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Consideration for crime prevention within the planning system: Responding to changes in policy and practice within England and Wales

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The design of homes can enhance the quality of life of residents by reducing their vulnerability to crime. Copious research has identified the features of individual properties, their boundaries and development layout which act as risk and protective factors. This has been, to some extent, reflected in England and Wales through regulation, national and local policy, guidance, process and incentives to support these. This paper reports on the findings of a collaborative project which was conducted in 2009/2010, which set out to strengthen and update the evidence base on the impact of design on a range of crime types – with a specific focus upon housing developments acclaimed for their innovative design and award winning architecture. The research involved physically assessing the design features of over 6,000 homes across three police forces to establish which features were associated with enhanced crime risk. Cautious of the dangers of relying on official police statistics, interviews were also conducted (on site) with Neighbourhood Policing Teams, local authority planners, Police Architectural Liaison Officers (ALOs)/Crime Prevention Design Advisors (CPDAs) and local residents to identify crime and disorder problems which may not have been reported to, or recorded by, the police. This paper focuses upon the qualitative findings of this extensive study, reporting practical issues and recommendations to address common design problems.

INTRODUCTION

This paper has two aims. The first is to outline and discuss the consideration for crime prevention within planning policy and practice within England and Wales, the growth in the recognition of the importance of crime prevention within the development of sustainable communities, particularly post-1998, and the associated recognition afforded to crime prevention within policy, guidance and practical interventions. Having introduced the reader to provision within England and Wales, the paper will present the findings of a major research project (commissioned by the Home Office) to clarify and strengthen the evidence base regarding the impact of residential design upon crime and to investigate the extent to which developments regarded as good practice examples of design quality offer crime reduction benefits. Whilst this ambitious project explored many elements of housing design, including property type, surveillance, territoriality, communal space, management and maintenance and physical security, this paper focuses upon the two themes which emerged as the most significant in terms of impact upon crime and disorder and upon those living and working within the area. These two themes were connectivity and car parking.

REDUCING CRIME THROUGH DESIGN

The past three decades have seen an increasing recognition that the design and layout of residential housing has a beneficial impact upon levels of crime, quality of life, social and environmental sustainability and, ultimately a reduction in costs to society. Where people feel safe they are less likely to choose to move out of an area, they are more likely to use public transport, more likely to make use of public facilities and less likely to require the intervention of health professionals for issues such as stress and anxiety. There is an increasing body of evidence to support the claims that properties designed according to the principles of Crime Prevention through Environmental Design (CPTED) will experience lower levels of crime (see, amongst others, Brown, 1999; Pascoe, 1999; Armitage, 2000; 2006; Cozens, 2008; Cozens *et al.,* 2005; Armitage and Monchuk, 2011) and that these design considerations have wider benefits upon social and environmental sustainability

(Dewberry, 2003; Cozens, 2007; Armitage and Monchuk, 2009). Wider benefits include the requirement for multi-agency partners to work together to address the features which promote opportunities for crime, thus promoting the requirement under Section 17 of the Crime and Disorder Act (1998) which requires organisations as well as the police, to demonstrate that they are doing all that they reasonably can to consider and reduce crime.

Situational Crime Prevention (SCP) and CPTED increased in popularity (in the UK) in the 1970s and 1980s, following a period in which criminology was predominantly focused upon the Criminal Justice System and the offender. The appeal of this type of intervention over long-term, resource intensive offender based interventions is highlighted by Smith (2000) who highlights how, for practitioners who are tasked with achieving crime reduction targets, within a short time scale and with very little additional resources, many crime reduction theories, and accompanying interventions appear (and are) unfeasible.

> "*It is easy to see that happy families tend not to produce criminals. It is hard to see how public policy can decree that family relationships be constructive and positive*" (Smith, 2000, p. 149).

Whilst many have criticised the approach as simplistic, as disregarding the root causes of crime and seeking a short-term solution to a deeper problem. The author would argue that this is both inaccurate and unfair. There is nothing short-term about this crime reduction approach. The consultation, planning, design and development process can take years, even decades, and the benefits will last for generations. This may not be rocket science, but as Ekblom (2011) highlights, rocket science itself is actually "*dead simple – feed fuel and oxidant into a chamber, stand well back, ignite, apply Newton's laws of motion, and whoosh*" (p.279). CPTED is a crime prevention initiative which allows opportunities for crime to be designed out before the problems emerge. It creates an environment in which key agencies must work together to demonstrate and deliver their requirement to consider crime prevention, and it creates environments where people want to live and work, both now and in the future – the very definition of sustainable development (Office of the Deputy Prime Minister, 2005).

