THE EFFECT OF BETTER STREET LIGHTING ON CRIME AND FEAR: A REVIEW

Malcolm Ramsay
with the assistance of Rosemary Newton

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Crime Prevention Unit Papers

The Home Office Crime Prevention Unit was formed in 1983 to promote preventive action against crime. It has a particular responsibility to disseminate information on crime prevention topics. The object of the present series of occasional papers is to present analysis and research material in a way which should help and inform practitioners whose work can help reduce crime.

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Foreword

This review examines the impact of improvements to street lighting on both crime and the public's sense of fear. It draws on the latest research findings, including those from a substantial study carried out by a team from the University of Southampton, who monitored the effect of large-scale lighting improvements in Wandsworth. Their work is being published at the same time as this, as Crime Prevention Unit Paper 28.

This report suggests, on the basis of the available research evidence, that lighting improvements are in general more likely to have a positive impact on the public's fear of crime than on the incidence of crime itself. Exceptionally, in localised 'blackspots', where lighting is particularly inadequate crime and incivility may be reduced in addition to pedestrians' sense of security being improved.

The report also documents the Home Office's expenditure on lighting improvements - geared primarily to reducing people's fear of crime in crucial settings - through the Safer Cities programme. In total, over the two financial years ending March 1991, some £818,500 was spent, spread across 15 urban areas, and representing 12 per cent by value of all schemes approved.

I M BURNS
Deputy Under Secretary of State
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Since arriving in the Crime Prevention Unit of the Home Office late in 1988, the topic of street lighting is one which has brought me into contact with a great many people from outside the Home Office. In differing ways, all have been helpful. It would not be easy - and might be inappropriate - to attempt to list them all. I am also grateful to colleagues in the Home Office for their help (notably to Mrs Mayhew of the Research and Planning Unit, for supplying fresh material from the British Crime Survey).

Most importantly, I would like to express my warmest thanks to Ms Rosemary Newton, a Senior Scientific Officer in the Crime Prevention Unit, and to make clear the important role which she played in preparing this review. She drafted Section 6, which deals with lighting improvements in the Safer Cities programme, and Appendices D and E, concerned respectively with a street lighting experiment in Hastings and supplementary material on Safer Cities. All of this was done on the basis of extensive data collection and analysis, for which she took responsibility.

Ms Newton is grateful to police officers in Sussex for their assistance, as I am to those in Bolton (together with the crime prevention specialist at Bolton Town Hall, Mr John Watson).

Malcolm Ramsay
August 1991.

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1. Introduction

Scope of the study - street lights, street crime

This study focuses on streets, roads and - to a lesser extent - other open-air sites accessible to the public. The distinctive role of lighting for industrial and housing estates is not directly considered. The crucial question tackled here is whether better street lighting can help to reduce crime and the public's fear of crime. Until quite recently, street lighting was mainly geared to the needs of those driving vehicles. Pedestrians were almost forgotten. However, 'British Standards' guidance published in the late 1980s also deals with the protection of pedestrians from crime (BS 5489: see Appendix A of this reveiw for futher discussion). The third part of the code of practice, which deals with lighting for "subsidiary roads and associated pedestrian areas", is especially relevant. The foreword notes: "Emphasis is given to the importance of good street lighting as a crime deterrent." Of course, the British Standards guidelines say more about ideals than about the locally variable quality of actual street lighting – which reflects not least the standard of maintenance.

The prevention of types of crimes committed in streets or public places is particularly important, both qualitatively and quantitatively. While violent or sexual offences only account for 6 per cent of all those officially recorded, a good many of these incidents occur in public places. Also, the prospect of being assaulted or mugged while one is out walking, particularly after dark, does much to fuel fear of crime, whatever the actual incidence of such attacks. So it would be doubly helpful if violent offences could be curbed through better street lighting.

There is, too, a much larger group of offences potentially within the influence of street lighting: thefts of or from motor vehicles, almost invariably when they have been parked in the street, or in car parks. Indeed, these two types of crime together account for nearly a third of the total volume of recorded crime. If improved street lighting were to reduce the incidence of autocrime, that too would certainly be worthwhile.

Finally, there is a wide range of other types of offences possibly affected by levels of street lighting. These would include burglaries of houses and shops (particularly through their fronts, where these face the street), thefts of bicycles, and criminal damage involving cars or the outside of buildings. Putting together all the different categories of crime where the quality of street lighting might conceivably be relevant, one soon finds that one has accounted for the vast majority of all recorded crime. The only significant residual categories, those where turning night into day is never likely to make much difference, are fraud/forgery, shoplifting and 'other'

theft/handling, which between them account for no more than a quarter of all recorded crime.

The purpose of this report is to help inform policy at both local and national levels. There are a number of reasons why improved street lighting might seem appealing as a crime prevention strategy, but, at the same time, there is a lack of authoritative guidance. This report is an attempt to bridge that gap, by presenting an overview of relevant research. First, however, it is essential to sketch in the developments which have helped to arouse interest in lighting as a means of crime prevention.

The blossoming of situational and multi-agency crime prevention

Despite all the resources invested in the police and the whole criminal justice system, crime still tends to increase. In recent years, the Home Office has responded to this problem by encouraging situational or environmental efforts aimed broadly at making it more difficult to commit offences, for instance by literally 'designing out crime', or through various social measures, such as neighbourhood watch. It has also given its backing to 'multi-agency' action, instead of leaving crime prevention solely to the police.

Situational or environmental approaches to crime prevention can take various forms. These include target hardening – at its simplest, through locks, bolts and bars. Also, more pertinently, surveillance of public places can be improved, perhaps by encouraging neighborhood watch, or by siting car parks on housing estates where people can see them from their homes. Improved lighting fits neatly alongside such measures: members of the public are better able to maintain surveillance in good visibility. Likewise, even if CCTV cameras are used to monitor public places, their effectiveness depends on adequate lighting, by night as well as by day.

The upgrading of street lighting for crime prevention purposes also implies multi-agency collaboration. Police forces and those local authorities with responsibility for street lighting need to co-operate, while other groups or individuals might also be consulted – for instance, tenants' or residents' associations. After all, police statistics on local patterns of crime, their nature, time and location, inevitably tell an incomplete story. Some incidents of crime and a great many of disorder are never reported to the police.

The impetus from the lighting industry

New - more effective and economical - forms of street lighting have been developed by the lighting industry. Bodies representing its interests, notably the British Parliamentary Lighting Group and the Lighting Industry Federation, have been active in promoting street lighting for crime prevention. The former body enjoys cross-party support among a group of interested MPs. The latter was among those

represented on the committee entrusted with the preparation of the recent British Standards guidance.

Companies involved in manufacturing street lighting have sponsored small-scale demonstration projects, of which the best known was carried out in Edmonton (Painter, 1988). Painter's conclusion - that the project "illustrates how improved lighting in one street reduced crime reduced fear of crime and enhanced public safety within an urban environment" – aroused considerable media interest.

The opening sentence of a leading article in *The Times* (9 January 1989) took up the call: "Recent research has demonstrated what was obvious to common sense already, that a systematic improvement in street lighting can bring about a substantial reduction in street crime?" The article proceeded to stress the need for "some knocking together of heads" between the Home Office and other government departments, and for the Edmonton scheme to become "a model and a standard" across the country, rather than just an interesting experiment.

Action by the Home Office

The Home Office is active on two fronts, where lighting is concerned. First, it has an interest in the whole spectrum of crime prevention policy. Obviously it keeps major options – such as lighting - under regular review. Secondly, through the Safer Cities programme, the Home Office provides funding directly for crime prevention schemes of all kinds - including improved lighting. Where that money goes is in large part decided locally, with a strong multi-agency input. The role of lighting schemes within the Safer Cities programme is discussed in Section 6.

On the broader issue of lighting as a means of crime prevention, the Home Office continues to reappraise the potential effects of street lighting improvements. But, despite the enthusiasm of certain newspapers, actual scope for "substantial reductions in street crime" may in reality be limited. The results of small-scale experiments, like the one in Edmonton - even if they are accepted at face value – do not necessarily provide a blueprint for the country at large.

Precisely because of the limitations of demonstration projects based on a single street - measuring effects over no more than a pair of six week periods - the Home Office commissioned a much more thorough evaluation of an extensive set of lighting improvements, in the London Borough of Wandsworth. It was carried out independently, by the University of Southampton (Atkins, Husain and Storey, 1991). The results are discussed in this report, with those from Edmonton and various other locations where lighting has been improved.

Topics covered - plan of review

Whatever the extent to which street lighting helps to prevent crime, it can also serve to reduce fear. So, following Section 4, which deals with the impact of lighting on

crime, another is devoted to the effect of lighting on fear (Section 5). While good street lighting may or may not deter offenders, *lack* of it may well cause some people to be unnecessarily frightened.

However, before assessing crime prevention and fear reduction, the underlying assumptions of both the public and offenders need to be analysed, by way of essential background. As Section 2 shows, the public is well disposed towards good street lighting, for crime prevention. Offenders, however, may be less concerned about lighting, as Section 3 reveals. Lighting is one of those criminological issues where the perceptions of the public and offenders' patterns of behaviour may be somewhat at variance.

2: Public perceptions of lighting for crime prevention

The gist of this section is that better street lighting is widely seen by the public as a useful way of preventing crime - and lessening fear - although not as some ultimate panacea. Evidence for this assessment is drawn from various social surveys. There may be a "possibility of public irrationality", since most people "have, on the whole, little knowledge as to how effective crime control occurs" (Crawford and others, 1990). This section, however, take the public's views at face value, while remembering that survey findings may be influenced by the selection and phrasing of questions (and by the use of closed rather than open-ended questions).

The Second Islington Crime Survey is one of many which highlight the public's faith in street lighting as a means of crime prevention. Respondents in this high-crime, inner-city area were asked to pick their top three items from a list of nearly a dozen options for reducing sexual attacks and harassment against women. 'Better street lighting' was the second most popular measure chosen by men, eclipsed only by the traditionally favoured option of 'harsher penalties'. For the female interviewees, lighting came third; it was also less highly regarded than 'self-defence courses for women' (Crawford and others, 1990).

