Street Lighting and Crime: The Hull Project

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Final Report

of the

HULL STREET LIGHTING AND CRIME PROJECT

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School of Geography and Earth Resources **The University of Hull**

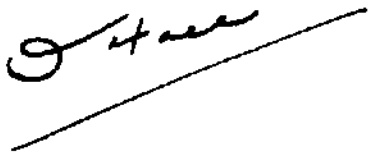
Project sponsored by Urbis Lighting Ltd

Preface by the Chief Constable, Humberside Police

For more than 200 years - since their beginnings as Night Watchmen in the Cities and Boroughs - Police Officers have had a part to play in providing reassurance and comfort, particularly during the hours of darkness.

Since those early days, much has changed both for the Police and the community it serves. What has remained, however, is the importance of good street lighting and this report illustrates what can be achieved by applying modern day technology and knowledge to an age old problem.

The project has been an excellent example of the mutual cooperation of many agencies'and I am pleased to have been associated with it. There are many lessons to be learned from the study but I am convinced it represents a substantial step forward in our attempts to reduce the fear of crime.



D Hall CBE QPM CBIM
Chief Constable

Acknowledgements

This project would simply not have been possible without the hard work, advice and goodwill of a great many people, not least the long-suffering residents of the Dukeries.

In Hull, the Working Group consisted of David Coatham (Lighting Engineer, Humberside County Council) and his successors Geoff Popple and Colin Payne, Phil Jordan (Lighting Engineer, Hull City Council), Supt Mike Wray and Sgt David Hewson (Humberside Police) and latterly Ch Insp David Warren. Without their graft, the project could have foundered at any stage. We have also had support and advice from members of both councils and from the Hull Safer Cities Project. We are also indebted to Mrs Findley, Headteacher of Thoresby Primary School for welcoming us to talk to her pupils.

In the British Parliamentary Lighting Group Ken Woolmer has been a rock. Kate Painter generously made available her questionnaire and invaluable experience. The pool of experience we share with our colleagues in the other five projects has been a constant source of stimulus, both of parallels and contrasts.

In the University, Chris Walker was the Consultant on the interview surveys ably assisted by Aileen Mclntosh as Field Supervisor and interviewers Angela Shakesby, Kath Williams, Jenny Carr, Eileen Battye, John Kennedy, Ronnie Malcolmson, Tina Morris, Maria Blake, Susan Dawson, Robert Schofield, Andrew North, Paul Brush, Margaret East, Sally Pawson, Gill Blacksell, D. Rymark, L.Lamb, B.Rea, and J.McKay. Joyce Bell typed the manuscript in her usual immaculate fashion.

Last but no means least, we are indebted to our sponsors, Urbis Lighting Ltd, and their managing director, Patrick Baldrey, who, apart from providing the financial wherewithal, has taken a personal interest in the progress of the project while encouraging our professional and academic objectivity at every stage. We are indeed grateful.

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CHAPTER ONE

SUMMARY

Background

- the Hull Street Lighting and Crime Project is one of six being coordinated under the aegis of the British Parliamentary Lighting Group, supported by the Institution of Lighting Engineers and the Lighting Industry.
- the Project Area comprises five streets of late nineteenth-century terraced housing in West Hull known locally as the "Dukeries"

The research agenda

- to investigate the impact of improved street lighting on:
  - crime
  - fear of crime
  - quality of life generally in the community
- toevaluate the costs and benefits for individuals and the community in relation to the social and environmental conditions particular to the project area. It is recognised that no one project can deal with all the issues.

The information base

- a household survey consists of interviews before and after re-lighting:
  - 375 households were selected at random from the 927 in the area
  - 251 responded to the first phase *{61%)*
  - 215 of these completed the second phase
  - 180 had the same respondent in both phases
- a survey of children in the local primary school using questionnaires and group discussions
- a crime survey collated information about all 279 crimesreported to the police between January 1989 and March 1991
- pedestrian counts enumerating pedestrian movements in the project area in both pre- and post-lighting improvement phases.

Findings

Fears and worries about crime

- worry about crime is widespread in the Dukeries though not high in comparative terms
- women and the elderly worry most
- worries focus on burglary and autocrime, rather than personal risks.
- worries were reduced but not substantially so after re-lighting
- children's fears focus on older children, adult men and drunks

Precautions against crime while out after dark

precautions were very common despite comparatively low fear levels
one in four respondents avoided going out although they would like to
- one in two avoided certain people or certain streets
women were generally more than twice as likely as men to take precautions
all forms of precaution showed dramatic reductions after re-lighting
- three out of four who previously avoided going out no longer did so.

Crime and trouble

- crime rates in the Dukeries are about average
burglary was rising steeply before the re-lighting and less so after
there is some evidence of a shift of burglary away from the well-lit front of premises
- fewer autocrimes occur in the evening hours.

Out on the street

more respondents felt confident about going out after dark, especially women and the elderly
after re-lighting more people were out on the streets after 9 pm, the largest increases being of women and the elderly
- drunks were perceived as a problem more commonly after re-lighting but this appears to be a function of their greater visibility and the fact that more people were out.

Impact of re-lighting

- hardly any one failed to appreciate the new lighting
people were more positive about the general benefits than about the benefits for individuals of their own age and gender
- the advantages of white light in recognising people and the colour of cars were emphasised
children particularly focussed on the ' see-and-be-seen * aspect of street lighting, both in respect of cars and threatening adults.

Implications for community safely and crime prevention

- the Dukeries is not a high crime area yet the increase in confidence and street use is greater than in some other studies. Improved street lighting can therefore have positive benefits even where crime and fear of crime are not extreme
- women and the elderly gain most from improved lighting
- improved street lighting can trigger an upward spiral in neighbourhood attitudes which support and reinforce the benefits for individuals
- street lighting may work us a single crime prevention measure in an area like the Dukeries, but multi-level, multi-agency approaches in which improved lighting is but one element may be needed in areas with greater problems
- the capital cost of the Dukeries re-lighting scheme could be met by the savings ensuing from just 9 detected burglaries
- the revenue costs per household amount to 88p per annum.

CHAPTER TWO

THE ISSUE:
STREET LIGHTING, CRIME AND COMMUNITY SAFETY

Street lighting has an ancient and honoured relation with public safety. The origins of the civilian police forces which emerged in the nineteenth century are firmly rooted in the Night Watch tradition of British towns. Policemen have always been seen as the guardians of public safety as well as the agents of law and order. This role is nowhere more keenly appreciated than on the streets during the hours of darkness. Good street lighting is the first lieutenant of the policeman in this role and no-one doubts its benefits. The question which this study seeks to illuminate (if such an expression is permitted here) is how much lighting and with what benefits. But before readers assume that this small study can provide all the answers, let us disenchant them. This study can only deal with the issues in its particular context, five streets of late nineteenth-century terraced housing. However it is part of a wider scheme sponsored by the British Parliamentary Lighting Group and involvingrather different settings in five other cities (Buinbridge and Painter, 1991; Ban and Pease, 1991; Burden and Murphy, 1991; Ditton,,1991; Herbert & Moore, 1991). Together the six studies may sum to rather more than their individual parts.

A Crime, fear of crime and the quality of life.

As an issue touching the consciousness of the ordinary citizen, law and order ranks second to the economy in public salience. Crime is an issue which invades everybody's life, and on which everyone has an opinion. Most people are touched on a daily basis by crime through the self-protection we employ to minimise the risks of becoming a victim. For most of us these precautions are small in scale and a matter of habit. We lock our doors, we don't leave valuables unattended in public places, we avoid confrontation and trouble. For some whose job or social activities places them at greater risk, the precautions may be more onerous. For others who are more fearful of the consequences, such as women and the elderly, crime avoidance may result in severe restrictions to daily activity. Yet few people actually become the victim of crime. The risks of burglary are about once every twenty years. The risk of a violent crime is still much less than once in a life-time. The gap between perceptions and fears of crime and actual risks remains wide despite rising crime rates. Moreover fears and risks are often inversely correlated with the most fearful, women and the elderly, least at risk (Maxfield 1987). Maxfield argues that fear of crime is better understood if general worries about victimisation are separated from anxieties about personal safety. The former is embedded in estimations of risk which primarily originate in perceptions and, to a lesser extent, experience of crime in a neighbourhood context. Both general worries and anxiety about personal safety are mediated by the individual's vulnerability, but it is from the latter that precautions emanate. But as Maxfield goes on to point out, fear of crime is less valuable when seen as a general construct embracing a wide range of fear-inducing situations. It is much better to examine specific crimes and their context. In this study the issue of fear will largely concentrate on feelings of safety on neighbourhood streets after dark, though at times other sources of fear, particularly in the home, will be examined.

Feelings of safety on neighbourhood streets is not simply the product of objective assessments of risks arising from knowledge gained from direct experience of victimisation, or indirectly from accounts of others' misfortune, or even more distantly from media pronouncements and opinion. Rather it is the product of a complex interaction between the individual and the community. Thus an individual may pick up visual cues about risk, such as rubbish or graffiti, which may then be mediated by verbal communication with neighbours or reinforced by the rowdiness of drunks returning home late at night. There is little doubt that we need to examine both individual and community implications in our analysis, and that these relationships may involve other issues than crime itself or the fear of crime. These issues are tentatively summed up by the notion of the quality of neighbourhood life which covers social interaction, neighbourliness, shared values, local facilities, social cohesion and perceptions of neighbourhood change as well as other hazards such as traffic and disorderly behaviour.

B Individuals and the community

Individuals and the community interact at a number of different levels (Davidson, 1981). Communities provide a normative structure for individual behaviour, sanctioning or prescribing individual responses to crime. Individuals will feel safer going out at night if their neighbours do. If more people go out, they will each feel safer. Communities short on interaction or low on shared beliefs will be less likely to inhibit the growth of fear. Support is another important function which serves to mediate individual actions. Communities with high degrees of social solidarity will provide support for actions which may be counter individual feelings, for example, going out while feeling fearful is easier if neighbours are known to be alert and watchful. A third function of neighbourhood is to frame change. Individual desires and aspirations are reflected in the community. Rapid population turnover or influx of newcomers different in age or lifestyle weakens the response of the community to external threats such as crime. Strong social networks or community groups will alleviate the problem of change. A final function of the community is to legitimate individual actions. This may be at a direct level in validating police involvement or more indirectly in mediating a variety of responses to fear among different groups of individuals.

In this study, focus will be placed particularly on women and the elderly who are generally regarded as having high levels of fear and anxiety, particularly in the street after dark. We will also focus on children, who are street-users just as adults are, but whose position in criminology has been sadly neglected. The treatment of community will inevitably be more constrained, since the study is small in scale and not able to comment on relations other than those pertaining locally.

C Dark streets - light streets

How may good street lighting impact on crime, the fear of crime and the quality of life? The balance sheet may look like this:

Dark streets:

provide safety and succour for those who wish to conceal their nefarious activities

increase fear and anxiety among law-abiding citizens

- increase risks of accident to pedestrians, especially the old or infirm
- magnify fears emanating from a different source, for example noise
- keep people off the streets, leaving the hours of darkness **free to those of ill-intent**

reduce the opportunities for community-strengthening activities, especially in winter.