POLICY AND PRACTICE IN ENGLAND AND WALES

Within England and Wales, the past two decades have seen huge progress in the consideration for crime prevention within the planning system and this can be seen in regulation, national and local policy, guidance, awards/incentives and systems and processes of implementing these considerations. A detailed overview of these developments is outlined in detail in Armitage (2013), however, a brief summary is required to set the context for the findings presented below. Although England and Wales does not mandate specific security standards within residential housing, there is an overarching legislative requirement for responsible/relevant authorities to consider the crime implications of their policy and practice. Section 17 of the Crime and Disorder Act (1998) imposes a duty upon local authorities (as well as other responsible agencies such as police and fire authorities) to: "*Without prejudice to any other obligation imposed upon it...exercise its functions with due regard to...the need to do all it reasonably can to prevent crime and disorder in its area*" (Great Britain, 1998). Here, local authorities are being required to conduct all of their functions with consideration for any likely impact upon crime and disorder. Within England and Wales, local authorities include departments which take responsibility for local planning policy – developing policy documentation to outline the future of development within the area. They also include the responsibility for development control and making decisions

regarding planning applications for developments within the area. Under Section 17, these (and many other) decisions are required to be made with crime and disorder in mind.

Within England and Wales, the period between 1998 and 2011 saw an increasing recognition of the role of planning in crime reduction and this was reflected in policy and guidance. Prior to 1998, the only planning policy which referred to crime prevention was circular 5/94 – Planning out Crime. Planning out Crime was just eleven pages in length and offered little in the way of guidance, other than highlighting the importance of consultation with police ALOs. The publication of the Urban Policy White Paper – *Our Towns and Cities: The Future* (ODPM, 2000) marked the beginning of a series of policy and guidance documents which stated the importance of crime prevention within planning and development. This White Paper made many references to the importance of crime, however, the key statements included the recognition that *"...good design of buildings and the way buildings and public spaces are laid out can help prevent crime"* (ODPM, 2000), that *"properly designed developments can also discourage crime"* (ODPM, 2000) and the recommendation to review and update advice on circular 5/94 - Planning out Crime. Circular 5/94 was officially cancelled with the publication of Planning Policy Statement 1: Delivering Sustainable Development (DCLG, 2005) and was replaced by *Safer Places – The Planning System and Crime Prevention* (ODPM/Home Office, 2004) which outlined the seven attributes of safer places - access and movement, surveillance, structure, ownership, physical protection, activity and management and maintenance. This document is 108 pages in length and is based around the presentation of guidance and recommendations, supported by academic evidence and case study examples. Planning Policy Statement 1 set out the Government's national policies on land use planning in England. The importance of crime prevention as a consideration within sustainable design was highlighted within the document's first paragraph – which sets the scene for the emphasis contained within this Policy Statement. It highlighted how: *"...poor planning can result in a legacy for current and future generations of run-down town centres, unsafe and dilapidated housing, crime and disorder, and the loss of our finest countryside to development* (DCLG, 2005, p.2). Planning Policy Statement 1 was accompanied by Planning Policy Statement 3: Housing (originally published in 2006) which highlighted the importance that planning authorities should place upon the creation of safe developments.

Alongside these, the Planning and Compulsory Purchase Act (2004) introduced the requirement for local authorities to produce a Development Plan which set out the objectives in relation to development and land use for their area. One specific benefit which this introduced for crime prevention was that many local authorities developed a model of producing an overarching 'core' strategy/plan which outlined the general statement that planning decisions should take account of crime prevention considerations, and this was supplemented with a detailed 'themed' Supplementary Planning Guidance focused solely upon crime prevention. These were generally entitled *Supplementary Planning Guidance: Planning out Crime, Supplementary Planning Guidance: Design for Community Safety* or *Supplementary Planning Guidance: Crime Reduction/Prevention through Design.* The Planning and Compulsory Purchase Act (2004) also introduced the requirement to produce Design and Access Statements when submitting applications for outline and full planning permission. The DCLG Circular 01/2006 – *Guidance on Changes to the Development Control System* (DCLG, 2006), outlines what is required within a Design and Access Statement and paragraph 87 states that Design and Access Statements must demonstrate how crime prevention measures, and in particular the principles outlined in Safer Places, will been addressed.