Street lighting is, like crime one of innumerable factors affecting people's quality of life. The Second Islington Crime Survey included an item relating to a whole gamut of neighbourhood problems. Poor street lighting was mentioned as a 'big problem' or at least 'a bit of one' by approximately half of the 1600 people interviewed. This indicates considerable concern. Nonetheless, a long list of other problems weighed more heavily than lighting. Starting with crime and vandalism, civic issues more widely rated as problematic also included dirty streets, unemployment, poor housing, air pollution, lack of facilities for young people and a poor health service.

Another survey charts the views of businesses operating in the High Street of Deptford in London - also a high-crime, inner-city area (Charlton, 1990). The findings of this smaller study are interesting both in their own right and because they illustrate the importance of the way questions are framed, and whether there is any prompting. When coaxed – unprompted – into listing the three main disadvantages of their location, 8 per cent mentioned poor lighting. A wide variety of other problems were of greater concern. These were the low level of custom (mentioned by 22 per cent), poor parking (20 per cent), poor public transport (20 per cent), crime (18 per cent), drunks (14 per cent), poor range of shops (10 percent), general dirty appearance (10 per cent) and the general poverty of people (10 per

cent). On the other hand, when asked *specifically* whether better lighting would decrease fear of crime and attract more shoppers, 80 per cent of the Deptford High Street businesses agreed that it would. Perhaps the results of that rather direct question need be set alongside those from an – unprompted - question as to what needed to be done to prevent crime locally. In answer to this, nearly 60 per cent stressed the need for more police or more visible policing, whereas only 4 per cent mentioned lighting.

Having more police on the streets is generally the public's first line of thought, when confronted with hypothetical questions about tackling crime. For instance, in a survey of 500 people carried out in Hull city centre, while two-thirds agreed (when prompted) that better street lighting would make them feel safer when visiting the area, almost nine out of ten concurred with the suggestion of more police patrols (Collingwood Court and Associates, 1990).

Another interesting aspect of the Hull survey is that respondents were asked if there were particular times when they tried to avoid the city centre. More than half singled out evenings/nights. In particular, they were wary of being downtown on Friday or Saturday nights. However, from comments made to the interviewers, it was apparent that unruly or violent behaviour by groups of young males caused concern, rather than the quality of street lighting.

Both the importance attached by the public to good street lighting, and the limits to their concern, are evident from the Brighton Community Safety Survey (Demuth, 1989). This involved nearly 800 households, in four different parts of Brighton, which can stand as 'anytown', in terms of its middle-range level of crime. Nearly three out of ten respondents felt that lighting was 'a bit of a problem', or even a big one. On the other hand, a long list of other issues aroused still greater concern. In descending order, these were: vandalism, dogs, crime, unemployment, poor housing, youths hanging about, public transport, nowhere for children to play, drunkenness and cars on the pavement.

The survey in Brighton was one of many where respondents were asked if they were reluctant to venture out by themselves, after dark. Just over a quarter said that they often or always avoided it. Some groups felt particularly constrained. More than a third of women, and half of all those aged over 65, were affected in this way. Such figures are not far out of line with those from the British Crime Survey: for instance, in the first sweep (1981) across England and Wales, around a third of women (but only 5 percent of men) said they sometimes avoided going out on foot after dark in their neighbourhood, for fear of crime (Hough and Mayhew, 1983). Similar results were obtained in the second British Crime Survey, carried out in 1984 (Maxfield, 1987).

Such figures are disturbing. However, they rely on a particular "question used extensively in American and Canadian surveys [which] is believed to be a sensitive measure of fear of violent crime in public places" (Hough and Mayhew, 1983). More

recently, some researchers have emphasised that answers to a hypothetical question about fear of going out alone after dark, may reflect many things, including personal feelings of vulnerability, past experiences, and general concern over a troubling social issue as well as estimates of the risk of victimisation (Ferraro and LaGrange, 1987; Home Office, 1989). Also, while the mention of "after dark" may stimulate feelings of alarm, there is some room for doubt as to how far levels of street lighting enter into respondents' minds at this juncture. As Maxfield has pointed out, "residents of [rural] areas where anxiety about personal safety is lowest... most often cite darkness, while people living in [inner-city] neighbourhoods where anxiety is very common least often associate this with dark streets. This suggests that improved lighting would have little impact on anxiety about personal safety in the most troubled urban areas?

That last assertion is perhaps slightly sweeping, given that there are clearly some urban locations where poor lighting of pedestrian routes gives rise to very real concern. The extent of this type of problem varies. In Brighton, respondents were asked both to identify streets or areas which they avoided because of fear of crime and, separately, to pinpoint those places which they considered poorly lit. The findings bear quoting in full:

> In general terms, 55 of the 603 responses (9 per cent) referred to avoiding dark or poorly lit streets. However, specifically few of the streets avoided were also regarded as being poorly lit. In Preston [a comparatively affluent part of Brighton, with relatively low crime], where there were the most complaints about street lighting, only Blaker's Park was mentioned as being badly lit and an area to be avoided. In Regency [another of the four areas surveyed], Vine Place, Seven Dials and Buckingham Road appeared on both lists. In Whitehawk, some of the alleyways and steps on the estate which people said they avoided were also identified as badly lit.

In other words, lack of good lighting was a particular problem in a limited number of places. In Brighton, as in Hull, the central entertainment area was shunned by many people late in the evening (especially on Fridays and Saturdays). This was because of the danger of drink-related disorder, rather than as a result of lighting deficiencies.

If the quality of street lighting varies from place to place, so too do the needs of local people. In the London Borough of Brent, the local authority was sufficiently conscious of inadequate street lighting, from the pedestrian's perspective, to commission a survey of perceptions of lighting. This was carried out on three housing estates beset by a considerable range of problems, including high levels of crime. The findings pointed to a widely shared desire for better lighting both inside communal areas of blocks of flats and also more extensively, throughout each of the three estates and beyond. Not only additional or brighter lighting but better maintenance was wanted. So far as exterior lighting was concerned, between half and two-thirds of the respondents believed that improvements would reduce

the level of crime ‘a bit’ or even ‘a lot’. A still higher proportion – roughly three-quarters - considered that improvements would help people to feel safer. However, despite this high level of enthusiasm for lighting, it was not accorded top priority in any of the three estates. That was reserved for better physical security.

A survey in Canterbury (Harris Research Centre, 1990), for Kent County Council, produced some interesting findings on public perceptions of lighting. It was carried out after localised improvements to lighting, in accordance with the latest British Standards specifications. The new lighting was certainly much appreciated. But, in nearby streets where lighting was not improved, there was comparatively little willingness to pay higher local taxes for the sake of brighter lighting. Also, hardly any of those respondents whose road lighting was ‘halfway improved’ (to BS 3/3) noticed any difference between the brightness of their area as compared to an adjacent area accorded the considerably higher level of BS 3/2. (See Appendix A for further explanation of British Standards guidelines.)

Ultimately, there are limits to the public’s enthusiasm for lighting. Broadly speaking, however, it is felt to have an important role in helping to prevent crime and reduce fear. Complaints about over-lighting are certainly very rare. The crucial question is whether the public’s view of street lighting embodies a realistic appreciation of the way offenders think and behave. This is addressed in the next section.

3: What offenders think about lighting

Most if not all crime prevention measures are in some sense "based on assumptions about offenders' perceptions and decision-making" (Bennett and Wright, 1984). This is certainly true of lighting improvements, the supposition being that "one dim bulb every 50 yards is much less of a discouragement to nefarious nocturnal activities than a blaze of light in all directions" *(The Times,* 9 January 1989). In trying to establish whether this is indeed a reasonable assumption, it is unfortunate that, as Bennett and Wright also note, "there is very little research available on offenders' perceptions and decision-making".

Before examining available research findings, it is helpful to explore the extent to which crime take place by night. Only in so far as offenders operate out-of-doors and under cover of darkness is there scope for preventing crime by enhancing lighting levels. It is fair to say that virtually all burglaries and thefts of cars involve some outside activity. Judging by the 1988 British Crime Survey (BCS), about half of assaults, two thirds of robberies and over nine out of ten thefts from cars, bike thefts, vandalism, and 'other' household thefts took place out-of-doors. Focusing on those offences which occurred outside, Table 1 shows the proportions attributable to daylight, darkness and dawn/dusk.

Nearly a third of these out-of-doors BCS offences happened in broad daylight. They could never have been prevented by better lighting. A larger group, slightly over half the total, occurred during the hours of darkness. Perhaps these - or some of them – could have been averted, if only there were better street lighting.

The fact that so many offences take place after dark does not necessarily mean they have been caused by deficient lighting. Street crime tends to occur in leisure-time contexts, often taking place when people - both offenders and victims – have gone out to enjoy themselves (while probably drinking alcohol). A study of 550 offences involving violence or public disruption in central Southampton showed that almost half occurred over the 48 hour timespan from 6.00 am on Friday to 6.00 am on Sunday. While this prime period of leisure indeed centers on two nights, detailed analysis of crime reports and other sources suggested that darkness was relevant to no more than a handful of the offences. Altogether, more cases occurred in the two summer quarters than in the winter ones, with their longer hours of darkness (Ramsay, 1982). A similar seasonal pattern exists at national level, for sexual offences and violence against the person, judging by official statistics of crime, regularly recorded in *Statistical Bulletins* published by the Home Office.

Table 1. Extent to which various types of offence are committed in daylight, or after dark, as measured by 1988 British Crime Survey

	% in daylight	% in darkness	% at dawn or dusk
Burglary (n = 548)	34	62	4
Theft of car (n = 266)	29	67	5
Robbery, theft from person (n = 91)	49	45	7
Assault (n = 225)	34	58	8
Theft from car (n = 1,205)	25	72	3
Theft of bike (n = 210)	53	43	4
Vandalism (n = 563)	30	65	6
Other household theft (n = 525)	37	56	7
AVERAGE (n = 3,633)	32	53	4

NOTES. The main component of the 1988 BCS involved interviews in 10,400 households in England and Wales. As a victim survey, it was only concerned with offences where there was a personal – rather than institutional - victim. The data have been weighted for demographic consistency, as is usual with national surveys. 'Thefts from cars' also included some attempts to steal cars. Offences for which the respondent was unable to say whether it was daylight or dark are omitted from the table; these accounted for 10 per cent of the original set of figures. Also, those particular incidents not involving outside locations were excluded from consideration in preparing this table. It is published here for the first time.