***Well-lit** streets:*

- deter crime by increasing the visibility of offenders
- deter crime by increasing the likelihood of events being witnessed, both by pedestrians and residents
- deter crime by encouraging more people out after dark
- reduce the fear of crime by making easier the identification of individuals or events, particularly those initially perceived as threatening
- reduce the fear of crime by encouraging more people to use the streets
- improve social life by encouraging people to go out more often
- augment feelings of social solidarity through more social interaction

enhance the environment aesthetically and thereby encourage neighbourly activities and pride in the community

The impact of street lighting has a strong dynamic element. Improve the lighting and a spiral of reinforcing effects may be entrained, bringing more people out on the streets, reducing fear, and encouraging even more people to go out. In a situation of community deterioration, a lighting improvement scheme may act as the trigger for a reversal of the trend. The longer term benefits in rising property values and increased confidence and self-respect should not be discounted.

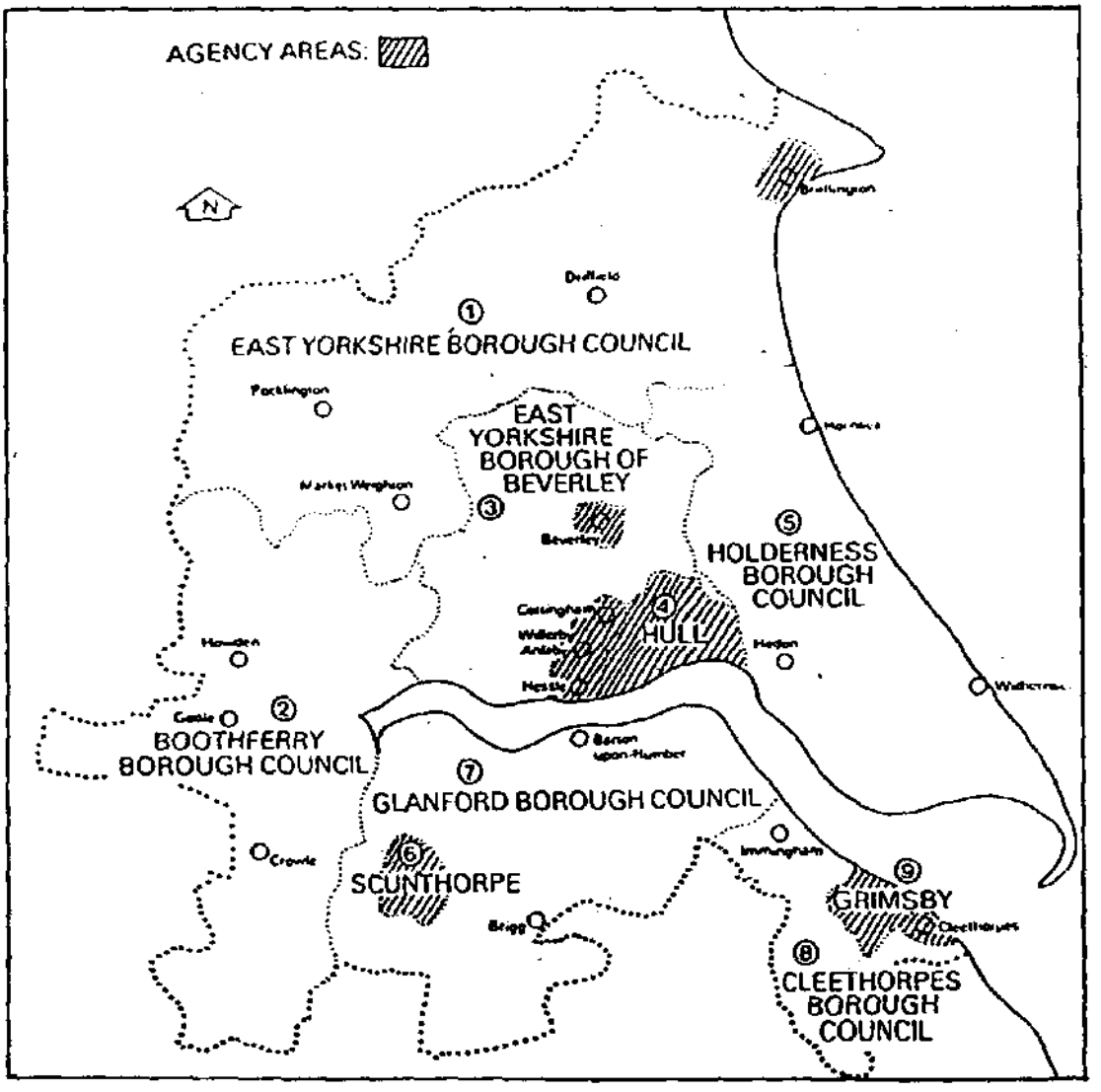
There is a paradox in the impact in street lighting that has emerged in studies such as the British Crime Survey. The paradox is that crime and fear are greatest where lighting levels are highest. Thus the rural village dweller suffers a poorly lit environment but is less likely to feel unsafe. **City** centres are best lit but most likely to generate fear. **It** is the **change** in lighting levels rather the **lighting** levels themselves that are important. Or to express it rather differently, the equation of lighting and fear must be seen in relative terms with an imbalance at any level being important rather **than the** level of lighting itself.

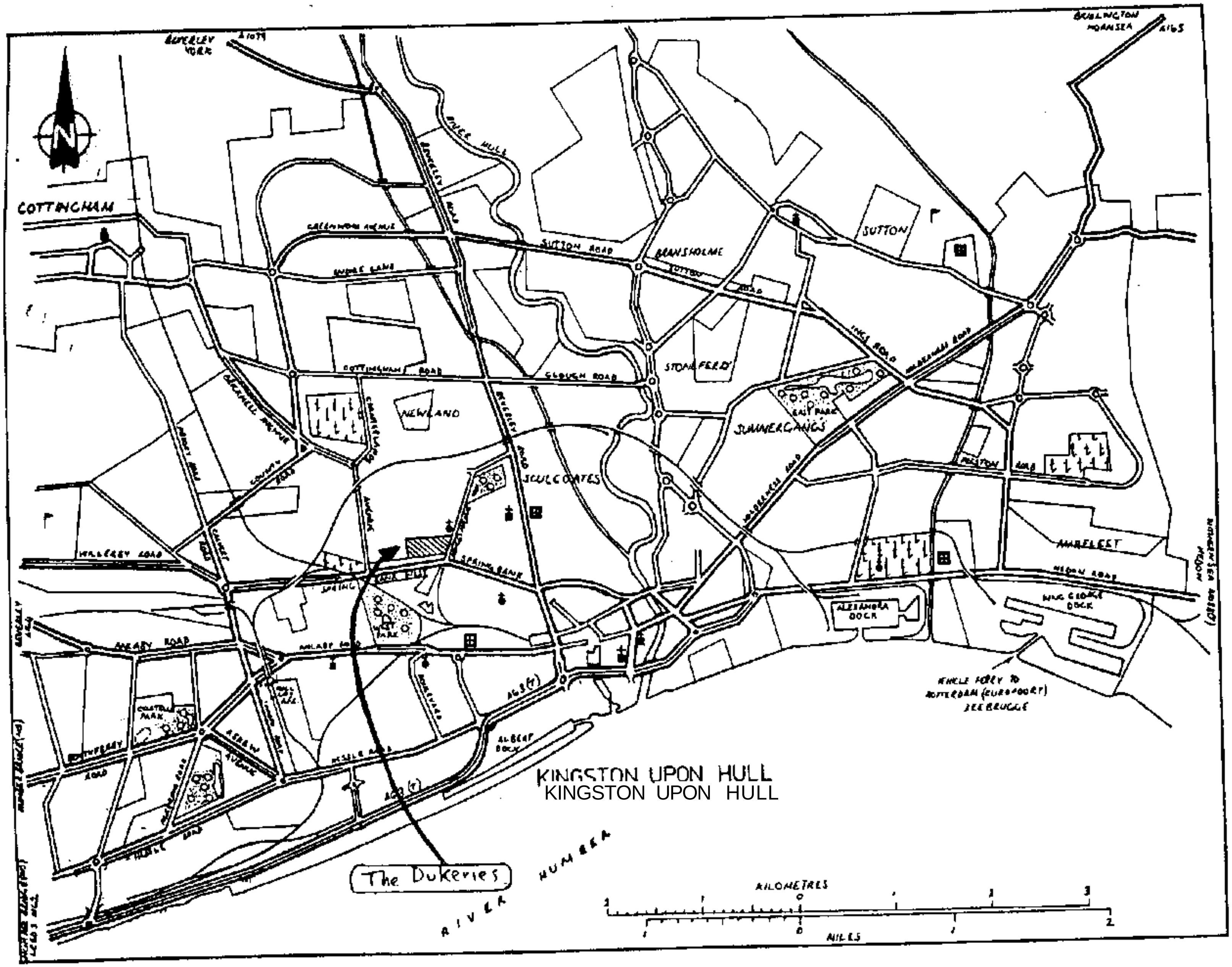
D Evaluation

Any evaluation of lighting improvement must consider a number of interlocking aspects. First the physical changes need to be accounted, both in absolute and relative terms. Against this we need to set the changes in perception and behaviour of individuals, especially the key groups of women, elderly and children. Thirdly, we need to attempt to assess the changes in the level of crime, however difficult this is in a short time-scale and in a small area. Finally we need to weigh the wider implications for community life and for crime prevention generally. As Kate Painter so aptly advocates (Painter, 1991), this involves the integration of a variety of sources: numbers of crimes, opinions and feelings of people, observed behaviour, and not least the interpretation of the meaning of this to the residents of the area. When weighed in the balance, what benefits have accrued from the application of public resources. This is the task to be undertaken in the Hull Street Lighting and Crime Project.

Figure 3.1

Humberside





oject Area in Hull

CHAPTER 3

THE RESEARCH SETTING AND METHODS

The Hull Street Lighting and Crime Project is designed to meet two rather different sets of criteria. One set relates to the need to mesh with the other five projects running contemporaneously under the auspices of the British Parliamentary Lighting Group. Thus the research setting waschosen to match in scale and scope the other projects, while tackling the issues in a rather different kind of residential environment - late nineteenth century housing. The other criteria relate to the local situation - the feasibility of re-lighting from the engineering point of view and the representativeness of area from the point of view of crime and other quality of life factors. Some 26 small areas of Hull were initially recommended for review by Humberside Police who prepared summary crime profiles for each, considering among other things the level of night-time offences. Using the wider criteria, an inter-agency group drew up a short-list of four competing sites from which the Dukeries was selected as providing the best compromise between sometimes competing criteria.

A Research setting: Dukeries

The Dukeries is a compact area of predominantly terraced housing situated about a mile northwest of Hull city centre (see Figure 3.2). The area consists of five residential streets built mainly in the 1890s under the bye-law regulations of that time. Most of the houses are of two or three bedrooms and many have been modernised. Gardens are small (vestigial at front) and rear access is by foot only. The nearest shopping street, Princes Avenue, abuts the area to the east and is of rather grander three-storey houses. It is a bus route, much better lit and has been excluded from the study area. To the south is Hull cemetery, once over-grown and still suffering from a reputation for lurking night-time dangers. To the north lies The Avenues, the main area of Victorian middle-class Hull, with larger gardens and vehicular rear access. To the west is an area similar to the Dukeries but its junior by a decade or so.