THE RESEARCH

There is little doubt that, in England and Wales, the period post-1998 has seen a great deal of progress within the field of designing out crime from residential housing. There has been an increasing recognition that design can (and does) impact upon crime, and this has been reflected in academic research, national and local policy (both planning and crime reduction) and the practical application on the ground. There has also been an increased recognition that crime reduction is not the sole responsibility of the police and that a variety of agencies, who may not have traditionally considered themselves as having a role in reducing crime are required by legislation to demonstrate their contribution. Readers may be wondering if there has been such progress, what is the purpose of this paper, and the research upon which it is based? There are two reasons for this paper, the first is historic and has concerned the author for some time. This relates to the lack of clarity regarding the impact of specific design features on crime – we know that the design of residential housing can impact upon crime, and we know that key agencies can and should display their commitment to these principles, but knowing that we should consider crime prevention in design is not the same as knowing how. Therefore, we risk a situation where those working in the fields of design, planning and development control know that crime must be considered, but do they know which features of design will enhance and reduce risk? The second presents a problem in itself, but one which becomes more problematic whilst the first remains unclear, and this relates to the major changes taking place within the planning system within England and Wales and the focus upon deregulation. This being compounded by the reductions in police budgets and the subsequent cuts in the number of ALO/CPDAs available to offer advice regarding crime prevention within design.

Whilst there has been progress in the consideration for crime prevention within the planning system and an acceptance that design can and will impact upon crime, there has been less focus upon exactly what 'good design' is and whether 'good design' in terms of architectural quality, is also crime reductive. The Government's recently published Housing Strategy (HM Government, 2011) states that: *'Well-designed homes and neighbourhoods are those that are attractive – reflecting local character and identity while featuring good architecture and landscaping'* (HM Government, 2011, p. 56). The same document asserts that: *'Well thought-through design can also improve the safety and security of homes and neighbourhoods'* (HM Government, 2011, p. 56). Does the first claim naturally entail the second. Is *good design* - which is attractive, reflects local character and features good architecture and landscaping also likely to improve the safety and security of homes? Therefore we are in a position, within England and Wales, whereby it is largely recognised by those working within the fields of planning and policing that crime prevention is a key consideration within planning policy and practice but is it clear, particularly to practitioners working on the ground exactly how 'consideration for crime reduction' should be achieved? There has been some confusion within research, policy and guidance relating to the specific design features which enhance or reduce crime risk, and one of the focuses of this research has been to clarify the evidence on how to reduce crime through design.

The progress highlighted above, in the consideration for crime prevention within planning policy and practice is, however, set to change. The Localism Act (2011) has introduced major alterations to the planning system within England - the primary change being that regional planning is abolished and replaced with a greater focus upon neighbourhood planning. This has seen the introduction of new neighbourhood level plans (which allow communities to come together through a local parish council or neighbourhood forum to produce a plan which sets out policies in relation to the development and use of land

within a neighbourhood area), the abolition of regional strategies, the restriction on local planning documents (discouraging supplementary planning guidance or documents), and the replacement of all existing Planning Policy Statements with one single National Planning Policy Framework. These changes are discussed in more detail elsewhere (see Armitage, 2013), however, the latter requires some clarification. The National Planning Policy Framework, a <u>fifty-nine page</u> document has now replaced <u>forty-four documents</u> including the Planning Policy Statement 1: *Delivering Sustainable Development* and Planning Policy Statement 3: *Housing,* discussed above. As well as replacing key Planning Policy Statements, the National Planning Policy Framework discourages the production of Supplementary Planning Documents, such as those dedicated to CPTED discussed above. Whilst the aims of the Act are expressed in terms which suggest an emphasis upon community empowerment and local decision making, there is no doubt that its introduction is a response to the need to stimulate growth within development in England and Wales. In addition to these changes, at the time of writing, the current government is consulting on a review of Planning Guidance (the Taylor Review) and it is proposed to cancel Safer Places (alongside many other documents) as of March 2013.

Unfortunately, this has been compounded by the impact of the financial crisis in England and Wales, and the subsequent cuts in public sector spending. A review of the ALO/CPDA role (Wootton *et al.,* 2009) revealed that in January 2009 there were 347 ALO/CPDAs in post in England and Wales, by August 2009 this had reduced to 305, and in the ensuing three year period the numbers were cut further, to approximately 196 (Monchuk, unpublished thesis). It is difficult to predict the impact of these changes, and there are many positive possibilities of placing decision making in the hands of those who reside and work within an area. These people are more likely to know what crime problems exist and can inform the understanding of what designs may work well within a specific context. However, there is concern regarding the extent to which these communities can make decisions regarding the finer detail of design - with limited resources from police ALOs/CPDAs and with reduced guidance and policy documentation. For this reason, it is essential that these recent and imminent policy changes are supported by the dissemination of clear, evidence-based guidance, and it is this concern which forms the second rationale for this paper.