Although many offences involve comparatively little pre-planning, this does not imply that they simply occur at random. There is at least a modicum of research which directly addresses the question of offender motivation. Burglars' perceptions of burglary, and their decision-making processes, have been explored in some detail by Bennett and Wright (1984). They found that comparative risks and rewards were evaluated with considerable care by a sample of over 300 experienced burglars. However, one of the attractions of offending for these men was that it gave them the excitement of risk taking. Nearly three-quarters of those in the main interview sample reported that they had taken unnecessary risks during their last period of offending. The presence of neighbours, the extent to which the property was overlooked, and the possibility of intervention from passers-by, were all routinely taken into account. However, between a third and a half reported that they were not necessarily deterred by these particular factors. Signs of occupancy constituted the only truly powerful deterrent, heeded by nine out of ten interviewees. Dogs and alarms, while also important, commanded lesser degrees of respect. Interestingly, Bennett and Wright make virtually no mention of lighting conditions.

A good many burglaries are committed in the daytime, and the same is true of robberies. The Crime Prevention Unit of the Home Office recently carried out a

project involving lengthy interviews with 45 street robbers (Barker, Geraghty and Key, 1991). The offences which they described were evenly divided between those perpetrated in daylight and those committed either at night or, at least, in twilight. Just over a quarter of the nocturnal robberies happened in dark corners, bereft even of street lighting. However, when the offenders were asked whether there had been some particular reason for choosing the time of day for robbery, nearly three-quarters reported that there had been no specific reason. Only two of the robbers mentioned darkness as a contributing factor. A similar lack of concern about levels of lighting also appeared in reply to a hypothetical question about preferred sites for robbery.

Research involving nearly a hundred car thieves (a few of whom had simply stolen things from cars) has been undertaken by Greater Manchester Probation Service (1990). Asked if and how "people make it easy" for them, nearly a quarter mentioned the vulnerability of cars parked in secluded locations. However, only a single offender cited unlit parking places. Offenders need just the briefest of opportunities. The majority, according to this study, reckoned to be able to break into and drive away a car in two to three minutes. Even the possibility of being spotted by a passer-by was not a sure deterrent. Only a quarter reckoned that any bystanders who noticed them 'in the act' would intervene personally.

Good lighting supposedly militates against crime in part because it enhances surveillance. If the possibility of being seen by others is not necessarily sufficient to deter offenders, then the case for better lighting is to some extent weakened. In the study of burglars by Bennett and Wright (1984), almost half the offenders noted that they were not concerned about people passing by, as they set about breaking in. While the reason given most commonly was that they could simply wait until the people were out of sight, "another argument put forward for not being worried was that passers-by take no notice or, if they do, take no action?"

Although this brief attempt to take stock from the offender's point of view is necessarily limited and impressionistic, it suggests that the case for lighting as a means of crime prevention needs to be proven, rather than taken for granted. The extent to which lighting improvements have actually been shown to make a difference to crime is considered in the next section.

4: The effect of lighting on crime

Over the last five years, more research has been carried out in this country into the possible effects of lighting on crime than over the previous half century, since the end of the Second World War. Perhaps one reason why lighting failed to appear on research agendas, until recently, was that the long-running rise in crime in the post-war period coincided with major improvements in street lighting. The scarcely suggests that lighting improvements are of great importance in preventing crime.

Three small-scale demonstration projects

The recent surge of interest in the possible effect of lighting on crime owes much to the initiative of the lighting industry, which helped to fund three local projects, located in Edmonton, Tower Hamlets, and Hammersmith and Fulham. All three followed a similar research design, featuring before/after interviews with pedestrians in a walkway where lighting was considerably improved (Painter, 1988; Painter, 1989a; Painter, 1989b; Painter, 1991, a replication – in part – of Painter, 1989b).

The Edmonton study neatly exemplifies the strengths and weaknesses of the type of approach which was adopted (Painter, 1988). The methodology had a certain classic simplicity, depending on an equally classic danger point. The 'blackspot' in question was a poorly lit tunnel through a railway embankment, forming a pedestrian access route to a council estate. Lighting levels both in the tunnel and a nearby stretch of road were greatly improved. Shortly before this, a sample of passers-by was interviewed about their experiences of crime and harassment in the vicinity, over the previous six weeks. Then, six weeks after the lighting had been upgraded, another sample of pedestrians was questioned in a similar fashion. The main finding - concerning the 'before' and 'after' sets of victimisation data-was indeed dramatic: "A total of 21 incidents was reduced to 3". Little wonder *The Times,* like many others, was impressed.

Detailed examination of the Edmonton findings does however suggest a certain difficulty in accepting them fully at face value. There was clearly a reduction in crime, but it may well have been on a more limited scale. The six-week recall period used in the 'before' stage would have lacked any obvious reference point to anchor its beginning in the minds of the people being interviewed. By unconsciously bringing forward older incidents still fresh in their memory, they could well have inflated the six-weekly 'before' figures. Twelve-monthly 'before' data, also elicited from the interviewees, tend to confirm this supposition. If one actually calculates

a six-weekly rate from the twelve-monthly one, the ensuing reduction from 'before' to 'after' would be from 10 to 3, rather than 21 to 3. Further details of this alternative interpretation are provided in Appendix B.

Whatever the statistical niceties, any reduction in crime is something to be welcomed. There are however a few additional caveats worth mentioning. First, the reduction related more to incivilities (threats/insults) than to crimes (attacks/robberies and vehicle-related offences). Secondly, the study was restricted to two extremely short periods of time. Victimisation rates measured over six week spans might well be affected by the usual spread of chance fluctuations, or by special events (the 'before' period coincided with much of the pre-Christmas crime surge, while the 'after' period included the quieter Christmas break). Additionally, the law of what might be termed diminishing experimental returns could have been relevant; it is a criminological truism that the effects of social or environmental interventions often taper off over a period of time (one such example in terms of street lighting comes from Hastings, as discussed later in this section and in Appendix D). Finally, given the small size of the area involved, more attention should perhaps have been paid to possible displacement of incidents from the walkway to other locations a short distance away.

Some of the limitations of the Edmonton research also affected the projects carried out in Tower Hamlets and Hammersmith and Fulham – especially the Tower Hamlets one (Painter 1989a). This particular lighting evaluation involved a pedestrian through-route at the point where it crossed under a railway bridge. Here too the annual victimisation rate implies that the six-week 'before' rate was artificially inflated in the same way as in Edmonton. A revised reduction from 'before' to 'after', again drawing on twelve-monthly 'before' data, would be from 6 to 4, rather than 18 to 4, as claimed.

The third 'blackspot' was located in Hammersmith and Fulham (Painter, 1989b; Painter, 1991). This time, a more multi-faceted evaluation was undertaken. In addition to interviews with two sets of pedestrians – six weeks before/after the change in lighting – 43 local residents were questioned on three separate occasions (both six weeks before/after re-lighting and then twelve months later). Also, the number of pedestrians actually using the walkway was monitored. However, during the 'before' period there were only two crimes against pedestrian interviewees, making it hard to point to any clear-cut reduction in their level of victimisation, subsequently. Probably the greatest gain from this particular set of lighting improvements was a reduction in incivilities (especially in men urinating against walls, after leaving a public house at one end of the walkway). The local residents - mainly elderly women – greatly welcomed this drop in incivilities, which almost certainly contributed to a reduction in fear of crime (the issue addressed in Section 5 of this review).

Large-scale evaluation of lighting and crime in Wandsworth

Even if one accepted each of the three 'blackspot' projects at face value, it would still be highly misleading to draw from them any sweeping conclusions, as to the effect of lighting improvements on crime. Instead of basing policy on simply a handful of special cases, a much broader perspective is needed. With this in mind, the Home Office commissioned the University of Southampton to investigate the effects of a major upgrading of street lighting in the London Borough of Wandsworth. Instead of ten or a dozen new streetlights, some 3,500 were involved. The impact of a four-fold increase in the level of lighting throughout a sizeable district in inner London was evaluated. The main database comprised over 100,000 reported crimes, although much of the analysis concerned a substantially smaller subsample. Of course, in looking at large-scale patterns over lengthy periods of time - a minimum of a year before and after lighting changes - the effect of other, possibly confounding factors could not be ignored. So the researchers checked the impact of, for instance, local police initiatives and neighbourhood watch, as part of their statistical analysis. The changes in lighting took three years to implement, and were carried out in a specific sequence in 39 separate areas, making it possible to isolate the role of improved lighting with a high degree of confidence. To be sure of this, the study focussed on possible reductions in night-time compared with day-time crime, rather than on whether crime as a whole went up or down.

"No evidence could be found to support the hypothesis that improved street lighting reduces reported crime? That was the main conclusion of the University of Southampton report into the 'Brighter Borough' of Wandsworth (Atkins, Husain and Storey, 1991). There were minor exceptions, but "the dominant overall pattern, from which this study draws its authority, was of no significant change." This finding held good even when policing initiatives and neighbourhood watch schemes were also taken into account, alongside the lighting changes.

In addition to their crime analysis, the University of Southampton team carried out a household survey, in both are-lit and an unimproved part of Wandsworth. The unimproved or 'control' area was studied for comparative purposes, in particular to reveal any repercussions of seasonal variation in hours of darkness. In both locations, successive sets of interviews took place simultaneously: first, shortly before the lighting alterations - in the case of the re-lit area – and then a few months afterwards. While the main purpose of the household interviews was to gauge fear levels (as discussed in the next section), they also served to calibrate changes in the incidence of crime and harassment. Both re-lit and 'control' households experienced reductions in crime; given the small numbers of offences involved, no firm conclusions could be drawn from this. Turning to incivilities or harassment, those interviewees resident in the re-lit area subsequently fared slightly worse than those living in the 'contol' area. Numbers were still quite small, and people's recall of relatively trivial events may have been erratic, so once again it would be a mistake to be dogmatic (as is duly emphasised in the University of Southampton report). One should not forget, however, that better lighting - by

drawing more people of all kinds on to the streets, and making it easier to pick out adversaries or targets - can have negative as well as positive implications for social order. This point is widely recognised (Fleming and Burrows, 1986; Painter 1989a, page 20; Painter, 1989b, page 10; Painter, 1991, page 76).