Within the Dukeries there are few non-residential activities. Half-a-dozen small shops inhabit street corners and one or two small businesses are hidden behind residential facades. There are no pubs within the area, though Spring Bank which runs from the Dukeries to the town centre is well endowed in this direction. Thoresby Primary School is the main focus for Community activity. It is situated in the Southwest corner of the project area and has an active community centre. Immediately adjoining, and used as an adjunct to the playground during the day, is a Community Play Area which remains the best lit part of the neighbourhood.

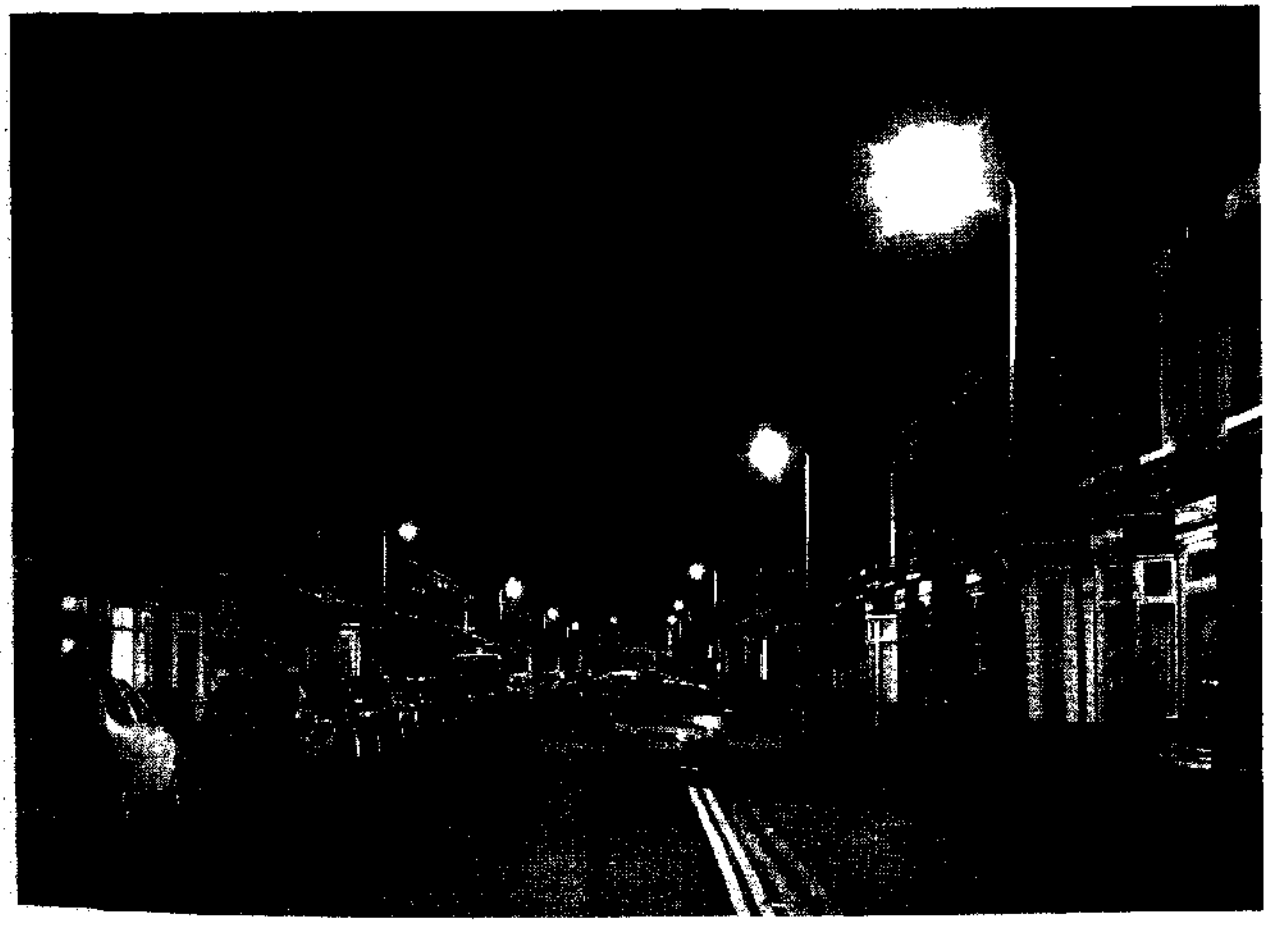
The street lighting in the Dukeries was based on the original nineteenth century gas columns which had been converted to low-pressure (yellow) sodium in the post-war period. Columns were located on the kerb side of pavements and the light tended to be cast in pools over the carriageway. The new lighting is based on BS5489 Pan 3 which lays down three standards of lighting level for residential areas depending on amongst other criteria crime risks. The selected illumination levels are in category 3.2 using a high pressure (white) sodium lantem on new columns at the rear of the

Before...

(for technical reasons, this photo is of a neighbouring street with similar lighting)

Figure 3.3 Dukeries street lighting

...and after



pavement. Modern developments in lantern design permit a much more even distribution of light (Figure 3.3). The technical details of the re-lighting scheme implemented in December-January 1990/91 jointly by Humberside County Council and Hull City Lighting Engineers are set out in Appendix A.

B The research design

Four main sources of research data for the project were engaged:

(i) A household interview schedule administered to a random sample of all residential households in the project area.

(ii) Questionnaires and group discussions with children in Thoresby Primary School.

(iii) An enumeration of all crime in the area from details of reported offences supplied by Humberside Police.

(iv) Pedestrian counts to track the levels of street movements into and out of the project area.

The research design anticipated collection of data under each of the four headings in two phases - a pre-lighting phase in November 1990, during the month after the clocks went back to GMT and before the lighting improvements were planned to commence in December. The second phase was in March 1991, in the month priorto the start of British Summer Time, which allowed a minimum of six weeks after the completion of the new lighting. Thanks to good cooperation from all parties concerned, this tight schedule was adhered to and all the data collected as planned.

While the four main sources provide the core of quantitative data for analysis, the research design also anticipated the need to enrich the findings by recording opinions and perceptions of a more qualitative kind. This particularly applies to the household and children's surveys, much was also helpful in illuminating trends in reported crime. This report cannot do justice to the helpfulness of many people in the project area in reporting views beyond those immediately requested by the project team.

(i) *The household interviews*

The basis for the household survey was a questionnaire adapted with permission for joint use by the six projects from that successfully employed by Kate Painter in earlier studies (Painter, 1988, 1989,1991). The pre-lighting version of the questionnaire was slightly longer and included a battery of questions on the following topics:

- respondents' personal details and background
- views on neighbourhood problem and general environment
- personal worries and fears of crime and safety
- precautions taken against crime
- victimisation experience, direct and second-hand
- responses to victimisation
- experience of other problems

Table 3.1

Summary of response to household survey

Number of dwellings in area			924		
Number of households approached			450		
of which	no contact		75		
	refused		124		
	pre-lighting respondents		251		
	of which	no contact		24	
		refused		12	
		post-lighting respondents		215	
			same respondent		180
			different respondent		35

- views on crime prevention
- views on changes locally
- views on street lighting and its importance
  social activities and street usage

The second phase questionnaire was more specifically addressed to the impact of the new lighting and included:

- social activities and street usage after re-lighting
- personal worries and fears
- precautions taken against crime
  victimisation experience since re-lighting
  experience of other problems since re-lighting
  views on crime prevention
- views on changes locally
- views on the new lights and their impact on feelings of safety, etc.

Households were selected for interview at random using as a sampling frame a list of all 927 addresses within the study area. To ensure as complete freedom as possible from bias, the interviewers were requested to select a respondent from all household members over 18 years using a random grid. Where possible, phase two interviews were conducted with the same respondent as phase one, though another household member could be used if this was not possible. No new households were approached at phase two. The response to the household survey is summarised in Table 3.1. The overall response rate at phase one was 67%, though this was achieved only by dint of hard work on the pan of the interviewers in calling back repeatedly at different times until a contact was made. Of the initial households, 86% completed the follow-up interview in March, with 72% of these being the same respondent.

(ii) *The children's survey*

With the support and cooperation of the headteacher and staff of Thoresby Primary School, the views of children about their neighbourhood and street lighting were investigated. The methodology here involved three strands. In the month before the lighting improvement commenced, a questionnaire was administered to all 87 pupils in the top three classes in the school (nine ten and eleven year-olds). The questionnaire was perforce simpler than that administered to adults in the household survey but designed to provide points of cross-reference with adult views. It also took the opportunity of addressing specific children's issues such as parental controls on outdoor activity especially in relation to darkness. The questionnaire was accompanied by intensive discussion with a group of 12 boys and girls to focus on individual experiences and views on crime and the neighbourhood.

Because only 36% of the children in the group actually lived in the project area, no follow-up post-lighting questionnaire was administered as sample numbers would simply be too low for evaluation. The responses of children to the new street lighting was evinced through small group discussion - 3 groups of 8 children drawn from the top three classes once again, with a majority resident in the project area. The discussions were recorded for subsequent analysis. The children's views in discussion were enhanced by map-drawing and role play, while the teachers made a valuable, if more informal, input.

(iii) *Crime survey*

Humberside Police supplied a full print-out of the details of all reported crimes that took plac within the project area between January 1989 and the end of March 1991. The 179 offences recorded provide a rich source of information about the incidence of crime, its situation and the characteristics of victims. The data included:

- the time, date and nature of the offence and where it took place
  age, gender and address of victim
  details of the incident and its circumstances
- brief details of the offender if known.

With the cooperation of the Hull Safer Cities Project numbers of reported crimes in 12 basic categories were available for the local police beat, the city of Hull and the Humberside Police Force Area. This permitted an evaluation of crime rates occurring in the project area with other geographical areas. Regrettably the short time scale of the project forecloses any attempt to investigate changes in levels of reported crime in this way, though this remains open for study when sufficient time has passed for proper evaluation.

(iv) *Pedestrian counts*

The final strand of the data collection was a simple enumeration of pedestrian movements into and out of the project area. Since the Dukeries is an almost exclusively residential area, no attempt was made to interview pedestrians since many would be covered by the household questionnaire. The pedestrian counts look place in November 1990 and were repeated in March 199 in the same format. Resources permitted 12 hours to be sampled from the week, covering all the darkness hours to midnight and a selection of daylight hours. The selected hours were scattered over

the days of the week with the exception of Sunday when no count took place. Six enumerators were placed at the ends of the streets of the project area and recorded by visual observation details of all pedestrian entering or leaving the area. Gender and approximate age of pedestrians was recorded, whether they were alone and in what direction they were walking. The weather conditions pertaining to each surveyed hour was noted.

As a whole the number of pedestrians fell between November and March, from 4802 to 4037. No indication is available as to why this should be so, though it is likely that seasonal factors are strongly influential with the late winter being a low period for many activities. The weather in March was drier, though colder, than in November.

CHAPTER 4

FINDINGS

A About the area and local problems

A profile of the project depicted by the characteristics of respondents to the household survey is outlined in Table 4.1. Some 99% of respondents live in terraced houses. Rather more females than males were interviewed, echoing a slight preponderance of females in the Dukeries at the 1981 Census. The age distribution is clearly biassed towards youth, reflecting the character of the Dukeries as a 'starter area' for owner-occupancy. Young couples buy into the area, live there for a few years before moving on as their families grow or their prospects improve. The dramatic decline in the roll of Thoresby Primary School is evidence of this pattern, with only about half as many 11 year-olds in school as 5 year-olds. Nevertheless, length of residence details reveal a substantial minority of longer-term residents in the area whose role and position should not be discounted. This dualism between the younger, transient element with stronger family focus and perhaps less concern for neighbour or community and the older, more rooted element with closer affinity with the area is one that may underpin some of the detailed findings in this study. Only a handful of respondents belong to ethnic minority groups.

