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Armitage, Rachel

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Original Citation

Armitage, Rachel (2011) The Impact of the Design and Layout of Car Parking on Crime and Anti-Social Behaviour. Other. University of Huddersfield, Huddersfield. (Unpublished)

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The Impact of the Design and Layout of Car Parking on Crime and Anti-Social Behaviour

Dr. Rachel Armitage



University of
HUDDERSFIELD

The project

This briefing note is one of a series of themed papers which reports the findings from a collaborative project funded by the Home Office and managed by the Commission for Architecture and the Built Environment (CABE). This note focuses upon the impact of the design and layout of car parking on crime and anti-social behaviour (ASB) within residential housing. The project set out to strengthen and update the evidence base on the impact of residential design on a range of crime types – with a specific focus on housing developments acclaimed for their innovative design and award winning architecture. It should be highlighted that although this briefing note is designed as a summary document, the findings and recommendations are based upon a seven month project conducted by a consortium of universities including experts within the field of designing out crime, statistical modelling, urban design and Geographical Information Systems (GIS). The project was overseen by an expert Steering Group who ensured that the research was conducted to the required standards in terms of independence and methodological rigour.

The main aim of the research was to establish which features of residential design impact upon crime (either positively or negatively) and whether these design features are those being promoted as good practice within planning policy and guidance. In terms of car parking, this includes questions such as:

- Are properties with garages safer than those without?
- Where garages cannot be provided, what is the safest form of parking?
- How safe is underground parking?
- What impact are planning policies designed to remove the car from the street scene having upon crime and ASB?

Recent and imminent changes in both planning policy and policing provision, increase the importance of ensuring that research findings are conveyed in a clear and comprehensible format. Practitioners (with increased workloads and reduced numbers) and newly formed community and locally based bodies need to be able to extract the relevant implications and apply these to proposed developments within their area. For this reason, this series of briefing notes will not dwell on the complex methodology or detailed analysis; rather it will focus upon the key recommendations for policy and practice.

The methodology

A brief overview of the sample and methodology is required to allow the reader to place the findings in context. The following diagram displays the three strands which formed the basis of the research. The first involved scoping the evidence (a literature and policy review), to establish what previous research had been published relating to the impact of residential design on crime, and whether findings were consistent or contradictory. The second strand (Macro Level) involved investigating whether there is a link between housing design quality (as judged by CABE's Housing Audits) and crime. The third strand (Micro Level) aimed to look in detail at the link between specific design features of residential housing and crime.

As the diagram reveals, the sample included:

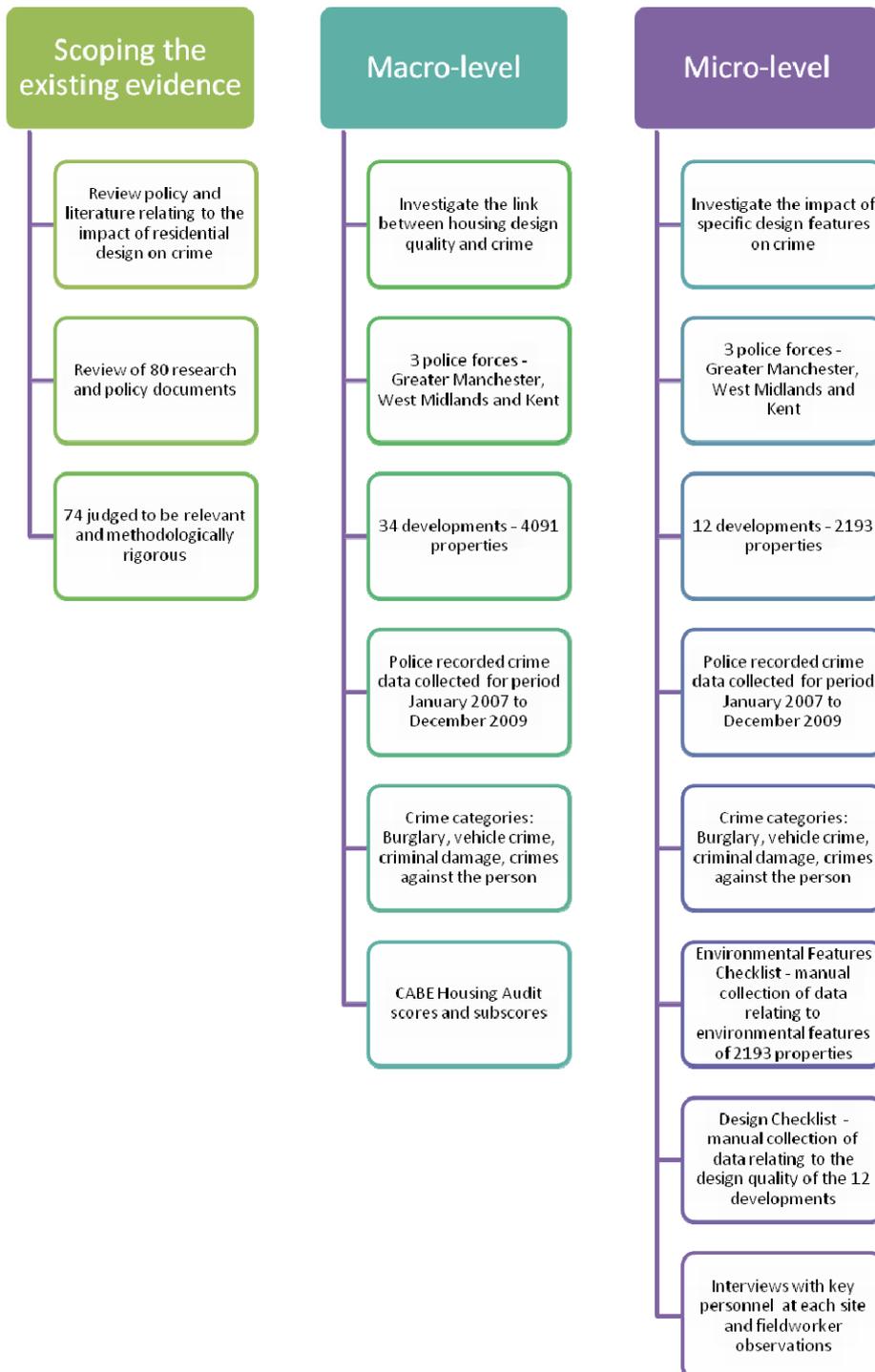
- Scoping the Evidence - 74 policy, guidance and research documents.
- Macro Level – 34 developments (including 4091 properties) from the three police forces Greater Manchester, West Midlands and Kent.
- Micro Level – 12 developments (2193 properties) from the three police forces Greater Manchester, West Midlands and Kent.