Other studies

Current interest in the potential impact of lighting on crime and fear is reflected in the not inconsiderable proportion of Safer Cities funding devoted to lighting schemes – as discussed in Section 6. In addition, the 'Urban Programme' has helped to finance lighting improvements. In many cases, such expenditure on lighting by central government forms part of a wider package, making it hard to single out the effects of the changes to street lighting. Also, schemes merely involving lighting have tended to be limited in their size and scope.

There are however one or two cases where it is feasible to evaluate the impact on crime of reasonably large-scale improvements to street lighting, under the Urban Programme. In Cleveland, four different areas were given better lighting. In three of these areas, the percentage of crimes which happened by night fell – but only slightly - following the change in lighting. In the area experiencing the most crime the proportion that was nocturnal actually increased after re-lighting, although not to any great extent. In just one of these four areas there was an absolute reduction in the level of nocturnal crime, following re-lighting; this drop was very small. Futher details are presented in Appendix C: also, the impact of the improved lighting on fear of crime is discussed in the next section.

One curious aspect of the lighting improvements in Cleveland is that installation of lighting columns in certain new locations seems initially – according to local police - to have facilitated the perpetration of offences. Columns sited in alleys close to the rear walls of properties made it easy for youths to climb up, and carry out burglaries. Of course, once this was realised, the columns were painted with an anti-climb substance, thereby resolving this particular problem.

Another set of lighting improvements promoted by the Urban Programme - and one which benefited a reasonably large number of residential roads, in close proximity - was in Bolton. The area in question was selected for new lighting partly because of perceived crime problems, including vehicle-related offences. Analysis of recently obtained autocrime data, which were made available in a suitably detailed format, does not suggest that there was any reduction in offences of this kind, following re-lighting (see Appendix C).

Some other interesting initiatives have been carried out, in addition to those funded under the Urban Programme. In Hastings, the police, the local authority and a lighting company agreed an arrangement whereby one area would be re-lit to a very high standard, while an unchanged 'control' area was identified, for comparative

purposes. As initially presented, recorded crime figures indicated a marked drop in car crime in the re-lit area. However, further analysis, based on longer, seasonably comparable periods of time, showed that nocturnal crime increased more in the re-lit area than in the 'control' one. This was also true of autocrime alone. Additional details are presented in Appendix D. There, the point is made that, while there seems to be a vast amount of crime nationally, its incidence in most individual locations is comparatively meagre. This is one reason why analysis of the impact of changes in lighting should be carried out across comparatively large areas. Small areas with sufficient crime to be measurable over short periods of time are, to say the least, unusual.

Similarly, there have been claims that improvements to street lighting in inner-city areas of Bristol led to reductions in crime (Lloyd and Wilson, 1990). However, it is admitted that "other variables were almost certainly intervening and having their effect". In addition, further examination of all the relevant crime data, carried out by the Safe Neighbourhoods Unit, suggests that the reduction in crime actually preceded the lighting changes (Safe Neighbourhoods Unit, forthcoming).

The Hilldrop project (Middlesex Polytechnic 1990) is an important instance where a reduction in crime and incivility has followed both improvements in lighting and a wide range of other measures to upgrade that part of the inner-city Borough of Islington. Two household surveys showed that substantial drops in crime – violent crime in particular, but not burglary - were achieved between 1987 and 1990. However, even the fact that the public strongly appreciated the improvements in street lighting does not necessarily prove that better lighting was the main cause of the crime reduction. All that is certain is that the new lighting was extremely visible to everyone; it helped to proclaim that real effort was being made to assist the area.

The apparent impact of the lighting improvements in the Hilldrop area suggests that, when carried out in conjunction with other locally-relevant initiatives, street lighting may on occasion contribute positively to crime prevention. Likewise, the three small-scale demonstration projects carried out in various walkways show that, in the kind of individual 'blackspot' which cries out for amelioration, better lighting can have at least some limited effect on crime and incivilities, at least over short periods of time. Other, larger-scale experiments discussed in this section - notably that in Wandsworth (Atkins, Husain and Storey, 1991) – confirm that lighting falls far short of being a generally applicable 'quick fix' against crime. Arguably, the main criminological benefit of improvements to street lighting is to reduce the public's fear of crime, as discussed in the next section.

5: The effect of lighting on fear

Measuring fear

Attempting to measure the impact of improved lighting on crime may be complicated, but judging its effect on fear is even more challenging. What is fear of crime? How should it be measured? It is usually interpreted in terms of people's attitudes or feelings, given in response to hypothetical questions about worry or fear of, say, going out alone after dark. However, these answers tend to reflect a wide variety of things, including any personal feelings of vulnerability, previous experiences of victimisation, and general concern over a troubling social issue quite apart from risk-estimates (Ferraro and LaGrange, 1987). Responses to the classic fear question may be affected by previous questions sensitising the interviewees, and focusing their attention on the topic of personal safety - or the possible lack of it - at night.

The public believes lighting has an important role in crime prevention. People's readiness to give acceptable or pleasing answers to questions may be reinforced if they realise that they are being interviewed about their reaction to changes in street lighting. This does not mean that it is invalid to ask directly about the perceived effect of lighting improvements on crime, but simply that due allowance should be given to the context in which the question was asked. Obviously, too, positive responses are especially likely in the first few weeks or months following re-lighting, when a generally welcome change is still in the forefront of people's minds (and before there is much likelihood of adverse occurrences).

If fear of crime shows itself in self-imposed restrictions on people's freedom of movement, perhaps the best way of calibrating changes in fear of crime is by measuring variations in behaviour. This suggests that special attention should be given to studies which incorporate a behavioral dimension. The case for doing this is reinforced by some of the problems apparent in attitudinal approaches to lighting and fear.

Attitudinal and behavioral changes in Hammersmith and Fulham and Wandsworth

The Hammersmith and Fulham experiment (Painter, 1989b; Painter, 1991) illustrates the advantages of measuring changes in the level of fear behaviourally as well as aptitudinally. In this particular project, unlike its two companion studies, actual usage of the walkway by pedestrians was monitored, in addition to interviews

with two succesive sets of 200 pedestrians before and after re-lighting (and, on three occasions, with 43 local residents). Increases in the number of people taking advantage of this shortcut between two roads occurred on a dramatic scale: no less that 101 per cent for men and 71 percent for women. While Painter recognises that these increases occurred mainly in the early part of the evening, and that they might in part have been affected by extraneous factors, her conclusion, that relighting of this particular local 'blackspot' encouraged more people to use it, seems irrefutable.

The attitudinal findings from the two sets of pedestrian interviews in the Hammersmith and Fulham walkway - each involving 200 people - are faintly puzzling (Painter, 1989b). There were substantial drops in feelings of fear, in relation to periods of darkness. But there was also a tendency for interviewees to feel safer by day. Indeed, proportionately, reductions in feelings of fear with regard to daytime attacks, sexual assaults and pestering were greater than for nocturnal incidents of these kinds. Only for rape was there a larger fall in fear for the night rather than the day. Can lighting be credited with improving people's feelings of safety by day as well as by night, at least over relatively short periods of time (six weeks)? Or is there some other explanation, for instance in terms of the sequence of prior questions?

The attitudinal and behavioural research carried out in Wandsworth offers extremely useful if sometimes tentative insights (Atkins, Husain and Storey, 1991). In contrast to the three walkway projects, which involved exceptional 'blackspots', the Wandsworth research deals with the impact of wide-scale improvements to street lighting. While the number of interviews was relatively modest, they were conducted on a panel basis, the same people being questioned on each occasion. (In Painter's Hammersmith and Fulham project, although the interviews with pedestrians were not organised on a panel basis, the 43 interviews with local residents did indeed involve a panel, but one which was small, demographically unusual, and ultimately slightly diluted with fresh interviewees.)

Prior to relighting in part of Wandsworth, 'before' interviews were carried out in 249 households; nearly two months after re-lighting, 191 of those questioned were successfully tracked down and re-interviewed. Matching interviews were carried out in a similar two-stage sequence in households from an otherwise comparable area which did not benefit from re-lighting, although the 'control' numbers were smaller (131 reducing to 104). The fact that a substantial minority was not recontacted does mean that – even though some particularly powerful statistical analysis was undertaken - a degree of caution is necessary in interpreting the results.

In the re-lit area in Wandsworth, all but 4 per cent of those interviewed in the second sweep said they had noticed the changes in their street lighting. There was no general increase in feelings of safety about being out in the area after dark, from 'before' to 'after'. Nonetheless, there was a discernible improvement in women's perceptions of security in the re-lit area.

Feelings of security and perceptions of the incidence of particular sorts of crime tended to vary according to age and sex. Thus, in the re-lit area, worry about being raped was reduced among the elderly to a greater extent than for young women. However, against this, women in the re-lit area actually became somewhat more worried about theft from vehicles; elderly women became rather more anxious about cars being damaged by vandals – and vandalism to vehicles was indeed perceived as somewhat more common than before. Noting that lighting can have adverse as well as positive effects on crime, the University of Southampton team commented that "some respondents may also subscribe to the view?' Interestingly, they also found that, in the re-lit area, graffiti and teenager gatherings were perceived as being somewhat more frequent, following re-lighting - although elderly people, who might not have been quite so well placed to observe any such change, were not of this opinion. In the previous section, the point was made that, if anything, respondents in there-lit area experienced an increase in harassment and incivilities, after the installation of the improved lighting, whereas those in the 'control' area did not.