It should be noted at this point that the focus of the analysis in this chapter is on the difference that re-lighting has made. Wherever possible, these differences are highlighted by presenting tables in "before" and "after" form and using percentages as the basis for comparison. The percentages usually refer to those respondents who were interviewed in both sweeps of the household survey. Households with a different respondent at the two stages have been checked and nowhere do they materially alter the findings. As a further aid to interpretation, all the differences have been assessed for their statistical significance. The criterion adopted is the standard 95% confidence level - any difference flagged in the tables with an asterisk will have at least a 95% chance of reflecting a real shift in views as opposed to some random noise in the data. It should be borne in mind that a given difference in percentages may not always be statistically significant. The larger the sample from which the percentages are drawn (indicated by N in the tables), the more significant will be the given difference, in other words the more people who answer a questipn, the more confident we can be that a particular pattern of response means something. In addition, the same shift for rare responses will be more significant than for common responses because, other things being equal, the impact is greater. Thus a change from 5% to 15% means three times as many people now hold that view; the same change from 45% to 55% has a relatively much smaller impact on the number of people with that view. Using statistical significance provides a effective way of controlling for the underlying sample numbers while retaining the simplicity of the numerical comparison. Appendix B tabulates the minimum significant differences at the 95% confidence level associated with the range of sample sizes in the household surveys.

Table 4.1

Some characteristics of the respondents to the household surveys

		% of respondents		
		Pre-iighting (N=251)	Post-lighting (N=215)	Same resp for both (N=180)
Gender of respondents	male	45	48	47
	female	55	52	53
Age of respondents:	16-25	33	34	33
	26-45	44	43	42
	46-60	11	11	11
	over 60	12	12	14
Race of respondent:	white	98	96	97
	Afro-caribbean	1	1	1
	Asian	1	2	1
	other race	-	1	1
Length of residence at this address:				
	under 12 months	24		21
	1-4 years	33		34
	5-9 years	14	n/a	16
	10-19 years	11		8
	20+ years	18		21
How many neighbours do you know well enough to talk to?				
	all or most	44	n/a	45
	few or none	56		55
Do you have relatives iving wiihin 20 minutes walk?				
	yes	68	n/a	68
	no	32		32
How long have you lived in Hull?				
	under 20 years	45	n/a	43
	20 years and over	55		57
Do you or any member of your household have regular use of a motor vehicle'.'				
	yes	66	n/a	63
	no	34		37

Theperceptions of respondents about local problems are summarised in Table 4.2. Dogs and litter figure prominently with over 70% of respondents regarding these as a big or bit of a problem. Both these problems have a distinct age bias with older people regarding them as more serious. Car parking and personal security are also important local issues but ones perceived by old and young, men and women alike. Street lighting while not so often regarded as a big problem, is high among the bit of a problem category. Taken together 57% of respondents see it as local issue. Broken paving stones and badly maintained pavements have a similar overall rating but here there is clear gender differentiation with women much more keen to appreciate the problem than men. The lack of safe, clean areas for children rates highly despite the provision of a Community Play Area attached to Thoresby Primary School (see section G below for further comment on this). 82% never feel unsafe in their own home, though 45% worry about their home being broken into.

Table 4.2

Local problems

Would you tell me how much of a problem each of the following is in the Dukeries?

(N=251)	% of all respondents			
	Big problem	Bit of a problem	Not a problem	Don't know
Dog noise and mess	40	34	26	0
Secure car parking	31	24	31	14
Rubbish/litter lying around	28	45	27	0
Lack of safe, clean play areas for children	24	32	26	18
People being afraid to go out alone after dark	22	34	37	7
Broken paving stones/badly maintained pavements	21	27	50	2
Burglary	20	32	34	14
Not enough leisure facilities	19	31	39	11
Street lighting	16	41	42	1
Traffic noise	15	35	49	1
Theft of and from cars/vehicles	13	17	47	23
Unemployment	13	21	32	34
Lack of nursery/child- minding facilities	13	10	31	46
Vandalism to cars/property	12	31	46	11
Youths hanging around	6	26	65	3
Noisy neighbours	5	19	75	1
Refuse collection	5	15	79	1
Public transport	4	10	68	18
Street Robbery (mugging)	4	14	66	16
Noise and nuisance from drunks	4	28	67	1
Drug abuse/drug dealing	3	6	68	23
Racial attacks	2	4	75	19
Being pestered/bothered while walking around	1	5	90	4

Table 4.3

Neighbourhood concerns

Do you think that the following problems are more common or less common in the Dukeries than they were this time last year?

(N=180)	% of all respondents indicating "more common" Before re-lighting	After re-lighting
Burglary	34	18
Vehicles stolen, things stolen from vehicles, vehicles tampered with	26	15*
Vandalism to cars property	17	11
Secure car parking	n/a	9
Rubbish litter lying around	44	41
Noise and nuisance outside your home	18	10*
Poor street lighting	10	4*
People feeling afraid to go out after dark	39	13*
Youths hanging around	17	8*
Racial attacks	3	1
Rape/sex assault	8	1*
Robbery (mugging)	13	6*
Noise and nuisance from drunks	16	10
Being pestered/bothered while walking around	5	3

* differences significant at the 95% confidence level

The extent to which views about local problems have changed after the re-lighting scheme is outlined in Table 4.3. Of the major problems which respondents were becoming more concerned about before re-lighting, only the issue of rubbish and litter lying around has not shown a significant decrease. The proportion of respondents holding the view that "people in the Dukeries are afraid to go out after dark" is becoming more common has declined from 399r to 13%. The decline in respondents saying burglary and autocrinie are becoming more common is rather less dramatic but still powerful. Noise and nuisance outside your home, youths hanging around, mugging, poor street lighting and rape/sex assault are also significantly less commonly held to be on the increase. On the positive side, poor street lighting is rated less common a problem than last year by 719c of respondents after re-lighting compared to 5% before, and the proportion of respondents who indicated that "people being afraid to go out after dark" was less of a problem quadrupled from 2% to 9%. So the picture emerges of a neighbourhood which its inhabitants believe to have become less troubled in a number of significant ways.

Table 4.4

Efficiency oflocal services before and after re-lighting

How efficient do you think the local council is at providing services

(N=180)	% of respondents regarding the council as efficient Before	After
rubbish collection	78	78
keeping streets clean	45	54
maintenance of street lighting	63	89*
repairs of public property which has been vandalised	25	20
maintenance of roads	50	46
maintenance of pavements/public footpaths	38	30

* difference significant at the 95% confidence level

These positive views of neighbourhood change are reflected in views about the provision of services by the local council (Table 4.4) though in a rather more modest form. Apart from street lighting, which emerges as having a significantly higher proportion of respondents regarding it as efficient, there is little overall pattern of change. However there are some age and gender differences though these are mostly unaltered by the lighting improvements. Older people are likely to regard rubbish collection as efficient, as are more men for street cleaning and pavement maintenance. The only thing at which the council became regarded as less efficient by all gender and age groups is repairs to vandalised public property.

Table 4.5

Area changes before and after re-lighting

Taking everything into account, how has the general environment and quality of life in the Dukeries changed in the last three years?

(N=179)	9o of respondents Before	After
improved	9	12
got worse	24	19
remained the same	53	58
don't know	14	11

(no significant differences)

Some residents' comments about the area..

Before

..getting worse. It was very nice when we came here (woman, aged 60+)

After

The area has generally improved because there is lighting for everyone

Table 4.6

Worries before and after re-lighting

How much do you worry about the possibility of:-

	% of respondents who worry quite a bit or a lot			
	Men		Women	
(N=180)	Before	After	Before	After
your home being broken into and something stolen	39	38	50	51
being robbed in the street	14	6	24	19
being attacked in the street	15	7	31	32
being insulted/pestered in the street	11	6	17	22
having your home damaged by vandals	19	20	29	37
having your car stolen or damaged	36	30	37	35
being hit or threatened with violence by somebody you know	4	4	2	4
being sexually assaulted/raped (women only)			32	29

Do you have any other worries?	All respondents	
	Before	After
yes	10	11

(no significant differences)

Views about the general environment and quality of life in the Dukeries suggest that fewer people feel that the area is sliding into decline (Table 4.5). While the overall reduction from 24% to 19% is not in itself significant, this conceals a substantial drop after re-lighting in the number of men who indicated the area was getting worse. A similar pattern occurs with respondents over 45 becoming less inclined to be negative. Thus while it is not possible to say that re-lighting has turned around views of neighbourhood decline among the population as a whole, there are strong signs of amelioration among men and older people.

B Fears and worries

The issue of fear has been tackled in three ways. Respondents were asked how worried they were about the possibility of a range of crimes, and they were asked about how safe they felt walking in the streets around their home. Thirdly perceived risks for vulnerable groups, women, elderly and ethnic minorities were explored. The pattern of worry is recorded in Table 4.6. The overall impact of lighting indicates little change in the pattern of worries about crime in the Dukeries, though as we shall see in section F below there are some specific effects in this area. It is clear, however, that levels of fear in this relatively low crime area are substantially higher for women. Burglary is top of the list as a source of worry. Vandalism, autocrime and (for women only) sexual assault and rape are also potent fears. Violence is least commonly felt among the specific sources of worry. Levels

Table 4.7

Feelings **of** safety before and after re-lighting

Do you ever feel unsafe when walking in the streets around your home because of the possibility of crime against you?

(N=179)	% of respondents			
	Men		Women	
	Before	After	Before	After
yes	19	**8***	49	38
no	81	**92***	51	62

When do you feel most unsafe[7]

	% of respondents feeling unsafe when walking in the streets	
	Before	After
after dark	99	91
in daylight	1	-
both	-	6
don't know	-	3

* differences significant at the 95% confidence level

Table 4.8

Risks for women before and after **re-lighting**

Do you think there are risks for women who go out or their own in the Dukeries after dark?

(N=180)	% of respondents	
	Before	After
yes	86	68*
no	11	19*
don't know	4	13*

How likely is it that something will happen lo them?

very likely	22	22
not very likely	59	**59**
don't know	19	**19**

*** differences** significant at the 95% confidence level

of worry being exhibited in the Dukeries survey are not high in comparison to other areas; 19% worrying quite a bit or a lot compared to 66% recorded by Painter (1991) in her pre-lighting survey.

Feelings of safety when walking in the street (Table 4.7) are significantly increased after re-lighting with the proportion of men and women feeling unsafe both falling by some 10 percentage points. Gender differences are not, therefore, altered by re-lighting: young people are least likely to report feeling unsafe and this pattern again has not been disturbed. The vast majority of those who feel unsafe, do so after dark.

Perceptions of risks for women out on their own in the Dukeries after dark are lower after re-lighting (Table 4.8). The most interesting feature here is that men's perception of risks for women have fallen twice as fast as women's own perceptions. Indeed there is a slight increase in the number of women who report a greater likelihood that something will happen to them. We will need to return to this point later. For the elderly (Table 4.9), there is a significant increase in the proportion of respondents who indicated risks as 'not very likely[1] but this was largely at the expense of the 'no risk' category. No age differences were apparent in this pattern, but again men were much more

Table 4.9

Risks for elderly before and after re-lighting

Do you think there are risks for the elderly who go out on their own in the Dukeries after dark?