CABE is now part of the Design Council

Police recorded crime data were collected (at property level) for the three year period January 2007 to December 2009 for the crime types burglary, vehicle crime, criminal damage and crimes against the person. For the Macro Level, crime data were supplemented by CABE Housing Audit scores and sub-scores relating to the design quality of the 34 developments. For the Micro Level, crime data were supplemented by the following additional data:

- Interviews with key personnel – including the police Architectural Liaison Officer/Crime Prevention Design Advisor, the Local Authority Planning Officer, the local Neighbourhood Policing Team and, in some cases, a representative from the local Residents’ Association.
- Environmental Features Checklist - data relating to 31 specific design features of the 2193 properties, with a further 19 questions related to the development on which they were located.
- Design Checklist – data relating to the design quality of each of the 2193 properties (and the developments on which they were located).



The findings

Review of literature and policy

The review of previous research found very few studies which specifically identified particular designs for accommodating parking within residential areas as being more vulnerable than others. Brown and Altman (1983) studied the environmental features of 306 burgled houses on burgled blocks, non-burgled houses on burgled blocks and non-burgled houses on non-burgled blocks in an attempt to establish which factors were associated with burglary-prone homes. Several features were found to be associated with burglary-prone homes, one of which was the absence of a garage. Brown and Altman (1983) concluded that properties with a garage were less vulnerable to burglary than those without garages. Cromwell et al (1991) used staged-activity analysis with a sample of 30 active burglars as a means of identifying which environmental cues influenced their target selection. One of the features identified by burglars was the presence or absence of a garage. Burglars found properties without a garage, or with an open carport, to be more vulnerable to burglary.

A review of relevant policy and guidance documents revealed some conflicting guidance and recommendations. Secured by Design New Homes (ACPO Secured by Design, 2010) and Safer Places (Office of the Deputy Prime Minister and the Home Office, 2004) recommend the provision of garages or parking within the curtilage of the property boundary. In contrast, Manual for Streets (Department for Transport, 2007) suggests that parking within the front curtilage of a property should be avoided as this breaks up the frontages and restricts informal surveillance. Some of the issues which emerged from the research clearly relate to planning guidance which has encouraged the removal of cars from the street scene.

The impact of parking on police recorded crime levels

The Macro analysis looked at crime levels on 34 developments which had been included in CABE's Housing Audits. This allowed the analysis to look at the relationship between levels of crime and particular design features. The results revealed that developments which had scored highly on the CABE Housing Audit question 'car parking is situated as not to detract from the street scene', experienced lower levels of vehicle crime and criminal damage. For each development, a score of 1-3 was awarded for this question, with 1 suggesting that parking provision did detract from the street scene, and 3 suggesting that it did not. The analysis of police recorded crime suggested that, as compared to the base score of 1, developments which scored 2 experienced 40% less vehicle crime and 68% less criminal damage. The difference between 2 and 3 did not produce a significant effect for vehicle crime, but those scoring 3 did experience 74% less criminal damage than those scoring 1.