Despite all of these cautionary factors, when asked directly what the effect of the re-lighting had been, as many as 56 per cent of those who benefitted from it said that they felt either 'more safe' or 'much more safe'. Good street lighting is, after all, widely acknowledged to be reassuring. Those living in the re-lit area were offered a chance to pass general comments, and only 11 per cent of their responses were in any way critical. Once again, this reinforces the need to take into account the way questions are put to interviewees.

Initiatives in Cleveland and Hilldrop

There is further evidence of at least attitudinal changes following relatively large-scale lighting improvements in parts of Cleveland (Vamplew, 1990). Substantial surveys of residents in the improved areas-involving over 800 people in each sweep - were carried out before and after the installation of the new lighting, specifically to monitor any changes in fear and perceptions of crime. In the 'before' survey, 45 per cent of respondents reported that they felt unsafe going out alone at night. Subsequently, the equivalent figure dropped significantly, although "only by a modest 6 percentage points", to 39 per cent. However, there was an interesting divergence between male and female patterns of responses. Whereas the proportion of men feeling safe remained virtually unchanged (increasing only from 82 to 83 per cent), the relevant figures for women rose from 30 to 39 per cent. Clearly it is encouraging that women, who had greater need of a boost to their confidence, benefitted more markedly than men. There was less scope for making men feel any safer, because most of them were already comparatively confident, even before re-lighting.

In addition to the general question about their feelings of safety, respondents in Cleveland were also asked – directly - about their perceptions of the lighting

improvements. Typically, these improvements had been carried out just a few months earlier. While 29 per cent were uncertain, and 31 per cent doubted whether the brighter lighting had made any difference to crime and nuisance in their local areas, the largest group - comprising 40 per cent - was more positive in its assessment.

The Hilldrop project, where lighting played a prominent part in efforts to revitalise an inner-city area, is another comparatively large-scale initiative where the question of fear can usefully be explored. Between the 1987 and 1990 surveys, fear of falling victim to various types of offence dropped appreciably. However – as is hardly unexpected – reductions in worry did not exactly mirror changes in crime. Indeed, worry about being burgled dropped from 52 to 40 per cent, even though the actual level of burglaries increased slightly. Also interesting was the fact that the proportion reporting that they often/always avoided going out after dark increased from 35 to 41 per cent between the 1987 and 1990 surveys; at the same time as - contrarily - the proportion saying they never constrained themselves in this way increased from 44 to 51 per cent. Against these relatively modest shifts in behaviour-related responses should be set the fact that, when asked directly whether changes in the street lighting of the area made them more likely to go out at night, as may as 24 per cent agreed.

Conclusion

If nothing else, the various sets of findings presented in this section show that the precise approach adopted in particular surveys can have an important bearing on the responses obtained. Lighting is an issue where direct questions elicit rather different answers from those framed in a rather more neutral way. There are clearly some people - even if they comprise only a minority - for whom better lighting in their locality makes a real difference to the way they lead their lives. However, in practice, the fear of crime among the majority seems relatively unaffected, especially judging by behavioral criteria. There are also certain individual 'blackspots' where installation of better lighting can make a considerable difference, demonstrably improving people's freedom of movement. Finally, it is clear that, if carried out on any grand scale, people certainly notice improvements in their street lighting - although the 96 per cent level of awareness in Wandsworth is perhaps unusually high.

In sum, there is clearer evidence that improved street lighting can help to reduce fear of crime, at least among some people, or in relation to certain specific places, than there is of any consistent impact on crime itself.

6: Lighting improvements in the Safer Cities programme

The Home Office Safer Cities programme was launched in March 1988, essentially for the benefit of urban and inner-city areas. Three years later, sixteen cities had their own projects, which were managed by small local teams, backed by central support and funding from the Home Office. The various teams co-ordinate the programme locally, and assist with the development and evaluation of individual schemes. In order to receive support, schemes must address the objectives of the programme, which are to reduce crime; to lessen the fear of crime; and to create a safer environment within which economic enterprise and community life can flourish.

Each of the Safer City projects has a local steering group comprising representatives of voluntary and statutory agencies including the police, probation service, local authorities and other community and commercial interests. Local people are effectively the decision-makers, enablers and implementers for community safety strategies. The Home Office provides support and guidance although, as keeper of the purse, it maintains the final right of approval for the funding of schemes.

Lighting schemes

Up to March 1991, about 1,300 Safer City schemes received Home Office approval and funding. Of these, about 13 per cent incorporated some form of lighting improvement. By that point, such schemes had been developed in all but one of the initial sixteen cities. Further information about schemes involving lighting is presented in Appendix E. A city-by-city breakdown of numbers of approved schemes and associated expenditure is given in Table 2.

The role of lighting

Very few Safer City schemes have involved lighting as the only form of crime or fear reduction. Generally it has been used in conjunction with other measures such as target hardening, or as part of a programme of estate improvements, or perhaps in conjunction with CCTV and/or access control. Some of the lighting has been of the type triggered by infra-red heat detectors when people approach, or operated by photo-electric cells, which switch on the lights when darkness falls. Usually, the lights have been fixed to the outside of buildings or homes, for the reassurance of residents or users.

Table 2. Lighting schemes and grant support in the Safer Cities programme (over two financial years, to the end of March 1991)

City	Number of schemes	Grant Support (£)
Birmingham	3	2,018
Bradford	19	136,840
Bristol	5	30,110
Coventry	4	28,078
Hartlepool	5	41,511
Hull	11	40,882
Islington	2	33,500
Lewisham	9	63,457
Nottingham	11	60,544
Rochdale	42	57,436
Sunderland	9	145,569
Tower Hamlets	6	36,375
Wandsworth	5	10,303
Wirral	20	52,646
Wolverhampton	14	79,288
Total	165	818,557

The total of £818,557 represents approximately 12 per cent of the funds approved by the Home Office, through to the end of March 1991, under the Safer Cities Programme. This is a significant expenditure. Lighting is still recognised by the Home Office as having an important role, although primarily in terms of the reduction of fear rather than crime.

Few *street* lighting schemes have been initiated within the Safer Cities programme. Those that have been installed are either within housing estates or on a particular access route. Hardly any have been initiated solely to resolve a specific crime problem; the majority aim to reduce anxiety on the part of pedestrians. Specific crime problems against which lighting has on occasion been deployed include kerb crawling, car crime (in car parks) and vandalism, arson and burglary in schools, community centres and churches.

Lighting has generally been introduced either as part of a package of measures, as in the Sunderland multi-storey car parks, or to allay the fears of vulnerable residents on housing estates (Bradford, Wirral, Sunderland, etc). It is an undeniably popular measure with those isolated and fearful of crime enabling them to see who is at the door at night or, in conduction with infra-red detectors, who is passing. There is some evidence that these devices are triggered by small animals, but this nuisance factor is judged to be minor compared to the advantages. There are however occasional indications that lighting may *attract* unwelcome individuals.

Table 3 lists some of the locations where lighting has been used, and shows the range and nature of Safer City schemes involving lighting.

Table 3. Types of premises with security lighting, in the Safer Cities programme

Schools	Hostels
Churches / mosques	Old people's housing
Car parks	Pedestrian routes / thoroughfares
Blocks of flats	Housing estates
Ethnic minority areas	Youth areas
Nurseries	University campuses
Women's centres	Hospitals / hospices
Leisure centres	Docks
Bus stations	Assembly halls
Community centres	Scout huts
Adult education centres	Garages
Public buildings	Council offices
Law centres	Shops / shopping precincts

Evaluation of schemes

The Safer Cities programme, although effectively in operation for two years, is still somewhat new for evaluation. The main priority has been to develop local initiatives and inter-agency co-operation. Few schemes have been working long enough for meaningful assessment, although a programme of evaluation is now underway. There is little doubt that improved lighting is a popular, fear-reducing measure. So far, however, any impact on crime remains uncertain.

7: Summary and conclusions

Executive summary

Good street lighting contributes to the quality of urban life. That is not in doubt. What this review concludes is that improvements to street lighting can help to reduce the public's fear of crime, but that they make less of a difference to the prevailing level of crime than many people would expect. The main points are listed below:

* The public has considerable - but not boundless – faith in street lighting as a means of crime prevention.

* Offenders are not necessarily much influenced by lighting conditions. When deciding whether to commit a crime they are likely to take into account a variety of considerations, rather than any single factor, such as lighting.

* Better lighting by itself has very little effect on crime. There are some limited local 'blackspots' where improved lighting may have a modest impact on crime and perhaps a slightly larger one on incivilities. Also, in conjunction with other measures, better lighting may help to improve an area. Indirectly, this may conceivably assist in reducing crime - although such an outcome is not guaranteed. There is no scope for reducing crime on any broad basis simply by investing in better street lighting. The sophisticated evaluation of the major re-lighting scheme in the London Borough of Wandsworth confirms that particular point (Atkins, Husain and Storey, 1991). Even where localised lighting improvements have been followed by a reduction in crime, any such effect may taper off after the first few months, as appears to have happened in Hastings (see Appendix D).

* Better street lighting helps to reduce the public's *fear* of crime. The extent to which this is likely to happen remains uncertain. Measuring fear is not straightforward. Different methods result in different answers. It seems easier to notch up attitudinal changes than to enable significantly more people to 'reclaim the night' in terms of their behaviour. However, an increase in pedestrian traffic after dark has sometimes been demonstrated, at least on a localised basis. The Hammersmith and Fulham walkway project is an obvious example (Painter, 1989b). There are also indications, for instance in Cleveland, that, following re-lighting, women's attitudes are more likely to change - in a positive direction - than those of men, who are comparatively less prone to feelings of insecurity in the first place, or at least are less likely to admit them to an interviewer (Vamplew, 1990).

* The Home Office itself channels considerable amounts of public money into lighting, under the Safer Cities programme. Some £818,500 has been spent on lighting schemes, in 15 locations, in just two years. This represents approximately 12 per cent of all expenditure under the Safer Cities programme, through to March 1991. For the most part, fear reduction has been the main aim, as opposed to the prevention of crime. Given the findings presented here, this would seem a justifiable emphasis. Fear reduction is a vital issue that needs to be targeted as a distinct objective, alongside crime prevention: as is indeed specified in the objectives of the Safer Cities programme. Lastly, given the programmers commitment to economic enterprise and community life, there is little doubt that better lighting can sometimes play a worthwhile role in pursuit of these broader aims.