(N=180)	% of respondents Before	After
very likely	24	21
not very likely	39	*59**
no risks	21	.12 *
don't know	16	8

* differences significant at the *95[c]/c* confidence level

Some residents' comments on fear and worries..
Before

..I'm very frightened about being pestered

(woman, aged 16-25)

After

..it's a lot safer for people tww - women, the elderly who might be afraid

(man, aged 26-45)

Table 4.10

Risks for ethnic groups before and after re-lighting

Do you think there are any risks for ethnic groups who go out on their own in the Dukeries after dark?

(N=180)		% of respondents Before	After
Whites	very likely		15
	not very likely	n/a	33
	no risks		39
	don't know		13
Afro-Caribbeans	very likely		14
	not very likely	n/a	31
	no risks		35
	don't know		20
Asians	very likely		18
	not very likely	n/a	30
	no risks		33
	don't know		19

likely to see reducing risks for the elderly. Table 4.10 records the perceived risks for ethnic groups. The similarity between the groups is likely to reflect the low proportion of ethnic residents in the Dukeries area. Regrettably comparative figures are not available for the pre-lighting phase.

C Precaution against crime

In view of the worries expressed by Dukeries residents it is not surprising to find a high level of precautionary behaviour being engaged as a response to the fear of crime. What is surprising is the extent to which such behaviour has been reduced after the lighting improvement scheme. Table 4.11 contains some of the most notable results of the whole investigation, and their remarkable feature is that they involve not so much a reduction of fear but of the behaviour which fear engenders. The number of respondents who often or always felt unable to go out after dark though they would like to dropped from 44 to 11. The number avoiding certain types of people fell from 122 to 44. The number avoiding certain streets or areas fell from 100 to 34. All the forms of precautionrelatingtodark streets fell significantly after re-lighting. Gender differences are strongly evident, with women more likely to be taking all forms of precaution. The fall in the proportion of women who avoid going out from 38% to 7% is particularly striking. It is clear that improved lighting has a marked impact on women's behaviour in response to perceptions of crime and danger in the street after dark. Age differences in precautionary behaviour are also evident though on a lesser scale. Older people are more likely to take precautions but the impact of re-lighting in reducing these is rather lower as a whole, perhaps as a reflection of older people having limited mobility and being more set in their ways.

Table 4.11

Precautions before and after re-lighting

Simply as a precaution against crime, how often do you, after dark:-

	% of respondents who stated "always" or "often" or "sometimes"			
	Men		Women	
(N=180)	Before	After	Before	After
avoid going out though you would like to	10	5	38	7*
avoid walking near certain types of people	45	24*	73	25*
stay away from certain streets or areas	43	11 *	69	28*
gone out with someone else rather than by yourself	23	7*	75	34*
avoid using buses	11	1 *	26	16*
taken a car or a taxi rather than walk	31	11*	74	39*
% of "always" or"often" or "sometimes" take precautions who:-				
take similar precautions during the day	30	28	30	26

* differences significant at the 959b confidence level

Table 4.12

Why and when certain streets are avoided before and after re-Hghting

Are avoided streets:-

	% of respondents who stay away from certain streets			
	Men		Women	
(N=l15 before N=63 after)	Before	After	Before	After
well lit	16	5	4	2
badly lit	42	50	65	63
both	23	20	24	27
don't know	19	25	5	12
When do you avoid these streets'				
day only	2	6	0	2
night only	81	71	95	85
both	17	24	5	12

(NB post-lighting question limited to last six weeks)
(no significant differences)

Table 4.13

Reducing local crime before and after re-lighting

Which three crime prevention measures do you think would do most to reduce crime in the Dukeries?

(N=180) (up to three choices)	% of respondents Before	After	% of women Before	After
more Neighbourhood Watch schemes	44	52	48	58
stronger locks on doors and windows	41	53 *	43	48
better, brighter street lighting	62	18 *	60	18*
harsher sentences for convicted offenders	24	33 *	24	36
more police on foot patrol	84	82	83	87
more leisure facilities for young people	34	41	35	35
other measures	2	3	0	2

* differences significant at the 95% confidence level

Table 4.12 examines the pattern of avoidance among those respondents who avoid certain streets or areas. While gender differences are again common, no overall impact on patterns of avoidance is significant. Badly lit streets continue to be avoided by all groups of respondents. The proportion who restrict the avoidance to darkness hours has risen slightly for both men and women but not sufficiently to infer that re-lighting the Dukeries has sensitised its residents to lighting standards elsewhere.

Respondents' views on crime prevention have been altered by the re-lighting scheme (Table 4.13). Police foot patrols remain by far the most popular measure. Better street lighting has now been pushed down the list as might be expected and is no longer regarded as a prime crime prevention measure. In contrast significantly increased proportions of respondents now advocate stronger locks and harsher sentences, particularly among men. Women tend to favour Neighbourhood Watch and police foot patrols reflecting perhaps their greater need for support with incidents felt to be more fearful, whereas the focus of male views is in dealing with the problem or perpetrator. Age differences also appear with older people favouring Neighbourhood Watch and harsher sentences, younger people stronger locks and more leisure facilities for young. Attitudes towards crime prevention are clearly a complex amalgam of gender and age influences.

Some residents' comments about precautions taken against crime..
Before

..anyone going out on their own needs their head examining
(woman, aged 46-60)

..never see the elderly out of an evening (woman, aged 26-45)

..you can walk on the path now inti before I used the middle of the road
(woman, aged 26-45)

Table 4.14

Victims of crime

Have you or other member of your household been victim of any form of crime or harassment in the last six weeks?

	% of respondents			
	Men		Women	
(N=180)	Before	After	Before	After
not a victim	95	84	93	86
victim	5	16	7	14
% victimisations in Dukeries	100	100	63	69

(no significant differences)

Table 4.15

Profile of victimisation during last six weeks before and after re-lighting

	% of respondents	
(N=215)	Before	After
burglary	1	3
attempted burglary	1	3
theft from garden, garage, shed	2	2
vehicle tampered with or damaged	3	6
theft of vehicle	-	-
theft from vehicle	1	3
deliberate damage to home or property	-	1
theft from person	-	-
harassment in street	1	3
racial attack	-	-
rape/sexual assault	-	-
violence against person	1	1

(no significant differences)

D Crime

We now need to turn to an examination of the pattern of crime against which the precautionary behaviour is intended. Table 4.14 summarises the responses to the household survey's question on victimisation in the six weeks prior to the interview. Using here the wider definition of all respondents to the survey the numberof females reporting victimisation rose from 8 before re-lighting to 14 after. Male victims rose from 5 to 16. Although the rate of victimisation has risen, so few incidents are involved that firm conclusions should not be drawn. There are good arguments to suggest that victimisation surveys raise expectations about reporting and what is being seen here is simply a greater awareness of significant events among respondents in the post-lighting phase of the enquiry. Moreover one fifth of the incidents took place outside the Dukeries study area. Table 4,15 gives a profile of the victimisations. Burglary and autocrime are clearly the most important categories numerically, with personal offences much less common.

A sharper picture of local crime emerges from the pattern of police recorded offences. Over the period January 1989 to March 1991 some 279 incidents in the Dukeries were reported (Table 4.16). 114 were burglaries (91 domestic), 61 were autocrime, and of the other theft and criminal damage category 46 were cycle thefts. Violence, sex and robbery together accounted for 17 incidents. The effectiveness of police responses as measured by the local clear-up rates was pretty

Table 4.16

Profile of crimes reported January **1989-March 1991**

	violence sex robbery	burglary	auio-crime	theft damage other	total
Number of reported crimes	17	114 (91 domestic)	61	87 (40 cycle thefts)	279
Percentage cleared-up	74%	20%	28%.	35%	30%
Victim's gender (numbers)					
male	9	56	40	35	140
female	8	46	16	39	109
unknown/company	0	12	4	13	29
Victim's age (numbers)					
under 17	5	5	0	11	21
17-25	6	26	26	35	84
26-45	5	58	29	30	122
46-60	1	6	1	5	13
over 60	0	7	1	2	10
Total value of goods					
stolen		£40359	£24997	£9105	£74461
recovered	-	£745	£21185	£1234	£23164
damaged		£2961	£1550	£963	£5474

Table 4.17

Comparative crime rates per 100,000 population, 1989 and 1990

	Crimes against person	Burglary	Other crimes	All crimes	Popul'n estimate
Dukeries Project Area					
1989	400	1556	2489	4444	2250
1990	311	2356	3067	5733	2250
% change	*-29*	*+34*	*+ 19*	*+22*	
Local beat (BK5)					
1989	413	2885	6856	10154	10400
1990	452	3769	7798	12019	10400
% change	+9	+23	*+ 12*	*+ 16*	
Hull					
1989	1033	3708	9756	14497	275000
1990	1030	4623	11423	17076	275000
% change	*+0*	*+20*	+75	+ 75	
Humberside					
1989	814	2607	6946	10367	850000
1990	741	3224	8015	11980	850000
% change	*-10*	*+ 19*	*+ 13*	*+ 13*	
England and Wales					
1989	467	1634	5556	7657	50550000
1990	482	1992	6514	8988	50550000
% change	*+3*	*+ 18*	+ 75	+ 75	

The population estimates are based on Registrar General's estimates which are available for 1989 down to ward level. The assumption has been made that changes in the Dukeries population since the 1981 Census are similar to Avenue Ward of which it forms a part.

much average for each category. Male victims predominate, though this may be related to the fact that much of the reporting emanated from domestic situations where men might be expected to take the lead in reporting thefts of household property. This influence will clearly extend to the age of designated victims with a preponderance in the younger adult categories. Children are rarely recorded as victims, but where they are cycle theft is the commonest type of offence. There is a relatively high proportion of children in the violence, sex and robbery category, but this may arise simply through the identification of individuals as victims of personal crime in a way that is not so strictly necessary for properly crime particularly where household property is involved.

To place the Dukeries situation in context, it is possible to calculate the incidence of the broad categories of crime at various geographical scales working outward from the project area (Table 4.17). This was done for both 1989 and 1990 to indicate relative patterns of change. The

picture which emerges is of an area thai is about or just below average in the incidence of crime. The crucial rates to observe are burglary where the incidents are unequivocally related to the area concerned. Hull's overall crime rate, for instance includes a third of offences in the city centre where the victims and offenders may live elsewhere, even outside the city. Compared to Hull, the Dukeries burglary rate is low, but then Hull's rate is itself high compared to Humberside and Humberside compared to nationally. The annual change rates, however, place theDukeries rather above average, a pattern more emphasised in the case of burglary. If the position of the Dukeries on a scale of neighbourhood crime were to be summarised, it would be that crime is not a problem but is becoming one.

To emphasise the changes more clearly in connection with the re-lighting project, Table 4.18 enumerates recorded offences in the first three months of 1989,1990 and 1991. The totals for 1989 and 1990 are given for comparison. Again we are now dealing with low numbers, easily disturbed by unique events. The number of reported incidents rose from 31 in the first quarter of 1989 to 40 in the equivalent period of 1990 and to 50 in 1991. The 1991 figures, however, contain a series of incidents which sound a note of warning about interpretation of low numbers. On Monday March 21, Thoresby Primary School was the scene of a burglary during school hours. Five pupils and the school lost items of clothing or small amounts of cash from the cloakroom. Because six separate victims were identified, six crimes are counted, whereas a similar burglary of a private house would have counted as one incident. Deducting five from the 1991 figures halves the increase and makes the picture much more comforting. A much longer time period is needed with such a small area to allow crime rates to stabilise. It is one of the paradoxes of crime prevention that the most sensitive and carefully targetted schemes are the most difficult to evaluate because of the smallness of their scale.

