help. Three of the case studies were cul-de-sacs – mostly because of the configuration of the site and the available highway access. In these cases households located away from the entrance had a long and tortuous route if they chose to walk or cycle. In the other three case studies the designers of the estates had clearly tried to improve walk-ability and permeability. However these improvements were largely internal to the estate and there remained a problem with the way that they connected (or not) to surrounding areas. The two Kings Hill schemes, for example, had 'walkable' lanes running east/west through the estate. However the most direct route to the local centre would run north/south. In both cases it was possible to walk this north/south route, but it meant passing through tertiary routes, crossing a major road and then walking across the car park to a supermarket. It is not surprising that people drive.

Recommendation 2: Allocated parking spaces should cater for the average parking requirement of households based on the house size. Unallocated spaces should provide for at least 20% additional spaces.

Parking provision: Which brings us to the question of how much parking should be provided? Even if reducing parking does not impact on car ownership there remain good reasons not to allow a free for all. Quite apart from the inefficiency of land use and the environmental impacts on estates, if we were to cater for the maximum possible needs of each household we would end up creating far more parking than we need. The most efficient solution would be to have all spaces unallocated. If this had been the case in Kent then the overall level of parking could have been reduced by as much as half a car/house. This explains why Victorian streets even with quite high levels of car ownership work better than most of our case studies. The problem is that housebuilders would struggle to sell a house with no allocated parking. So we need a mix of allocated an unallocated.

Our suggestion therefore is that the maximum number of allocated spaces be linked to the likely average level of car ownership. This is likely to be based on the data in Figure 4 namely that 1 and 2 bed houses and flats would have 1 parking space, 3 bed units would have a mix of 1 and 2 spaces (probably depending on their location) and 4 bedroom and above would have 2 spaces.

Ideally this figure would include garages. However, this is not going to be the case with garages that are little larger than a 2.4m parking space. If garages are to be counted they need to be at least 3m wide internally. Garages tend to have driveways in front of them so that they create 2 parking spaces. Provided that they are large enough to use, it is sensible for them to be counted as part of this allocated provision because people then can make a choice about whether to use them.

This level of allocated spaces will only work if there is a pressure valve of unallocated spaces to take up the slack. In our case studies the observed level of parking outside allocated bays varied greatly but in the three estates visited early on a Saturday morning it was 50% or more. Some of this was the result of people preferring to park informally on-street rather than in designated bays in rear parking courts. It is difficult to be precise but the suggestion that there should be at least an additional 20% of unallocated bays on top of the allocated provision is reasonable.

Recommendation 3: Estates should be more effectively integrated into their surroundings by creating clear, legible and safe routes to local facilities.

The design of estates: The parking problems observed in the case study estates are not necessarily the result of bad design. On the contrary the case studies exhibit the type of dense, village character development that many housebuilders have developed as a response to national design guidance. The houses are built to the back of pavement, streets are reduced to as little as 10m between buildings and densities are generally higher than 40 units/ha (compared to an average of 23 units/ha all housing schemes in the early 1990s).

It is difficult to avoid the conclusions that the problems with parking on these estates are at least partly the result of the way that they have followed national design guidance. Traditionally, allocated, on-plot parking was provided on a driveway in front of the house. With semi-detached units a second space could be provided in a garage, down the side of the house. These front driveways meant that houses had to be set back 6m from the pavement creating very wide streets with a suburban character.

Urban design guidance has suggested that streets be much narrower to create the more urban, village street character that we see in our case studies. Design guidelines and density standards have also tended to favour terraced houses rather than semis. This has meant that the quality and character of the estate has improved along with its popularity with residents (based on our survey). However it also means that the traditional driveway parking space has been squeezed out of existence.

This design-based approach means that new solutions are needed for parking. In the cases the solutions tended to be; town houses with integral garages, some semis with parking down the side of the house and for all other units rear parking courts. As designers we know that it is possible to develop housing estates up to 30-35 units/ha using semi-detached units. These can be built to the back of pavement to create a dense village feel while 200% parking can be provided out of sight, down the side of the property.