The conclusions in their wider context

The conclusions reached in this review would not come as much of a surprise to anyone familiar with the relevant research in the United States. An authoritative overview has been carried out for the US Department of Justice by James Tien and others (1979). It was based on analysis of over 100 projects. Special attention was paid to 15 evaluations of a relatively thorough nature. In terms of the impact on crime of those 15 projects, Tien and his colleagues noted that, for Part 1 offences (principally robbery, assault, burglary, auto theft and larceny), “more projects report increases, or no change, than decreases in crime”.

Tien and his co-authors were critical of the lack of methodological rigour of the studies which they assessed. In particular, they called for additional research to be based on ratios. That is precisely the approach used by the University of Southampton team in their Wandsworth study, which draws on comparisons between the proportion of daytime and night-time crime, before and after re-lighting, in each of 39 separate small areas (Atkins, Husain and Storey, 1991).

Tien and his colleagues also argued that there was a need for fresh thought to be given to the measurement of fear. They observed that the terms ‘fear’ “brings out different feelings in different persons”. Arguably the need both for further basic and evaluative research, as is asserted in the report of the independent working group set up by the Home Office and chaired by Michael Grade (Home Office, 1989), still holds true.

Towards the end of their report to the Department of Justice, Tien and his co-authors posed – and answered - the ultimate question about street lighting and public policy on crime. It is worth quoting them in full.

> A final question is: for the purpose of guiding immediate policy decisions, what can be assumed about street lighting and crime? The answer is that, although

it does not seem to impact the level of crime and may in fact displace crime, street lighting can be *assumed* to affect the fear of crime.

Similar assessments have also been made more recently by other American researchers (for instance, Lurigio and Rosenbaum, 1986). Here too, in another country, those conclusions still remain valid.

Appendix A: British standards, street lighting and crime prevention

The British Standards Institution produced a revised code of practice for road lighting, between 1987 and 1990. Part 3 of the 10 parts, *Code of Practice for Lighting for Subsidiary Roads and Associated Pedestrian Areas*, published in 1989, attaches particular importance to the issue of crime and pedestrian safety. The first point made is that, in areas with a "high crime risk", it is important to ensure that "any potentially dark areas, which may provide cover for a criminal, are lighted". A further concept is explained as follows: "To provide a sense of security it should be possible to recognise, in time to make an appropriate response, whether another person is likely to be friendly, indifferent or aggressive".

The same document prescribes different levels of lighting (measured in 'lux') in terms of – among other things – local crime rates. Roads with high pedestrian or vehicle use or with a "high" crime risk are classed as category 3/1 (average 10 lux, minimum 5); roads with moderate pedestrian or vehicle use or with an "average to low" crime risk are ranked as category 3/2 (average 6 lux, minimum 2.5); while roads with little pedestrian or vehicle use and a "very low" crime risk are classed as category 3/3 (average 3.5 lux, minimum 1). It is recommended that advice in determining the level of crime "should be obtained from the local crime prevention officer".

What is left unsaid is perhaps of some importance. With the main - rather ambitious - emphasis on preventing crime little or no consideration is paid to the fact that certain sorts of people may be fearful, irrespective of the actual level of crime to which they are exposed. Such instances might include single women going to or from a hostel, or people visiting a mosque.

While consultation with a crime prevention officer may indeed by sensible, in determining the level of crime, nothing is said in the code of practice about the need to discriminate between offences committed in daylight and those carried out after dark, nor about the nature of any offences. However, this omission may reflect the fact that not all police forces would be able to provide detailed information of this kind.

Facilitating recognition as to whether other passers-by are "friendly, indifferent or aggressive" may be helpful to pedestrians, but the importance attached to this in the code of practice does beg the question whether assailants can be relied on to make their purpose known in advance. A sense of personal security is likely to depend on a whole host of factors - though of course good lighting may indeed help, especially in any 'blackspots'.

Appendix B: Measurement aspects of Edmonton project

This appendix discusses apparent inconsistencies in the measurement of change in the level of crimes and incivilities in the Edmonton project (Painter, 1988). As was pointed out in the introductory section, the Edmonton report aroused considerable media interest. Painter certainly managed to reach a large audience with a resounding message about lighting and crime prevention. This explains the need for careful scrutiny of the Edmonton research.

There are indeed some difficulties, First, the initial six-week period had no obvious reference point to anchor its beginning in the interviewees' minds; whereas the start of the second six-week phase was marked both by the installation of the lighting and by the advent of Christmas, some ten days later. The likelihood that the first set of victimisation data was accidentally inflated is confirmed by a supplementary set of responses. The 'before' interviewees were also asked about their experiences during the previous twelve months. Taking the twelve-monthly victimisation rate, and calculating a six-weekly rate from it, one is left with an appreciably smaller figure, 10, rather than that of 21 presented by Painter. Table 4 illustrates this.

Table 4. Victimisation in or near a tunnel on a pedestrian route in Edmonton, before and after lighting changes: different formulas

	Numbers of victims in specified periods			
	12 month period BEFORE changes, as shown by Painter (n = 207)	6 weeks (BEFORE), calculated from 12 monthly data (col. to left) (n = 207)	6 week period BEFORE changes, as shown by Painter (n = 207)	6 week period AFTER changes, as shown by Painter (n = 153)
Vehicle crimes	23	3	12	2
Attack/robbery	19	2	5	1
Threat/insult	42	5	4	0
Total	84	10	21	3

NOTES (statistical health warning). This table involves the presentation of data that are loosely rather than strictly comparable. The data in the two left-hand columns relate to a slightly larger area than those in the two right-hand columns. The data in the second column from the left have been compiled without regard to the extent of multiple victimisation. It is also worth noting that the data shown in this table include both daytime and night-time crime.

The ‘revised’ reduction - from 10 to 3, rather than 21 to 3 - still represents a useful achievement. However, the ‘after’ figure of 3 needs to be revised upwards (to 4), to take account of a drop in the sample size, from 207 to 153. Also, there were more women in the ‘before’ survey – 80 as opposed to 54 the second time round - and so the adjusted figure of 4 would need, arguably, to be still further increased, given that the five attacks in the ‘before’ period were all against women. (It is perhaps worth mentioning that the drop in the number of women interviewed following re-lighting is scarcely suggestive of any behavioural indication of a reduction in fear levels.)

Ultimately, it is important to be cautious rather than dogmatic about the interpretation of results from this small project. It is always possible that the twelve-month period could have been recalled in a severely spurious way by the interviewees. However, under-counting would be at least as strong a possibility as over-claiming, given that one is dealing with a longer span of time. A year is a more satisfactory period of reference – customarily used in victim surveys – and would have corresponded approximately to a calendar year in the case of the Edmonton study (thereby helping to anchor its beginning in the minds of respondents). At the very least, reliance on the twelve-monthly as opposed to the six-weekly ‘before’ data represents a plausible alternative, albeit one which can never by fully proven.

Appendix C: Urban Programme lighting initiatives (Cleveland, Bolton)

Cleveland

In Cleveland, four areas benefitted from improved lighting. Funding came from various local authorities and other sources, in addition to the Urban Programme. The four areas were: North Ormesby, in Middlesbrough; Abingdon Road, also in Middlesbrough; New Blue Hall, in Stockton-on-Tees; and part of central Redcar. All locations were characterised by dense older housing, largely terraced or council-owned. None could be described as affluent. Further details can be found in Vamplew (1990), which is mainly concerned with the - clearer and more positive – impact of the changes in street lighting on people's fear of crime.

The improved lighting was not quite fully in operation throughout all four areas from the very beginning of the 'after' period. This suggests a certain need for caution in interpreting Table 5 (and possible scope for further research). On the other hand, the 'after' period did cover the phase immediately following re-lighting, when any effect on crime should have been particularly apparent. It is also worth noting that other crime prevention activity was taking place, although "lighting improvements were easily the most major change" (Vamplew, 1990).

Table 5. Crime statistics, within Cleveland, before and after re-lighting: number and percentage of offences by day and by night in re-lit and control areas

AREAS WITH BETTER LIGHTING

I. NEW BLUE HALL, STOCKTON-ON-TEES

	Before			After		
	Day	Night	Total	Day	Night	Total
No.	19	71	90	31	97	128
%	21	79	100	24	76	100

II. REDCAR (IN CENTRE)

	Before			After		
	Day	Night	Total	Day	Night	Total
No.	144	278	422	147	261	408
%	34	66	100	36	64	100

III. NORTH ORMESBY, MIDDLESB0ROUGH

	Before			After		
	Day	Night	Total	Day	Night	Total
No.	11	46	57	43	125	168
%	19	81	100	26	74	100

IV. ABINGDON ROAD, MIDDLESBOROUGH

	Before			After		
	Day	Night	Total	Day	Night	Total
No.	167	275	442	181	375	556
%	38	62	100	33	67	100

CONTROL AREAS

	Before			After		
	Day	Night	Total	Day	Night	Total
No.	301	845	1,146	267	861	1,128
%	26	74	100	24	76	100

NOTES: The 'before' period was from November 1988 to March 1989, and the 'after' one from November 1989 to March 1990. The control areas comprised the remainder of North Ormesby, together with Skippers Lane, Brambles Farm, Pallister Park, Berwick Hills, Longland/Highfield and Saltwells/Cargo Fleet. This table is based on data provided by Cleveland Constabulary to the Home Office.

The changes in the proportion of crime by day and night, shown in Table 5, are all small ones. In the first three areas with better lighting, the proportion of crime that happened by night did indeed drop slightly; in the fourth area, it increased, but only to a limited extent. There was a minor increase in the proportion of crime that was nocturnal, in the control area. It is worth adding that the absolute number of offences occurring by night increased in three of the four areas, Redcar being the exception. However, absolute figures are less telling than proportions, or ratios. Ultimately, while Table 5 falls short of providing clear-cut evidence, it is not consistent with lighting being a significant variable.