The Micro analysis, which looked in detail at 2193 properties on 12 developments, revealed that the only parking variable that significantly impacted upon total crime and vehicle crime was the provision of visitor parking – developments which included allocated visitor parking spaces experienced lower crime than those which did not. The overall nature of parking provision did not significantly impact on crime levels, however, properties with communal parking did experience higher levels of vehicle crime than those with other types of parking.

As was highlighted within the methodology, in addition to the statistical analysis of police recorded crime data, the research included interviews with key personnel from each of the Micro sample sites as well as detailed fieldworker observations (this is often referred to as qualitative data). The following section highlights the key issues which emerged from the qualitative analysis in relation to the impact of parking provision on crime.

Emerging issues

Inappropriate car parking solutions

One of the major issues to emerge from the research was the unintended consequences of attempting to remove the dominance of cars from the street scene. Several developments had used innovative approaches to parking in an attempt to encourage residents to park in spaces provided away from the immediate street scene - including communal parking courts. One development had been designed with deliberately short driveways (not long enough for cars to park on) with the aim of encouraging residents to use their garage or the additional space provided in communal parking courts (see the following picture). However, residents were clearly continuing to use the driveway as a parking space – for convenience and through the desire to ensure that their vehicle was within viewing distance of their property. As a consequence, cars were left jutting out onto the pavement or road – blocking the path for those with pushchairs, prams or wheelchairs and, in one development, resulting in the employment of a management company to enforce parking regulations.

Cars jutting out onto the street due to short driveways not long enough for a car ^{vii}



Designing developments with a low ratio of car parking spaces per dwelling, particularly where one of those spaces includes the garage, presumes firstly that residents will use the garage as a parking space (which very few did), and also that residents feel comfortable to use the additional space which may be located away from their property. This design solution has made several incorrect assumptions about how residents will respond to the layout of their neighbourhood, with little consideration for the reality of how residents use the space around them. The first assumption is that residents are happy for their car to be parked out of sight. In most cases, residents want their car to be within viewing distance of their property. A car is often a valuable possession, and one which we naturally want to keep our eye on. The second assumption is that residents are happy to walk a distance to and from their car. Residents will often have to transfer bags, valuables, car seats, and children to and from their house, and therefore want their cars to be as close as possible to the property to make this journey easier and safer. The final assumption is that residents will use their garage to park their car in. In reality this is rarely the case, and the majority of garages witnessed throughout this research were being used as additional storage space. This further limits the space available to park within.

Residents often choose to park on the street convenience and safety



Garages were rarely used as parking spaces and rear parking courts were often unused



Poor allocation of car parking spaces

Another key finding to emerge from the research was that care must be taken to ensure that the allocation of parking spaces is both appropriate and considerate. The research revealed that this was not always the case, and the inappropriate allocation of car parking spaces had resulted in both neighbour disputes, and in some cases, criminal activity. This problem was most apparent at one development where allocated car parking spaces were not always directly adjacent to each resident's property. This meant that, in some cases, a resident's parking space could be located directly in front of another resident's front window. In the picture below, the car parking space is directly in front of the bay windows of two separate properties. In practice, this means that one resident will be looking out of their window directly onto their neighbour's vehicle. The second picture shows a less obvious problem, but one which could be avoided. The parking space here is located directly adjacent to the property's patio doors – almost so close that the French windows would touch the vehicle when opened. This is neither considerate nor appropriate design.

Inconsiderate and inappropriate parking allocation



Rear parking courts

The Micro sample included twelve developments and rear parking courts were present at seven of these sites. One local authority planning representative explained that the popularity of rear parking courts resulted from government pressure to reduce the dominance of the car on the street scene. Problems relating to rear parking courts were reported by practitioners across the breadth of the sample. The majority of rear parking courts were open access, and where gates were provided, they were frequently left unlocked. Open entrances to rear parking courts provided access, not only to vehicles, but also to the rear of properties. Natural surveillance to rear courts was frequently limited with poor or no lines of sight from surrounding properties and poor lighting. At one site the parking courts were overlooked by upper floor windows, however, the majority of these were bathroom windows, which in reality meant that surveillance was minimal. At this site practitioners reported that rear courts had become a site for the abandonment of stolen vehicles and groups of anti-social young people. This site also had mailboxes located within the rear parking courts which had been subject to vandalism and theft of mail (with the potential risk of future identity fraud offences). Fieldworkers observed that rear parking courtyards were infrequently used by residents who preferred to park, often illegally, on the pavement near to their property for convenience and also because they felt unsafe in the parking courts.