Table 4.18

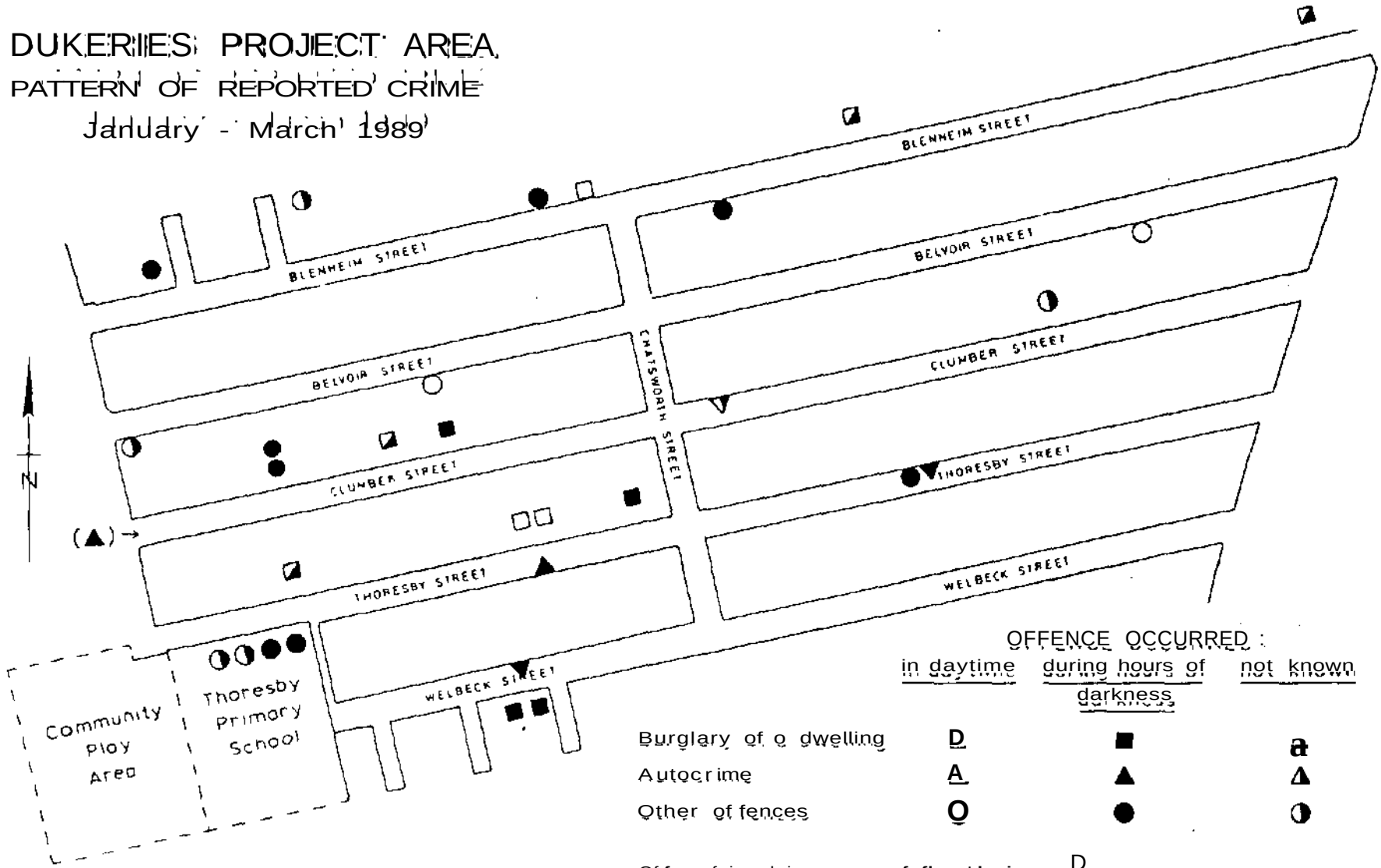
Number of reported crimes in Dukeries area

First quarter	1989	1990	1991
Violence.sexual offences, robbery	2	0	3
Burglary	13	19	26
(Burglary dwelling)	(H)	(17)	(19)
Autocrime	5	8	7
Theft, damage (not auto), other	U	13	14
Total	31	40	50

Whole year	1989	1990
Violence.sexual offences, robbery	9	7
Burglary	35	53
(Burglary dwelling)	(26)	(46)
Autocrime	22	31
Theft, damage (not auto), other	34	38
Total	100	129

Figure 4.1

DUKERIES PROJECT AREA
PATTERN OF REPORTED CRIME
January - March 1989



Locations shown approximately only

Figure 4.2

DUKERIES PROJECT AREA

PATTERN OF REPORTED CRIME

January - March 1990

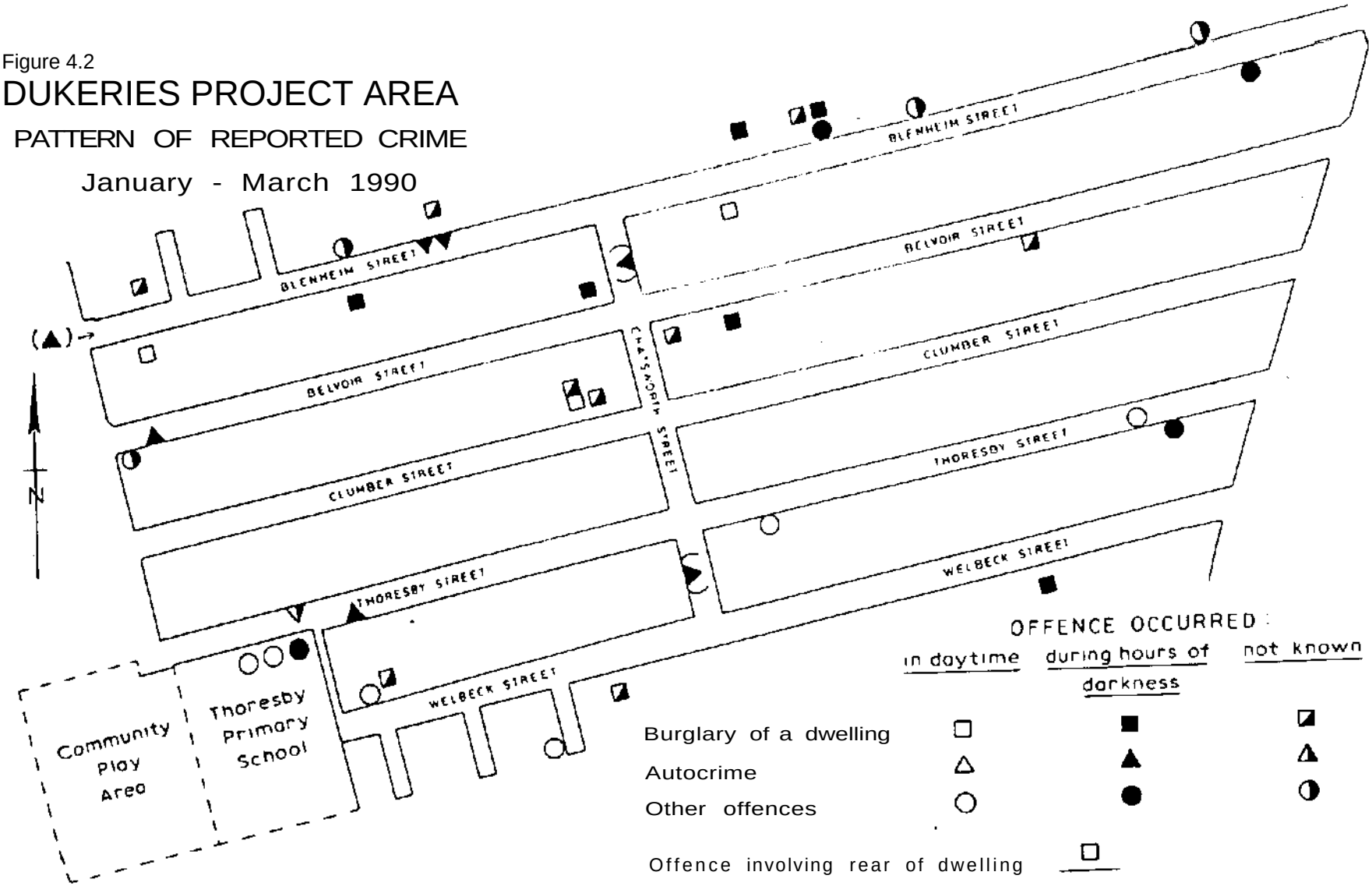
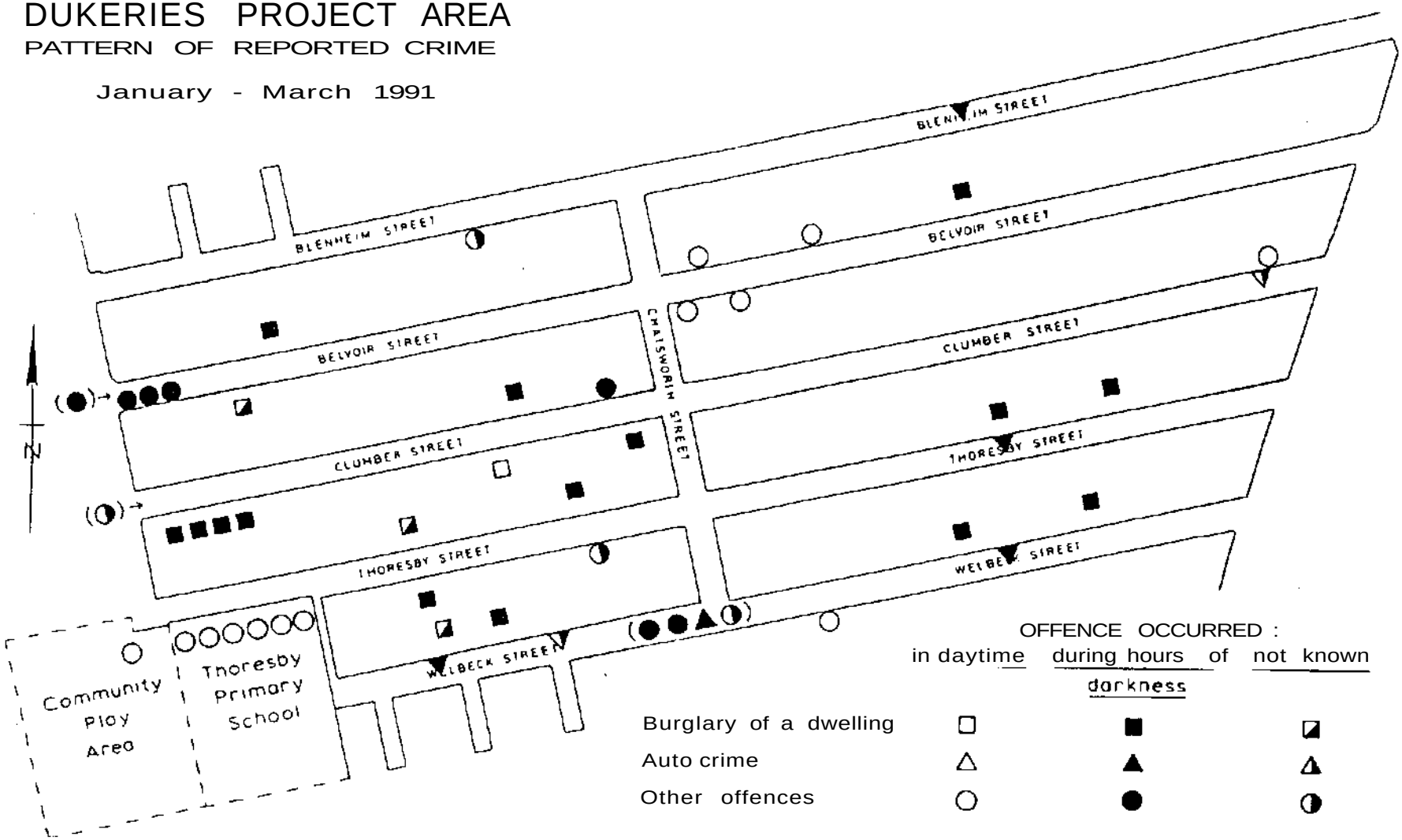