METHODOLOGY
The aim of the research upon which this paper is based was to update and strengthen the evidence base on the impact of the design of residential housing on a range of crime types and to focus upon developments considered by the Government's measure of housing quality to be 'good examples of housing design'. To achieve this aim a unique methodology was adopted encompassing three strands of analysis. Table 1 summarises the key research questions and the research methods adopted to investigate them.

Table 1: Research questions and methods used

Research Strand	Research Question	Methods Employed
First strand: Literature and policy review	What research, policy and guidance currently exists to inform housing design in respect of presumed links to crime?	Comprehensive review of literature, guidance and policy documents.
Second strand: Secondary data analysis of CABE's Housing Audit	Do developments of high design quality experience less crime and disorder than developments with lower design quality?	Modeling of CABE Housing Audit Data and Police Recorded Crime Data

Third strand: Detailed assessment of the link between residential design and crime	Which elements of housing design, in what contexts, act as a protective factor against crime?	Design Features Checklist Site visits and walkarounds Interviews with practitioners Analysis of Police recorded crime data

The first strand of the research entailed a comprehensive review of literature, guidance and policy documents. The second strand, reported elsewhere (Armitage *et al,* 2010), conducted a secondary data analysis of CABE's Housing Audit data on 34 developments (4,091 properties) spread throughout England, exploring the links between housing design quality and crime. The third strand, which forms the basis of this paper, involved a detailed assessment of the link between residential design and crime within twelve case study sites across three police forces in England. To ensure that the research focused upon design features that reflect the most innovative practice in high quality housing design, this strand focused on developments that had received commendations for their exceptional design quality and architecture through the receipt of a Building for Life A*ward,* or through achieving the Building for Life *Standard* which represents a score of 70% or over on the CABE Housing Audits. The sample included twelve developments, six of which were awarded the Building for Life standard/award, and six comparison sites[i]. This included 2,193 properties across three police forces (Greater Manchester, Kent and West Midlands).

Table 2: Geographical distribution of sampled developments

North	**North: Building for Life 1 (179 dwellings)**	**North: Non-Building for Life 1 (96 dwellings)**
	North: Building for Life 2 (51 dwellings)	North: Non-Building for Life 2 (181 dwellings)
Midlands	Midlands: Building for Life 1 (514 dwellings)	Midlands: Non-Building for Life 1 (158 dwellings)
	Midlands: Building for Life 2 (237 dwellings)	Midlands: Non-Building for Life 2 (73 dwellings)
South	South: Building for Life 1 (361 dwellings)	South: Non-Building for Life 1 (176 dwellings)
	South: Building for Life 2 (88 dwellings)	South: Non-Building for Life 2 (79 dwellings)

This element of the project was extensive and involved many separate elements. For each of the twelve developments the research team conducted the tasks outlined below.

Interviews with key personnel: Semi-structured interviews at the development with the local ALO/CPDA, Local Authority Planning Officer, Neighbourhood Policing Team and, in some cases, the developer and a representative from the Residents' Association. The interviews explored crime and disorder problems, views on the design of the development and issues relating to the development process. Above all, this element of the research allowed practitioners to talk to each other, on-site and in the context of the issues being discussed.

Design features checklist: A Design Features Checklist was completed for every property in the sample – 2193 houses. The checklist included 31 questions relating to the design and layout of the property and a further 19 relating to the wider development.

Design quality checklist: A Design Quality Checklist was completed for every development. This included questions based upon the Building for Life criteria and created a design quality score for every property and development.

Police recorded crime data: Crime data for a three year period (January 2007 to December 2009) was collected for the entire police force area for each of the three forces selected. Crime categories included burglary dwelling and non dwelling, theft of and theft from motor vehicle, criminal damage, theft from person, and assault. For each crime the individual crime reference number, location (easting and northing), full address (flat/apartment/house number, street/road, town/city, postcode), date and time and *modus operandi* details[ii].

This element of the project produced a detailed dataset for a sample of twelve developments. The scope and depth of the research findings was extensive, and the quantitative element of the research is reported elsewhere (Armitage *et al,* 2010). This paper focuses upon the qualitative findings identified from the site visits and interviews with key personnel, the aim being to produce clear guidance as to how to design out crime and disorder problems.