An alternative (and successful) approach to rear parking courts was taken at one development where small amounts of housing had been included within the courts to facilitate natural surveillance. Communal parking areas at another site were also kept small and were situated to the front of dwellings. These developments did not experience crime or ASB problems associated with the car parking provision.

Empty, dark and desolate rear parking courts



On-plot car parking and garages

On-plot parking is recommended by policy and guidance, and this research confirms that not only are cars safer when parked on-plot, but also that residents want to park close to their property – for both safety and convenience. However, several issues should be considered when designing on-plot parking. The first relates to over dominance of the car, which can detract from the street scene and restrict natural surveillance. Where parking is within the curtilage of the property boundary, it should not take up the entire area of private space or restrict the ability for residents to personalise the environment. An additional concern highlighted was that, although prior research suggests that garages are the safest place to park a vehicle, some of the developments included within this sample had garages located at the end of the rear garden. These proved to be extremely vulnerable to crime with an unexpectedly high level of ‘burglary other’ offences at developments which had utilised this design.

The conclusions and recommendations

The review of literature revealed no conflicting findings regarding the impact of the design of car parking on levels of crime. Studies agreed that properties with garages were the least vulnerable to burglary. However, this research highlighted that where garages are located away from the property (at the end of rear gardens), these can be vulnerable to burglary other offences.

Analysis of policy and guidance documents revealed areas of consistency (all appeared to agree that rear parking courts are vulnerable to crime), however, there were some conflicts regarding the benefits of parking within a property’s curtilage. Secured by Design New Homes (ACPO, 2010) and Safer Places (ODPM and Home Office, 2004) agreed that garages, followed by driveways, are the safest places to park vehicles. However, Manual for Streets (Department for Transport, 2007) suggested that parking within the front curtilage of a property should be avoided as it breaks up the property’s frontage and restricts natural surveillance.

This study confirmed concerns that rear parking courts are vulnerable to crime. Rear parking courts had higher levels of vehicle crime and criminal damage than other types of parking, and also facilitated offenders’ access to the rear of properties. Crucially fieldworkers observed that many residents were not using their allocated spaces within these courts, preferring to park on street, regardless of whether the street was designed for on street parking.

The research highlighted the unintended consequences of parking policies designed to move cars away from property frontages and the street. Across the sample the behaviour of residents demonstrated a desire to park within close proximity to their home – often by parking illegally on pavements. Lack of consideration for users in the design and allocation of car parking can lead to expensive retrospective solutions such as the need to employ management companies to enforce parking regulations. The study also demonstrated that the appropriate and clear allocation of parking spaces, including suitable provision for visitor parking, can reduce crime and prevent neighbour disputes.

Key recommendations emerging from the research include:

- There is a clear need for consistent guidance on parking provision within housing developments. This should recommend that, where possible, vehicles should be parked within garages or within the curtilage of the property.
- Rear parking courts should be avoided. However, where they are essential, they should be overlooked by nearby housing and be small in size.
- Developments must have allocated car parking spaces for visitors and the design and allocation of on-street and communal parking must take care to avoid neighbour disputes.
- Innovative approaches to parking should be well-considered. Residents will often adapt and adjust their parking in ways not intended if parking provision does not provide the necessary convenience.
- Designs for garages should ensure that surveillance from the main property is not restricted, sightlines must be maintained and the physical security of these garages should be maximised.

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The report upon which these briefing notes are based was jointly written with Professor Ian Colquhoun, Professor Paul Ekblom, Leanne Monchuk, Professor Ken Pease, Michelle Rogerson.

ⁱⁱ The production of these briefing notes was jointly funded by ACPO CPI Ltd, CABE and the Home Office.

ⁱⁱⁱ The research resulted in a 500 page final report.

^{iv} From 1 April 2011 CABE became part of the Design Council and operates as Design Council Cabe.

^v The Applied Criminology Centre at the University of Huddersfield; Professor Ian Colquhoun; The Design Against Crime Research Centre, Central Saint Martins College of Art and Design; The Midlands Centre for Criminology and Criminal Justice, University of Loughborough; The Design Against Crime Solution Centre, University of Salford and Nottingham Trent University.

^{vi} Drive-arounds.

^{vii} It should be noted that as the scores were awarded by CABE's Housing Audit Assessors, the research team were unable to question the specific reasoning behind the scores awarded.

^{viii} All photos should be credited to Leanne Monchuk and Ian Colquhoun.

University of Huddersfield
Queensgate
Huddersfield
HD1 3DH
UK

Telephone
+44 (0) 1484 473854
E-mail
r.a.armitage@hud.ac.uk
www.hud.ac.uk



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