Bolton

In the Breightmet area of Bolton, 23 roads - situated in a compact area of mixed council and private housing – had their street lighting upgraded. This was done with financial assistance under the Urban Programme. Installation was carried out progressively between February 1989 and December 1990. One of the aims was crime prevention, including prevention of autocrime. Conveniently, thefts of vehicles are logged in some detail by the local police (part of Greater Manchester Police), including precise location of original offence and apparent time-span.

Although it is too early to draw final conclusions, vehicle theft data covering the period from the beginning of 1988 to late March 1991 do not show any overall reduction in the number of cars stolen (in 1990 or early 1991); nor, more importantly, do they point to any fall in the proportion stolen after dark. It would be necessary to wait until January 1992 to do a full one year 'before' and 'after' study. So the findings presented in Table 6 still need to be confirmed by further work. It is however striking that almost as many vehicles were stolen in the first quarter of 1991 (when re-lighting was complete) as in the whole of 1988 or 1989 (before re-lighting, or while re-lighting was still in its early stages).

Finally, it is worth noting that in the relevant sub-division as a whole vehicle thefts did not increase so steeply as in the much smaller re-lit area. The sub-divisional figures were: 1,272 for 1988; 1,204 for 1989; 1,369 for 1990; and 451 for the first three months of 1991 (to 31 March).

Table 6. Thefts of vehicles from streets where lighting was upgraded, 23 roads within Breightmet area, Bolton

	1988		1989		1990		1991, Jan to March	
	No.	%	No.	%	No.	%	No.	%
Morning: 8 am - noon								
Daytime: 9am - 5 pm					1	2	1	5
Afternoon: 12 noon - 8pm	2	8	2	9	4	10	1	5
Evening: 6pm-lam	9	35	4	17	6	14	1	5
Night: 10pm - 8am	12	46	8	35	21	50	12	57
Unknown: no estimate	3	12	9	39	10	24	6	29
TOTAL	26	100	23	100	42	100	21	100

NOTES: The area comprised postcodes beginning BL25: small parts of one of the 23 roads which were in BL26 were excluded. Figures for the first quarter of 1991 cover the period to 28 March, and not the last three days. Bottom-line percentages do not all sum to 100, owing to rounding. No vehicle thefts took place in the 'morning', and only two in the 'daytime'.

Appendix D: Street Lighting and Crime, Hastings

The police officer responsible for crime prevention in Hastings identified two areas near the town centre with apparently similar vehicle crime problems. Agreement was reached with the local authority and a lighting company to re-light one area to a high standard (Cornwallis Gardens, Holmesdale Gardens), while monitoring another as a control (Falaise Road, White Rock Gardens).

The re-lit area

Cornwallis Gardens is a terraced residential street, close to the town centre (and used by some motorists seeking to avoid central Hastings). It constitutes a triangle around a small park. There is free on-street parking along two parts of the triangle. The third has permit-only parking on one side and double yellow lines on the other. All three parts of Cornwallis Gardens are overlooked by houses.

Holmesdale Gardens is also a largely residential street, with parking on both sides. It gives access to a hospital, which uses some of the houses as specialist treatment centres. There is also a nurses' home at one end of the street. Holmesdale Gardens forms a semi-circle, with both entrance and exit from Cornwallis Gardens.

The area was visited at 11 am on a Friday in January 1991, when 188 cars were parked, leaving hardly any free spaces in the two streets. There was some movement of vehicles, but very little through traffic. The area was re-visited at 6 pm, when there were still many parked cars. It was too early in the evening to assess the extent of overnight parking by residents.

The control area

The control area consists of Falaise Road and the roads surrounding the White Rock Gardens. Falaise Road is a wide, busy, through road connecting the A21 to the sea front, with parking permitted on both sides. It provides access to a leisure centre with parking space for about 60 cars. There are gardens and parking spaces along one side of Falaise Road. White Rock Gardens, White Rock Road and St Margarets Road form the White Rock parking area. White Rock Gardens is a limited-access road, with parking permitted along one side. White Rock Road and St Margarets Road are through roads, the latter linking with Falaise Road. Continuous traffic flows along both St Margarets and Falaise Roads.

When visited on the same Friday morning as the other area, 204 cars were parked in the control area, with few free spaces. After dark, the control area was inspected once again. It was very poorly lit, with little street parking, particularly in Falaise Road. The leisure centre car park was a third full. As there are no nearby residences, parking seems to occur when people are visiting the leisure centre or the public hall in White Rock Gardens. These roads are not overlooked and there is no additional lighting from housing.

Initial data analysis

For the first three months of 1989, the vehicle crime figures indicated a higher level of crime in the area chosen for re-lighting than in the control area (31 reported offences versus 21 in the control area). It was from this manually collated data that the decision was made to upgrade the street lighting in Cornwallis and Holmesdale Gardens, using Falaise Road and White Rock Gardens as a control. The street lighting improvements were carried out in December 1989. Subsequent data analysis by Hastings Police, for limited but seasonally matching before/after periods (January-March 1989 and January-March 1990), indicated a marked drop in vehicle crime in there-lit area. This might at least in part have been due to the improved lighting exerting a positive effect primarily in the short term, a possible outcome mentioned in general terms in Section 4 of this review. It was also the winter period, with long dark nights. The local authority carried out a small social survey in the re-lit area in May 1990, which showed that the new lighting was popular with residents.

During 1989, after the three months initially examined by the police (January-March), there was a drop in vehicle crime in the area where - at the end of that year – the new lighting was implemented. For the year as a whole, there were 59 thefts of and from vehicles in the re-lit area, as compared to 82 in the control area. To establish a clearer and more comprehensive picture covering a longer period of time, Hastings Police provided the Home Office with further data for both 1989 and 1990, and dealing with a variety of street offences, rather than just vehicle crime.

Analysis of crime data

Installation of lighting was completed by the end of December 1989. Use of data for two different periods within a timespan stretching from spring 1989 to autumn 1990 allows for a comparative seven month, before/after analysis. The crime data include vehicle crime, criminal damage, assault and street robbery. Table 7 indicates that between these periods street crime increased by 31 per cent in the control area (from 85 to 111) and by 40 per cent in the re-lit area (from 15 to 21).

When a street crime is reported to the police, the time of occurrence is often unknown. For example, when a car theft is reported, the times logged will be when the car was last seen by its rightful owner/driver and the time of reporting the loss to the police. No single, specific time could be assigned to 22 per cent of the offences in the control area or to 47 per cent in the re-lit area. The control area includes a busy thoroughfare with much traffic and many pedestrians. The re-lit area was quieter and more residential, with vehicles perhaps unattended for longer periods. This may help to explain the variation in the extent to which offence times were known. While taking this into account, Table 8 shows the time pattern of street crimes, before and after the change in lighting, in both the re-lit and control areas. The data span the same period as the previous table.

Table 7. Street crime figures, before and after change in lighting, for re-lit and control areas, Hastings

MONTH	CONTROL AREA		RE-LIT AREA	
	Before	After	Before	After
April	4	10	5	3
May	14	8	1	6
June	10	10	0	3
July	16	16	1	3
August	14	13	4	2
September	19	24	2	2
October	8	30	2	2
Total	85	111	15	21

Table 8. Street crime figures, by time of occurrence, before and after change in lighting, for re-lit and control areas, Hastings.

BEFORE				AFTER			
A. CONTROL AREA							
Period	Day	Night	Un-known	Period	Day	Night	Un-known
Apr 89	1	3	0	Apr 90	4	0	6
May 89	7	5	2	Apr 90	7	0	1
Jun 89	5	2	3	Jun 90	8	1	1
Jul 89	2	7	7	Jul 90	9	4	3
Aug 89	2	8	4	Aug 90	3	4	6
Sep 89	7	9	3	Sep 90	11	11	2
Oct 89	2	4	2	Oct 90	7	20	3
Total	26	38	21		49	40	22

BEFORE				AFTER			
B. RE-LIT AREA							
Period	Day	Night	Un-known	Period	Day	Night	Un-known
Apr 89	1	2	2	Apr 90	0	1	2
May 89	0	0	1	May 90	1	3	2
Jun 89	0	0	0	Jun 90	0	2	1
Jul 89	0	0	1	Jul 90	0	2	1
Aug 89	0	0	4	Aug 90	1	0	1
Sep 89	1	0	1	Sep 90	0	2	0
Oct 89	1	1	0	Oct 90	0	1	1
Total	3	3	9		2	11	8

NOTES: 'Night' means during hours of darkness, when street lights would be lit. By way of caution, it is worth noting that while these pairs of seven monthly periods were chosen to minimise seasonal variation, they comprised non-winter months, when street lighting could conceivably have had less impact.

While the limited number of incidents implies a need for caution, Table 8 does not show any positive effect from the improved lighting. There were proportionately similar increases in both areas, but it was only in the re-lit area that crime increased noticeably by night.

Analysis of vehicle crime

The street crime analysis included various types of offence. Altogether, over 70 per cent of these offences involved vehicles - the focus of the initial study by Hastings Police. That analysis has been extended here, as shown by Table 9, to consider any impact of lighting on vehicle crime over a longer period, in line with the previous two tables.

Discussion

While many people think of street crime as commonplace, close examination of offences recorded for these two small areas points to a comparatively low incidence, ranging from 0 to 6 offences per month in the re-lit area to between 4 and 30 per month in the control area. In these locations, theft from motor vehicles accounts for 53 per cent of recorded street crimes, while theft of motor vehicles – including taking and driving away – amounts to a further 18 per cent. Only a minority of street offences involved personal contact between offender and victim.