As was highlighted in the introduction, the data collection focused upon many design features traditionally associated with designing out crime. However, one benefit to emerge from the detailed site-visits was that crime and disorder problems perhaps not traditionally associated with CPTED were raised as key concerns. These included neighbour disputes relating to car parking allocation, fraud relating to theft from external mail boxes and anti-social behaviour linked to landlords letting city properties for short breaks. This paper focuses upon two themes which consistently emerged within the research; these are the impact of the design and layout of residential car parking, and connectivity and through movement on crime and disorder problems.

THE IMPACT OF CAR PARKING DESIGN ON CRIME AND DISORDER

A 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 (drive-arounds) 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. Although not explicitly stated, it could be that offenders select properties where vehicles are parked in less secure locations (i.e. on-street) in order to commit a vehicle related offence, and then continue to commit other offences (such as burglary) either at the same time, or at a later date.

The research found that the design and layout of parking provision within residential housing can have a significant impact upon crime and anti-social behaviour, and this was raised consistently as a priority and concern at all sites. Whilst car parking provision may be associated with theft of and from vehicle, or damage to a vehicle, the research found that it

also impacted upon levels of youths causing annoyance, neighbour nuisance and even violent crime. The key issues to emerge were that properties with communal parking experience higher levels of vehicle crime than on plot parking. The research also revealed that developments with allocated visitor parking experienced lower crime than those which did not provide such parking. Common practical problems identified related to rear car parking courts, inappropriate parking solutions and inconsiderate allocation of spaces. These are presented in detail below.

Rear parking courts: Rear parking courts are one option of providing car parking provision away from property frontages. Cars are located behind properties in courtyards which are usually accessed through an archway between properties. As with the picture below, these archways are often narrow, running under dwellings with little natural surveillance or light. There are options to gate the courtyard entrances, but the benefits of such measures depend upon the extent to which they are implemented by residents and visitors who may fail to close and lock gates once they have entered the courtyard. By their very nature, rear parking courts are out of view of street users and even, in many cases, neighbouring residents. In the example below, high boundary walls block the view from adjacent properties and enhance the feeling of isolation. Many residents, even where no legitimate alternative is provided, prefer not to park within these courtyards due to the inconvenience of having to walk from the car park to their home, for concerns regarding the risk to their vehicle whilst parked in the courtyard, and for reasons regarding their own safety. Where courtyards are unused, the space can often become an ideal location for anti-social behaviour, perpetuating and amplifying the fear felt by legitimate users.

Empty, dark and desolate rear parking courts

Inappropriate car parking solutions: As well as the negative consequences of rear parking courts, there are many other negative, and largely unintended, consequences of a planning system which has focused upon the desire to remove the car from the street scene. One approach, seen at two developments in the South of England, had included 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 picture below). 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. In one development, this resulted 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

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 do), 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 very often garages are used as additional storage space.

Poor allocation of car parking spaces: When designing car parking provision within residential areas, care must be taken to ensure that the allocation of parking spaces is both appropriate and considerate. This includes the allocation of both resident and visitor parking. The picture below shows the parking provision at one development in the West Midlands, UK. The parking space is located directly in front of the bay window (living room) of two neighbouring properties. As there is one space only, this is allocated to just one of those

properties, meaning that the residents at the second property have to look out of their front window directly onto the vehicle belonging to their neighbour. Although this may not cause problems where the vehicle is small in size or parked in the space for short periods of time, there is every likelihood that the vehicle could be a people carrier, a four-wheel drive or even a commercial van. If this was parked during daylight hours the neighbour would have very little outlook, other than the side of their next door neighbour's vehicle. Visits to this development revealed that neighbours had left notes in each other's vehicles relating to their parking. Analysis of police recorded crime data also revealed that there had been two serious incidents relating to parking disputes – one public order offence and one assault, both had led to residents being arrested.