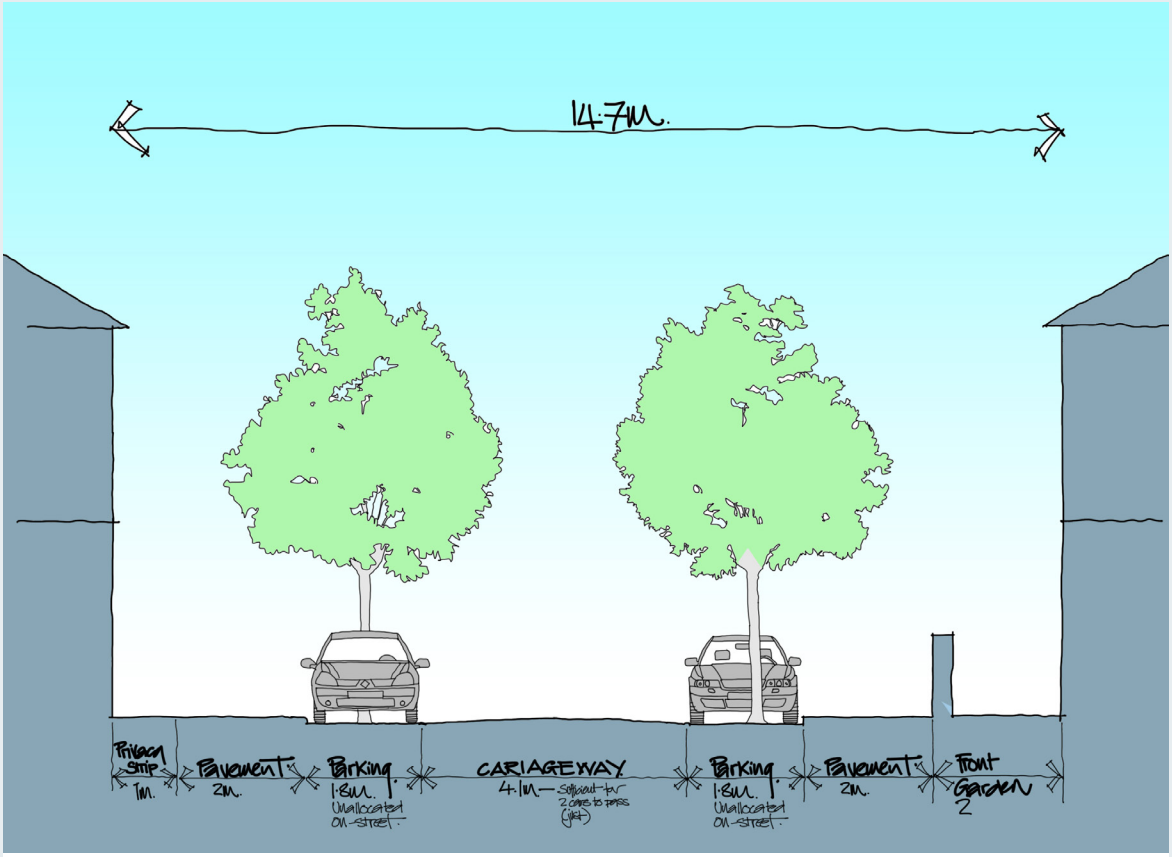


Figure 16: A robust 'Victorian Street with a 7.5m cariageway

[cont].

Once densities rise above this level – as is desirable – then it is necessary to use terraced houses. In order to provide parking it becomes necessary either to reintroduce the front driveway, provide allocated parking on-street or to create rear parking courts. Driveways tend to be resisted by the planning authority and allocated spaces can only be provided on streets that are unadopted. So in many cases parking courts become the only option. These however are not popular and our case studies suggest that some people will avoid using them if they are able to park informally outside their house. It does however appear that parking courts work best if the parking space is linked to the back garden of the house, if the parking court is small and provided that the cars can be overlooked. In some cases it may even be appropriate for the parking court to be gated.

In our view the street should be the place where unallocated parking is provided. This will require a rethink of the way that these streets are designed. The narrow winding lanes in our case studies mean that parked cars inevitably need to be partly on the pavement and even then they look out of place. A better solution would be a robust 'Victorian Street' wide enough to accommodate parked cars. This suggests a carriageway width of 7.5m rather than the 4.5m found typically in our case studies (see Figure 16). This would allow cars to park on either side of the street leaving a 3.5m carriageway – which would mean that cars would still need to give way to oncoming traffic.