Figure 4.3

DUKERIES PROJECT AREA

PATTERN OF REPORTED CRIME

January - March 1991



OFFENCE OCCURRED :

	in daytime	during hours of darkness	not known
Burglary of a dwelling	□	■	◪
Auto crime	△	▲	◭
Other offences	○	●	◑

Offence involving rear of dwelling □

Offence involving front of dwelling □ (△)

Exact location not known

Locations are shown approximately only

Table 4.19

Time and micro-location of crime

January-March 1989	Daylight	Darkness	Unknown	Total
Burglary of a dwelling	3	4	4	11
Autocrime	0	4	1	5
Other offences	2	8	5	15
Street/front of premises	3	10	5	18
Rear of premises	2	6	5	13
All reported crime	5	16	10	31

January-March 1990	Daylight	Darkness	Unknown	Total
Burglary of a dwelling	3	6	8	17
Autocrime	0	7	1	8
Other offences	5	5	5	15
Street/front of premises	5	11	5	21
Rear of premises	3	7	9	19
All reported crime	8	18	14	40

January-March 1991	Daylight	Darkness	Unknown	Total
Burglary of a dwelling	1	15	3	19
Autocrime	0	5	2	7
Other offences	13	7	4	24
Street/front of premises	7	12	5	24
Rear of premises	7	15	4	26
AH reported crime	14	24	9	50

Figure 4.4

PEDESTRIAN FLOWS BEFORE AND AFTER RE-LIGHTING

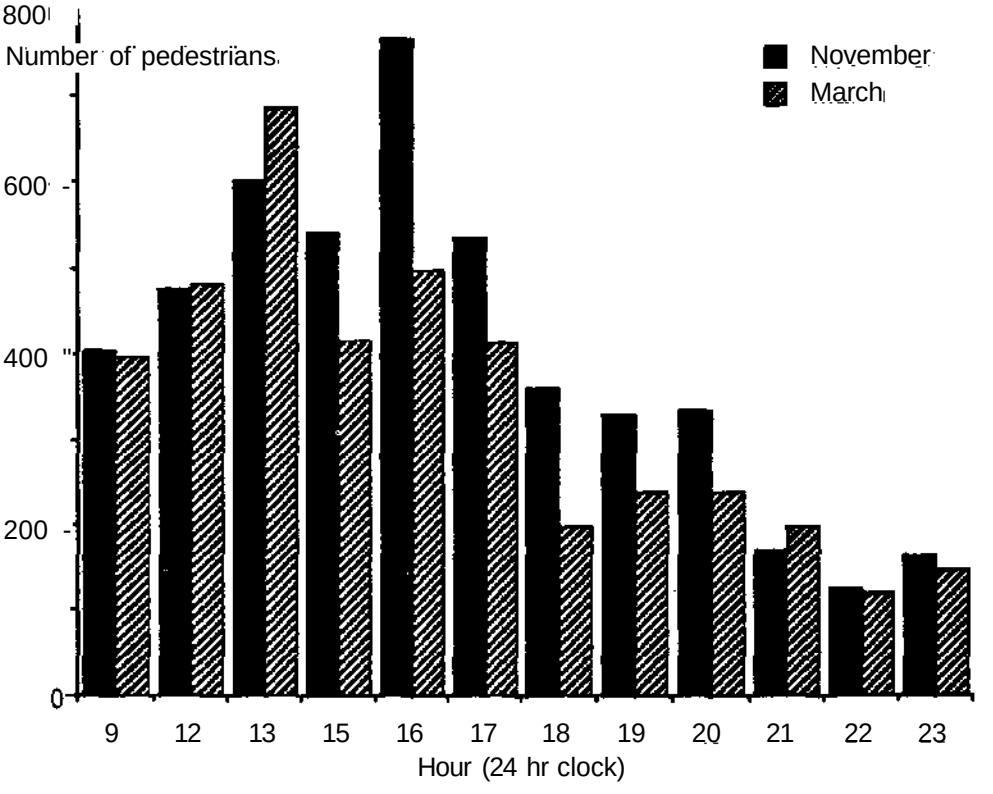


Figure 4.5

FEMALE PEDESTRIAN FLOWS BEFORE AND AFTER RE-LIGHTING

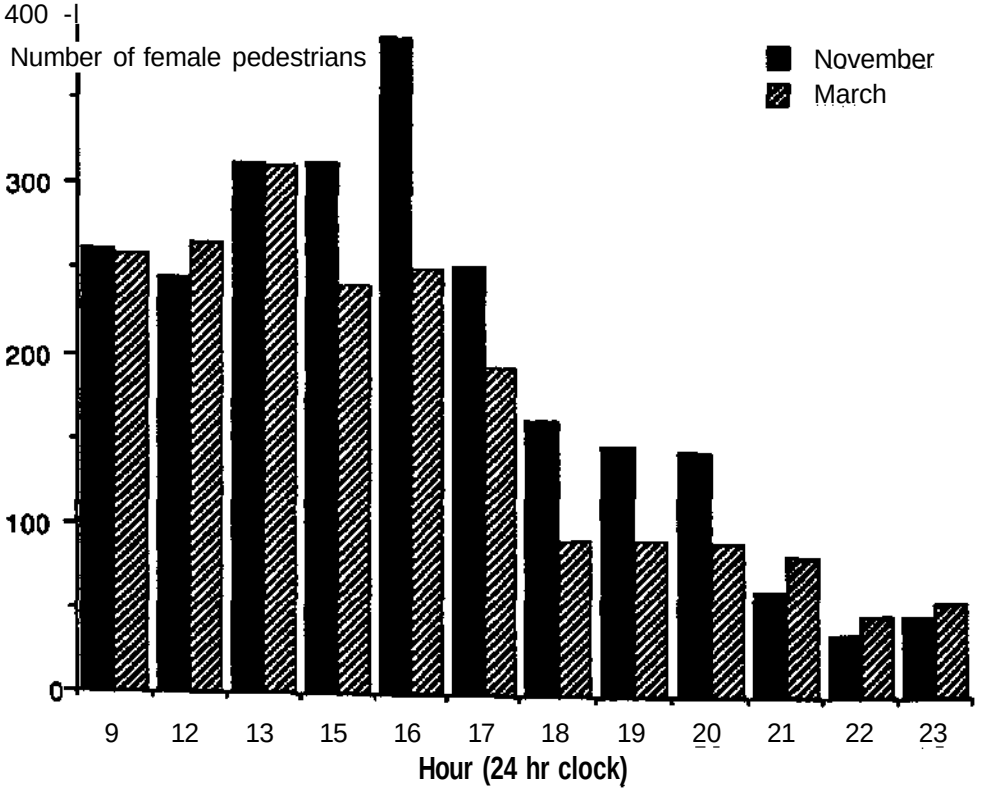


Figure 4.6

ELDERLY PEDESTRIAN FLOWS BEFORE AND AFTER RE-LIGHTING

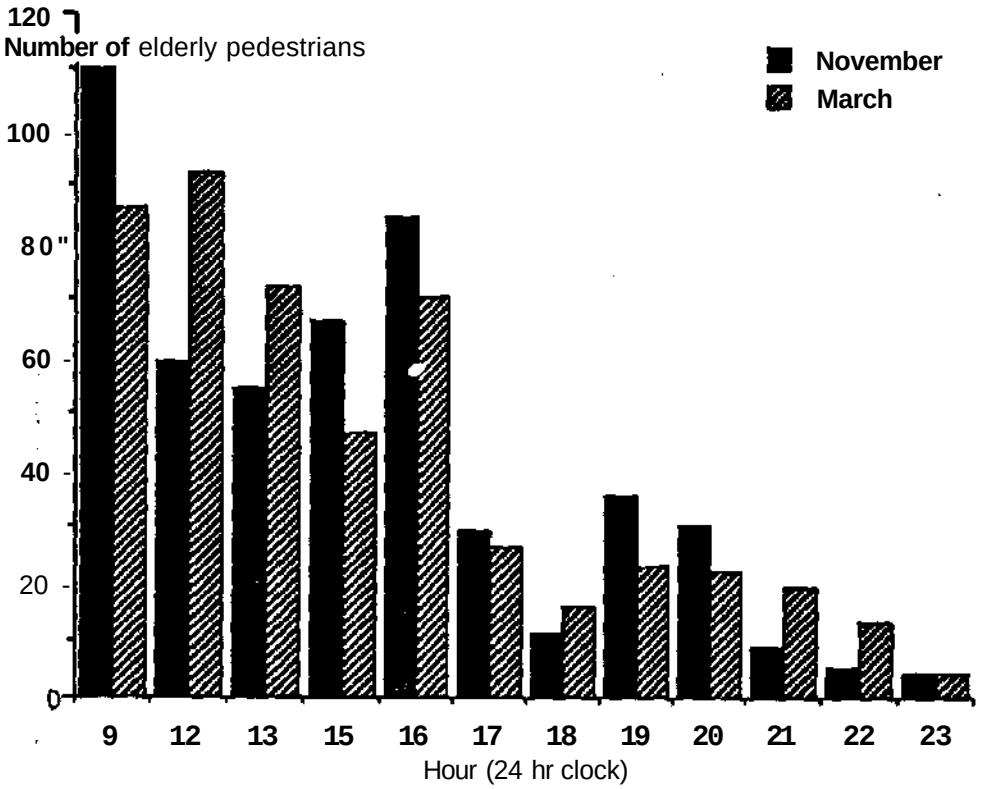
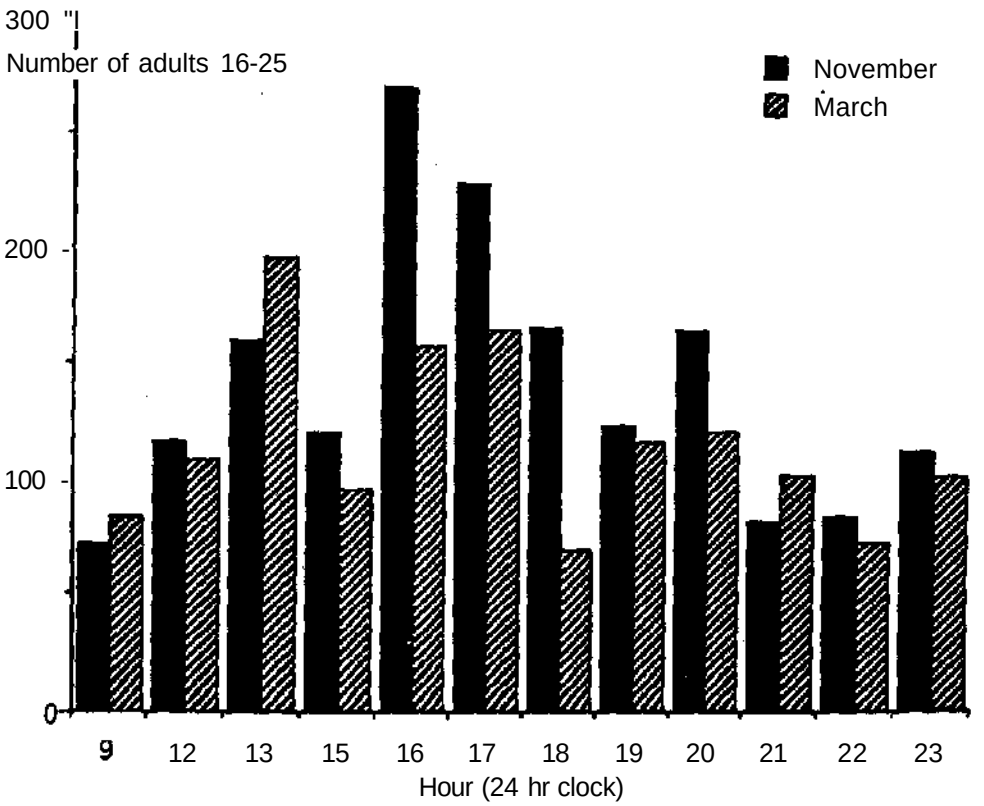