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

On-plot car parking and garages: On-plot parking is recommended by policy and guidance, and 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. There should also be consideration given to the location of a property's garage. Where garages are provided, they can be one of the safest parking options, however, the location of the garage can be crucial in ensuring that this benefit is maximised. The research found that several developments had located the garage 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 IMPACT OF ROAD LAYOUT ON CRIME AND DISORDER

Debates surrounding connectivity and through-movement hgave dominated much discussion on designing out crime within residential housing within England and Wales. Often findings have been overstated, with headlines such as: *"End of the Road for the Cul-de-Sac"* (Fairs, 1998, p.1), *"Culs-de-Sac Hit the Skids"* (Stungo, 1998, p.2) and *"How Brookside Boom Helped the Burglars"* (Summerskill, 2000, p.16). However, such

simplification has proved unhelpful for many crime reduction practitioners who are tasked with reducing crime through the design and manipulation of the environment. A review of relevant research suggests that the cul-de-sac layout is favoured by the majority of criminological literature. However, urban designers highlight the negative features of this low permeability layout (including the increase in travel distances and therefore reliance upon the motor vehicle). Explanations for higher crime in areas of greater connectivity point to the operation of three underlying mechanisms. Firstly, developments with high levels of through-movement provide ease of entry and escape for potential offenders (Rubenstein *et al,* 1980; Taylor and Gottfredson, 1987; Poyner and Webb, 1991). Secondly, developments with high levels of through-movement are more likely to fall within the activity space, and therefore awareness space, of potential offenders (Brantingham and Brantingham, 1984) with offenders selecting targets as they take part in day to day activities (Letkemann, 1973; Feeney, 1986; Gabor *et al,* 1987; Poyner and Webb, 1991; Rengert and Wasilchick, 2000; Wiles and Costello 2000). The third mechanism suggests that developments with high levels of through-movement offer increased levels of anonymity for potential offenders (Angel, 1968; Suttles, 1968; Brantingham and Brantingham, 1975; Taylor and Gottfredson, 1987; Poyner and Webb, 1991).

Although Hillier and Sahbaz (2009) have argued that there are insufficient empirical studies to form any conclusions regarding the impact of road layout on residential crime, the review of literature would suggest otherwise. A range of studies conducted across Europe and North America have demonstrated the link between high connectivity/through-movement and crime by employing a range of methodologies and varied indicators of connectivity. Beavon *et al* (1994, in Canada) and Johnson and Bowers (2010, in the UK) demonstrated that increases in the number of roads connected to a street segment led to statistically significant increases in the number of burglaries to that segment. These increases were greatest when street segment connections led to a major traffic thoroughfare (White 1990, in the USA and Johnson and Bowers 2010). Further, the majority of research projects directly comparing burglary levels on highly connected through roads to culs-de-sac and streets with the lowest connectivity have demonstrated that culs-de-sac experience the lowest rates of burglary (Bevis and Nutter, 1977; Mirlees-Black *et al,* 1998; Rengert and Hakim, 1998; Armitage, 2000; Hakim *et al,* 2001; Yang, 2006; Armitage *et al.,* 2010; Johnson and Bowers, 2010). Johnson and Bowers' (2010) study further concluded that culs-de-sac are safer than through roads and that sinuous[iii] culs-de-sac are safer still. However the study did not distinguish between 'true' culs-de-sac and 'leaky' culs-de-sac (those that are breached by footpaths). Research has demonstrated that leaky culs-de-sac experience more crime than true culs-de-sac and through roads (Armitage, 2006; Hillier, 2004) and the quantitative element of this research concluded that, compared to the true cul-de-sac (the safest), through roads experienced 93% more crime and leaky culs-de-sac 110% more crime.

As has been stated throughout, the focus on this paper is not to rehearse the arguments that have been discussed in many research papers, it is to propose practical solutions for those tasked with the role of designing out crime on the ground. The following section identifies some of the common practical issues relating to road layout. One of the key findings to emerge from the research was that cul-de-sac layouts (where true) were the safest design option, with leaky culs-de-sac the least safe. The research also confirmed (in line with recent research conducted by Johnson and Bowers, 2010) that sinuous culs-de-sac are safer than those with a linear layout. In general, the participants felt that culs-de-sac portray the impression to potential offenders that they are entering a private area – increasing the likelihood that offenders will feel uncomfortable entering the development. There were,

however, exceptions to this, and several extremely permeable developments had created a strong sense of ownership and territoriality, whilst maintaining a high level of connectivity. In the particular case studies this had primarily been achieved via consistent and detailed design to ensure routes were well overlooked, designed to a high quality and managed and maintained robustly. Participants acknowledged that such designs can be successful but stressed the need for caution in replicating them in different contexts. In particularly, the social buy-in, community involvement and management and maintenance approach which these neighbourhoods had developed were viewed as an essential ingredient in the success of these more permeable designs.