Table 9. Vehicle crime figures, by time of occurrence, before and after change in lighting, for re-lit and control areas, Hastings

BEFORE				AFTER			
A. CONTROL AREA							
Period	Day	Night	Un-known	Period	Day	Night	Un-known
Apr 89	1	3	0	Apr 90	5	1	9
May 89	7	4	2	May 90	6	0	1
Jun 89	4	1	1	Jun 90	7	0	0
Jul 89	2	0	7	Jul 90	8	1	1
Aug 89	2	6	2	Aug 90	3	0	6
Sep 89	7	7	3	Sep 90	8	9	2
Oct 89	2	1	1	Oct 90	6	12	1
Total	25	22	16		43	23	20

BEFORE				AFTER			
B. RE-LIT AREA							
Period	Day	Night	Un-known	Period	Day	Night	Un-known
Apr 89	1	0	2	Apr 90	1	2	2
May 89	0	0	1	May 90	1	3	2
Jun 89	0	0	0	Jun 90	0	0	1
Jul 89	0	0	1	Jul 90	1	1	1
Aug 89	0	0	2	Aug 90	1	0	1
Sep 89	1	0	0	Sep 90	0	2	0
Oct 89	1	1	0	Oct 90	0	0	0
Total	3	1	6		4	8	7

NOTE: Vehicle crime includes theft of and from cars and 'taking and driving away'. It does not include criminal damage to vehicles.

Table 9 gives similar results to the street crime analysis (Table 8). There was a higher incidence of vehicle crime in the control area than in the re-lit area, in both periods (possibly reflecting seasonal usage). An important change was that while vehicle crime increased by 37 per cent in the control area (from 63 to 86), it went up by 90 per cent in the re-lit area (from 10 to 19). Secondly, even more pertinently, vehicle crime remained roughly constant by night in the control area, while increasing by 88 per cent in the re-lit area (from 1 to 8). Of course, only very small numbers are involved.

The latest British Crime Survey indicates that 60 per cent of thefts from motor vehicles are not reported to the police, whilst only 5 per cent of thefts of vehicles go unreported (Mayhew, Elliott and Dowds, 1989). During the entire period analysed (April 1989 - October 1990) it is possible that - if one were to extrapolate notionally from the daily figure for parked cars - over 220,000 cars were parked in the areas concerned. Of these, 161 cars (403 if taking into account under-reporting) were broken into and 60 (63 with under-reporting) were stolen. Compared to the large number that were 'available', the actual number of vehicles involved in crime was relatively small, as revealed in this extended study of an interesting initiative on the part of Hastings Police. However, precisely because numbers were limited, there remains a need for caution in interpreting the findings presented in this appendix.

Appendix E: Lighting Schemes within the Safer Cities Programme

For each Safer City project, this appendix briefly describes the lighting schemes for which funding was approved, up to March 1991. All schemes involving £l0,000 and over have been itemised separately (to the nearest thousand pounds). The remainder are listed more briefly. It is not uncommon for lighting to form part of a package of security measures; in such instances, costs for the lighting component have occasionally had to be estimated. In a few cases, for various local reasons, the lighting may not have been installed, resulting in the return of the grant. Alternatively, there may sometimes have been unforeseen cost over-runs. Finally, it is worth noting that some schemes relate to more than one location or building; and that, in certain cases, the Safer City grant was simply a contribution to a development initiated by some other local agency.

Birmingham (total £2,018)

The 3 approved lighting schemes related to a church car park, a hospital and, in a single scheme both a young people's centre and a women's hostel.

Bradford (total £136,840)

The 19 approved lighting schemes in Bradford included 4 high-cost ones: lighting for car parks and associated pedestrian routes (£35K); 2 schemes for the benefit of a community college (£18 and 25K); and a scheme for lighting roads on a housing estate (£24K). The other 15 schemes involved housing for elderly people (3 schemes); other housing areas (3 schemes); street lighting in an ethnic minority area where local people were reluctant to venture out at night (1 scheme); and 8 other - comparatively modest - schemes for providing lighting at or near various community amenities, including a church and a mosque.

Bristol (total £30,110)

Of the 5 lighting schemes in Bristol, 1 was for street lighting (£25K). The others, all much smaller, were for 2 schools, a women's centre and a community centre.

Coventry (total £28,078)

The 4 lighting schemes in Coventry included 2 high-cost ones, for safe pedestrian routes in the city centre (£13K) and for a housing estate (£10K). The remaining 2 schemes involved blocks of flats and schools.

Hartlepool (total £41,511)

Of the 5 lighting schemes in Hartlepool, two were high-cost ones: security lighting for a housing estate, mainly to protect individual homes considered vulnerable (£20K); and for various leisure/community centres (£10K). The other 3 schemes featured a hospital, housing for the elderly, and a dockside area.

Hull (total £40,882)

Of the 11 schemes involving lighting in Hull, one was comparatively costly (£13K); this was linked to the installation of CCTV in a city-centre car park. Lighting improvements in the city-centre bus station fell just short of the £10K threshold. Of the other 9 schemes, schools featured in 2 cases, together with a hospital, a lane, a facility for young people and various types of housing (4 schemes).

Islington (total £33,500)

Both of the 2 lighting schemes in Islington were relatively costly (£12K and £22K); each involved street lighting for a particular road, with a view to reducing fear of crime as well as crime.

Lewisham (total £63,457)

Of the 9 lighting schemes in Lewisham, 2 were in the high-cost bracket. These involved a pedestrian route across a park (£10K), together with various lighting improvements (totalling £32K) on a large housing estate. The remaining 7 schemes related to housing estates (2 schemes), adult education centres (2 schemes), some garages, a pedestrian route and a nursery school (together with a nearby social services building).

Nottingham (total £60,544)

Of the 11 lighting schemes in Nottingham, 2 were relatively costly: a street lighting scheme involving three roads £22K), and lighting improvements to a housing estate (£25K). The other 9 schemes involved housing (2 schemes), churches (2 schemes), an underpass, an ethnic minority community centre and 3 other charitable/community organisations.

Rochdale (total £57,436)

There were no less than 42 lighting schemes in Rochdale, most of them modest ones. Exceptionally, a scheme for the benefit of a new tertiary college cost £25K. All but one of the other 41 schemes were below £5K - indeed, many were less than £1K. Of these smaller schemes, 20 were housing-related, for the benefit of elderly people in a number of cases. Schools featured in a further 6 schemes. The remaining 15 schemes covered a wide variety of locations – mainly associated with charitable organisations.

Sunderland (total £145,569)

Of the 9 lighting schemes in Sunderland, 3 were in the high-cost bracket. Exterior lighting for the houses of elderly people, linked to a separate scheme for target hardening, accounted for approximately £70K. Another-more general-housing-related scheme was for £11K. The lighting component of a scheme for improving security at 2 multi-storey car parks cost £50K. The other 6 schemes were for a school, a dockside area, car parks at a polytechnic a hostel for long-term, mentally-ill people and 2 community centres.

Tower Hamlets (total £36,375)

Of the 6 lighting schemes in Tower Hamlets, 1 was in the high-cost category (£25K): this was for improved street lighting in 3 roads. All but 1 of the other 5 schemes involved exterior lighting for housing. The remaining scheme was for security lighting of a luncheon club and courtyard car park.

Wandsworth (total £10,303)

All 5 lighting schemes in Wandsworth were low-cost ones. Additionally, all involved exterior lighting of community clubs/centres (ethnic minority ones, in 2 cases), or their pedestrian access. There are also a number of schemes in Wandsworth where lighting with infra-red triggering has been installed alongside alarm systems; however, these schemes have not been counted within this listing.

Wirral (total £52,646)

Of the 20 schemes involving lighting in the Wirral, 1 was in the high-cost category (£20K). This was to improve lighting on a housing estate. Of the other 19 schemes, 13 were housing-related (in some cases, specifically for elderly people). Various community centres, a scout hut and the rear of some shops accounted for the other 6 schemes.

Wolverhampton (total £79,288)

Of the 14 schemes in Wolverhampton involving lighting, 2 were high-cost ones: exterior lighting of buildings and car park at a community college (£14K), and a scheme for safer routes in and around a housing estate (£25K). Of the other 12 schemes, 4 involved security lighting for the outside of groups of houses: another 2 schemes were for walkways and pedestrian routes on housing estates. A further 2 schemes were for community centres in particular residential areas. The remaining 4 schemes involved a college car park; a shopping centre; a scout hut; and lighting improvements for 2 roads afflicted by kerb crawling.

Nottingham

A more detailed description of lighting schemes in Nottingham is given to illustrate the type and range of schemes which might be introduced within a Safer City project. Nottingham was chosen as it represents the average number of lighting schemes per city – 11 - and the average expenditure, approximately £60,000.

NOT 1 - Lighting schemes

This scheme funded the provision of new lighting to 3 streets: Forest Road, Byfield

Close and Wycliffe Street. In Forest Road, 10 lighting columns were installed, to deter kerb crawling. By field Close, a residential area for the elderly, gained one lighting column. Wycliffe Street gives access to a number of factories where female workers had expressed fears for their safety when traveling home after dark.

NOT 12 - Carroll Gardens security works

A grant of £642 was made to the British Legion Housing Association, for lighting of their car park.

NOT 24 - Nottinghamshire Peoples Housing Association security improvements

Part of the grant (£1,000) paid for photo-sensitive lights to be fitted to the rear of 10 dwellings.

NOT 33 - Bulwell Baptist church, security alarm and lighting scheme

A grant of 495 funded the installation of lighting and an alarm system to protect the church.

NOT 37 - Cheverton Court security lighting

This £24,900 lighting scheme introduced a high-intensity lighting system on the walkways through the estate, including branch lighting to porches.

NOT 59 - St Saviour's church, The Meadows

A number of security measures were installed at this church. External lighting in the car park formed part of the scheme, at a cost of £227.

NOT 68 - Crypt Foundation (Stephanie Lodge)

This small security system included the installation of lights with automatic sensors. The scheme cost £321.

NOT 82 – St Anns Gardens

The fitting of brighter lights formed part of the scheme of improvements to St Anns Gardens: a residential area incorporating sheltered accommodation for the elderly. The lighting component of this scheme was £4,000.

NOT 89 - Nottingham Open Door (security improvements)

A £500 grant has funded improvements to security, including the installation of lighting.

NOT 98 - St Anns shop security and Indian community centre

A grant of £6,860 was approved to fund the installation of lighting, CCTV and an access control system at the Indian community centre. The cost of the lighting alone was not itemised but has been estimated at 30 per cent, amounting to £2,058.

NOT 101 - Collin Street underpass, stage 2

This scheme included part-funding for ceiling lighting inside the subway and floodlighting for the entrance, at a cost of £4,000.

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