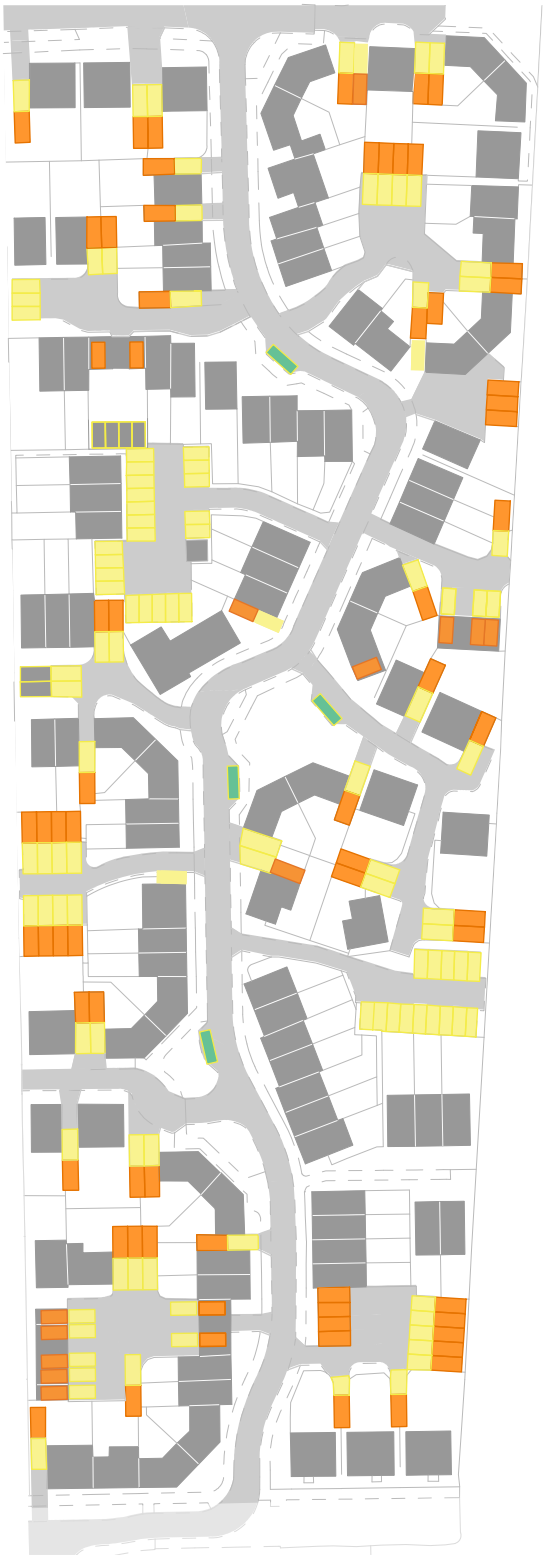
These suggestions, combined with clearer, more permeable layouts that are integrated into their surroundings create the potential for an alternative suburban form. This can potentially achieve densities in excess of 40 units/ha, provide for the levels of parking suggested above and create urban walkable neighbourhoods. To illustrate this potential we have redesigned one of our case studies on the page opposite.

As Built Case Study

102
Houses

196 Allocated spaces
of which **83** in garages
(192% Parking ratio)

4 on-street



Redesigned Case Study

based on findings of research

102
Houses

176 Allocated spaces
of which **59** in garages
(172% Parking ratio)

101 on-street

Recommendation 4: That design guidance for new estates should be amended to allow for wider streets to accommodate on-street parking and more permeable integrated layouts.

For many years, URBED has pursued the idea of the Sustainable Urban Neighbourhood[1] . Part of this has been concerned with the reduction in car use as part of a wider environmental agenda. This environmental imperative is as strong today as it has ever been if we are to meet our climate change targets. Transport is the only source of CO2 emissions that continues to rise and successive governments have sought to reduce car use.

This research challenges one of the orthodoxies of sustainable urban planning, namely that the reduction in parking is an effective tool to reduce car use. Our findings would suggest that it isn't, at least in the suburban estates that we have studied. So strong are the pressures to have and use a car that people will find a way around parking restrictions. If the restrictions are so strong that they are unable to do this, they will be very unhappy, tensions will rise and the community will suffer. It is the pressures to have and use a car that we need to address rather than the level of parking on new estates.

One response to this would be to say that this is only to be expected if we continue to build houses in car-reliant suburban locations. This is why we would like to undertake a companion research project to ask the same questions of schemes within urban areas. However, given the need for housing in the country and the loosening of restrictions on greenfield development it is likely that this type of housing will increase. We therefore need to reconsider our approach to the provision and design of parking which in turn will mean a new approach to the design of these estates.

1 David Rudlin and Nick Falk, Sustainable Urban Neighbourhood (2010)

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