Gated developments: The sample included two gated developments – one for which the whole site was gated, the other including small gated area within a wider development. The results revealed that, not only were these developments unpopular with the local planners, they were also unsuccessful in reducing crime. The planners who took part in the research expressed the view that the solution of physically gating an area would be unlikely to be repeated in future developments, and that the desired sense of privacy could be achieved through more subtle techniques such as a narrowing of the road entrance or a change in road colour and texture.

Gated developments

One of the main problems with the gated developments included within the sample was that, although gated at the boundary, once inside, these developments were highly permeable with an abundance of alleys and pathways which were narrow, dark and with little or no surveillance from surrounding properties.

Another issue to emerge was that, although these developments were gated, the poor positioning of street signs, utility boxes and street furniture meant that the gates could easily be scaled. In fact, it could be argued that the gates themselves act to entice offenders into the area – portraying an image that the development contains valuable possessions which require additional protection.

Lack of consideration for security in the positioning of street signs and utility boxes provides climbing aids for offenders.

Footpaths: The sample contained developments with a mix of layouts and a range of levels of connectivity. The research revealed several key findings relating to the provision of footpaths within residential developments, with the key issue being that footpaths can be included as long as they are designed with consideration for safety and security issues.

Cross referencing of crime locations and environmental features revealed that crimes were consistently clustered around alleyways and footpaths. Properties were particularly vulnerable when footpaths allowed access to the rear or side of the dwelling, where footpaths were not overlooked by surrounding dwellings and where footpaths were not well used. Corner plots located next to footpaths were also highlighted as vulnerable to crime, experienced 18% more crime than properties located elsewhere within a development.

Footpaths should not run at the rear or side of properties and should be direct, well-lit and overlooked.

Two developments in particular contained examples of properties which bounded footpaths and had either experienced high levels of crime, or the property owner showed signs of high levels of concern regarding crime. In the case of the former, the analysis of police recorded crime *modus operandi* revealed that offenders were entering the property via the boundary wall leading from the footpath (left hand picture). In the case of the latter, one

resident whose property bounded a footpath had fitted many retrospective security measures such as barbed wire, CCTV cameras and anti-climb paint. Although this property had not experienced high levels of police recorded crime, the resident clearly shows concern regarding crime or ASB.

Properties which bounded footpaths were particularly vulnerable to crime or high levels of fear of crime.

Although the presence of footpaths often caused concern, the research revealed that footpaths can be included within residential developments if safety and security is considered in the design and layout. Footpaths within one development had been explicitly designed, named and publicised to encourage pedestrian and cyclist through-movement. Police expressed concern regarding the number of footpaths within the estate but acknowledged that their careful design - connecting people directly to destinations, ensured they were frequently used. In addition to ensuring that they were well-used, the avoidance of footpaths to the rear of properties appears to have limited the criminogenic potential of footpaths within this development which experienced no burglary dwelling offences within the three year period of analysis. A key finding to emerge from the research was that, where footpaths are required (and therefore well-used), wide, well-lit, direct and located at the front of properties, they can be included within a development without increasing the crime risk.

Another finding to emerge was that where developers had either deliberately or unintentionally restricted pedestrian movement, residents frequently created their own short-cuts. This was observed at one development where the street layout had ignored existing desire routes. In response, some pedestrians climbed over high fences in an attempt to access the development (confirming this, one person was observed climbing the fence during the site visit). Similarly at another development pedestrians had created a short-cut through a gap in railings, giving access to other footpaths leading to the city centre and other residential and commercial areas. Unofficial short-cuts will not be subject to any maintenance and are unlikely to be adequately lit or overlooked. Where the short-cut is through a residents' garden (as with the picture below) this also risks neighbour disputes and heightened fear of crime. Designs which restrict pedestrian movement, therefore, risk prompting the development of desire routes that are far more criminogenic than deliberately designed-in alternatives.

Where existing desire lines are ignored, residents are likely to create their own short-cuts.

CONCLUSION

This paper outlines the consideration for crime prevention within planning policy and practice in England and Wales, and highlights the recent and imminent changes to that system. It is clear that the period post-1998 saw major improvements in the consideration for crime prevention within local and national planning policy and guidance and the provision to implement these on the ground. However, recent changes in the form of the Localism Act (2011) and the National Planning Policy Framework have seen forty-four Planning Policy documents (each based upon relevant research) replaced with a single fifty-nine page document. The current Taylor review of planning guidance has also recommended the cancellation of Safer Places - the guidance document specific to crime prevention within the planning system. The risks associated with these changes are amplified by the recent cuts in police resources, resulting in less ALOs/CPDAs to offer CPTED guidance to planners and neighbourhood groups, who, under the provisions made by the Localism Act (2011), are now able to develop neighbourhood level plans. A greater responsibility is being placed on communities to make decisions about planning within their neighbourhood, and the government believes that communities should be trusted to know what good design is. This has many positives, and there is no doubt that communities should have a greater influence on the development within their area, but the extent to which they can be relied upon (with limited guidance) to understand the potential impact which residential design can have upon issues such as crime and disorder is questionable. This paper presents the findings from an extensive research project which aimed to identify the features of residential design which offer risk and protective factors in terms of crime and disorder. The project comprised a detailed review of some seventy policy, guidance and research documents and an in-depth scrutiny of over 6,000 properties across three police forces. This paper focuses upon one element of the research - the in-depth assessment of twelve case study sites. This unique methodology involved conducting interviews with key personnel – the ALO/CPDA, Neighbourhood Policing Team, the local authority planner and in some cases the architect, developer and a representative from the Residents' Association. These interviews were conducted on site and took the form of a walk-about, where individuals discussed the design of the development and any emerging crime and disorder problems, within the context of the neighbourhood. There were many beneficial elements to this methodology. The first relates to

the identification of crime and disorder problems, related to the design of the development, which would not have been identified through the analysis of police recorded statistics. These included anti-social behaviour linked to landlords letting city properties for short breaks, fraud linked to external mailboxes and violent crime and neighbour nuisance incidents linked to the inconsiderate design of parking allocation. An additional benefit to this methodology was that key personnel, involved in the design and subsequent management of housing developments, were brought together on-site to discuss their own concerns and to explain these to each other within the context of the development. In many cases participants began the exercise with their own views on the priorities and concerns of the other agencies, yet concluded the exercise understanding that there are many competing priorities within the design of a residential development, that these have to be balanced, and this often involves an element of compromise.

Whilst the research covered many features of housing design, including property type, surveillance, communal space and management and maintenance, this paper has focused upon the two themes of car parking and connectivity – which were raised by participants at all of the case study sites. This paper has outlined the key crime and disorder problems associated with these design features and highlighted practical recommendations to avoid future problems. In terms of the design of car parking, the research 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 also 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. In terms of connectivity the research found that sinuous, true *culs-de-sac* experience the lowest levels of crime and developments containing rear access pathways, particularly where access if provided from the footpath into the adjoining property, experience the highest levels of crime. However, the research also revealed that footpaths can be included within developments without increasing crime risk, as long as they are designed in accordance with crime reduction guidelines and in close consultation with police ALOs/CPDAs. Where footpaths are included within a development they must be required/desired (and therefore well used), short, direct, wide, overlooked, well-lit and should not run at the side or rear of properties.

It is hoped that this research can be used to inform future policy, guidance and practice, and initial indications suggest that this is the case. Practitioner focused briefing notes have been written on the two themes discussed above (Armitage 2010a, 2010b) and the recently revised Building for Life criteria (Building for Life 12) include many references to the recommendations discussed above that had not been present in the original award criteria. Under the 'Connections' theme these include: advising against the blocking or redirecting of existing routes, particularly if they are well-used; ensuring that connections are attractive, well lit, direct, easy to navigate, well overlooked and safe; and ensuring that pedestrian/cycle routes pass in front of people's homes, rather than to the rear of them. In terms of the design

of car parking provision, the revised criteria again considers many of the issues presented above. These include: anticipation of parking demand and ensuring that parking spaces are provided for visitors; designing out opportunities for anti-social parking; ensuring that residents can see their car from their home; avoiding rear parking courts and parking which is not well overlooked.

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[i] Criteria for comparison site selection included: close proximity to the case study development; equivalent size area and number of dwellings; comparable socio-demographic composition and an equivalent range of housing types and density (e.g. detached, semi-detached dwellings, apartments).

[ii] It should be noted that the completeness and accuracy of modus operandi fields varied and this was missing for a large proportion of crimes.

[iii] A Sinuous cul-de-Sac is defined by Johnson and Bowers (2010) as: Property is located on a road which leads to a dead-end AND is non-linear in geometry so that there is little visibility down the road from the road to which it is connected OR the road is linear in geometry BUT the road to which you turn off to access the cul-de-sac is NOT a through road. A Linear cul-de-Sac is defined as: Property is located on a road which leads to a dead-end AND is linear in geometry so that there is visibility to the end of the cul-de-sac from the road to which you access the cul-de-sac AND the street is one turn off a through road.