Figure 4.7

YOUNG ADULT PEDESTRIAN FLOWS BEFORE AND AFTER RE-LIGHTING



E Out on the street

Again we have two independent sources of information on street activity. One comes from an enumeration of pedestrian movements in and out of the Dukeries area conducted in November and March while the household surveys were in progress. The second source are the accounts of residents themselves of how their use of the street changed. The accordance between the two sources should be reasonably good since the Dukeries is so predominantly a residential area that pedestrian movements for other purposes and involving non-residents is not likely to be significant. However two factors disturbing this pattern should be noted. One is movements involving Thoresby Primary School. These are largely daytime movements though the school also functions as a community centre in the evenings and attracts a clientele from neighbouring districts as well as from within the Dukeries. The other is pedestrian movements of non-residents percolating through the area of an evening going to and from pubs and other entertainment venues on Spring Bank and in the city centre. Late night drunks are an issue to which we will return shortly.

As a whole our counts revealed a decline between November and March from 4802 to 4037 in the surveyed hours. No particular weather conditions applied to explain the fall - the weather in March was drier, though colder, than in November. Perhaps no more than simple seasonal factors are at play. However if we begin to examine the time and composition of the flows, some rather more revealing patterns begin to emerge (Table 4.20, Figures 4.4-4.7). The strongest drop in numbers is in the early evening period and is most clearly connected with females and younger people. Late evening movements were entirely opposite to the general trend, with overall small rise of 2% hiding

Table 4.20

Pedestrian counts before and after **re-lighting**

	November	March	% change
All pedestrian movements	4802	4037	-16
before 6pm	3326	2898	-13
6-9pm	1021	677	-34
after 9pm	455	462	+2
Females	2357	1964	**-17**
before 6pm	1766	1512	**-14**
6-9pm	477	270	-43
after 9pm	144	182	+26
Elderly	496	489	**-1**
before 6pm	402	392	-2
6-9pm	76	61	-20
after 9pm	18	36	+100
Adult females alone	1261	969	-23
before 6pm	1039	782	-25
6-9pm	174	125	-28
after 9pm	48	62	+29

a 26% rise in late evening movement of females and a 100% rise in late evening movement of the elderly. Adult females out alone after 9 pm increased by 29%. Here is strong corroboration of the decline in crime-avoiding behaviour indicated by respondents to the household survey. The fact that it takes place in the late evening when fear is heightening and against a general pattern of decline in pedestrian movements points towards one of the most clearly beneficial aspects of the re-Hghting schemes - the increased confidence of women to go out at night and the reflection of this in the larger numbers who do so, and who may do so alone.

Table 4.21

Street use before and after re-lighting

How many times last week did you use the street outside after dark?

	% of respondents			
	Men		Women	
(N=180)	Before	After	Before	After
none	2	1	13	8
once	13	11	22	24
twice	14	12	28	21
three or more	71	75	37	47

(no significant differences)

Table 4.22

Social activities of respondents before and after re-lighting

On the occasions you vent out after dark, where did you go or where did you return from?

	% of all respondents		% of women	
(N=180)	Before	After	Before	After
social club	17	9	16	5
local pub	42	27 *	36	22 *
evening class	10	4	12	5
visit friends/relatives	48	44	47	38
religious buildings	6	3	5	3
cinema	22	6*	20	7*
late shopping	21	21	24	20
launderette	5	2	6	2
to and from work	28	21	28	17
eating out	28	6*	24	5*
most of above	8	1	4	2
other	18	13	18	11

* differences significant at the 957c confidence level

On the face of it, the household respondents' views are more equivocal (Table 4.21). While the pattern is clearly towards more frequent use of the street at night, none of the changes are particularly great, particularly among those reported going out 3 or more times a week. Gender differences are strong with women much less likely to go out. However the pattern of change applies equally to men and women. With age differences a rather different view begins to emerge. Here fewer older people report never going out, from 31% down to 20%, but in contrast fewer young people also report going out frequently. A clue to what may be happening comes out in the information given about the venues of respondents' social activities (Table 4,22). Here we see a significant **decline** in the number of respondents going to the pub, the cinema and eating out. In each of these cases the decline is driven by younger respondents rather than older. In November 44

Table 4.23

Reasons for feeling unable to go out after dark before re-lighting

If you would like to go out after dark for any reason but feel unable to do so, why is this?

(N=251)	% of all respondents
always feel able to go out	68
fear of crime	12
ill health	1
no-one to look after the children	2
poor lighting	3
no transport	2
don't want to go out	5
can't afford to go out	4
other reasons	2

Table 4.24

Problems with drunks before and after re-lighting

% of respondents or household members experiencing problems at least once i week

	Men		Women	
(N=180)	Before	After	Before	After
making noise, shouting, etc	35	35	29	47*
being rowdy, abusive	18	14	17	29*
making threats or being aggressive towards you	1	1	2	2
being violent or attacking you	0	0	0	1
damaging your car	0	0	1	4
damaging your house/property	0	1	1	1
fighting or arguing with each other	5	11	5	16*
vomiting or urinating in street or on your property	6	5	6	6

* **differences** significant at the 95% confidence level

younger people said they went out to eat, in March only 8 said they did. Indeed with going out to visit friends/relatives, the emphasis is more firmly towards older people. What may being indicated here is a combination of seasonal and economic factors militating against the more expensive social activities, particularly of younger people. Few residents who felt unable to go out, said it was because they couldn't afford to (Table 4.23), but this question was not repeated in the post -lighting follow-up. Most respondents always feel able to go out.

After crime, drunks and gangs of youths provide a focus for anxiety to street users. Problems with drunks are enumerated in Table 4.24. Despite the late night movement of pedestrians through the Dukeries to and from pubs and other entertainment venues, most respondents report few problems with drunks and most of those are annoyance rather than violence or damage. Most common is noise, less common is abuse and fighting/arguing with each other. However the interesting feature here is that the proportion of respondents reporting these problems rose in the post-lighting phase. Only the rise in fighting was sufficiently large to be significant but the trend is apparent. Why should this be so? The most likely explanation is a combination of visibility and exposure. More residents are on the streets in the late night period and the better street lighting may make them more sensitive to the problem. The fact that the changes are much more commonly reported by women lends credence to this view. The proportion of women experiencing noise and shouting rose from 29% to 47% after re-lighting, the proportion of women experiencing rowdiness or abuse from 17% to 29%. Fighting and arguing was more commonly reported by both men and women. No age differences are involved in these patterns.

Gangs or groups of youths provide a contrary trend to drunks. Overall there has been a significant decline in the proportion of residents noticing this problem in the locality (Table 4.25). Curiously, men are most likely to report this but it is among men that the strongest decline has taken place. It is likely that gangs or groups of youths are a greater source of male anxiety, whereas women are more sensitive to drunks. However among those reporting being upset or frightened, women predominate but with little change in this position.

Table 4.25

Gangs or groups of youths before and after re-lighting

Have you noticed if groups or gangs of youths have been hanging around the streets near your home?

	% of respondents			
	Men		Women	
(N=180)	Before	After	Before	After
yes	48	29 *	32	19 *
no	48	71 *	64	80*
don't know	4	0	4	1
Jfyes does this upset, frighten you?				
yes (incl "sometimes")	24	16	30	32

* differences significant at the 95% confidence level

Table 4.26

Changes in street lighting

Have you noticed any change to the street lighting in your street or in the Dukeries in the last few weeks?

(N=180)	% of all respondents	% women
yes	92	**93**
no	8	**7**
If yes, could you tell me more about the changes you have noticed?		
brighter	96	**97**
duller	2	1
don't know	2	2
better maintained	59	64
worse maintained	0	0
don't know	41	36
made it easier to recognise people	86	85
made it harder to recognise people	0	0
don't know	14	15
improved the look of the area	65	60
worsened the look of the area	14	18
don't know	21	22
Do you go out more after dark since the lighting was changed?		
yes	3	6
no	0	0
no change	97	94
Would you say that the changes made to the street lighting have had any effect on how safe or unsafe you feel in the streets?		
no effect	**55**	44
feel safer	44	56
feel less safe	1	0
Would you say that the changes made to ihe street lighting hive had any effect on how safe or unsafe you feel in your own home?		
no effect or don't know	86	78
feel safer	13	21
feel less safe	**1**	**1**

F Impact of the new street lighting

The impact of the changes in street lighting are summarised in Table 4.26. Hardly any respondents failed to notice the new lighting and the vast majority expressed a clear appreciation of its benefits. 97% reported it as brighter, though the technical details(Appendix A) indicate a much bigger improvement in **minimum** lighting levels compared to average lighting levels. What respondents are appreciating is a better distribution of light leading to fewer dark areas within the street. No age or gender differences were evident in the general appreciation of the new lighting nor with the fact that it has made it easier to recognise people. The improvement in maintenance is more likely to be commented on by women and the elderly: improvements to the look of the area are more common among men and the elderly. More women than men report feeling personally safer in the street, and this is even clearer among the elderly where the proportion feeling safe reaches 59%. Interestingly a small proportion of respondents also feel safer in their own homes as a result of the re-lighting, and this feeling is slightly concentrated among women. The increased feelings of safety being expressed here stand in some contradiction to the earlier comments about respondents' reported lack of increased street use. Perhaps this simply confirms the view that street use in the Dukeriesis, for many residents, not just mediated by crime or fearof crime, but has wider influences, particularly for the young.

Diagnosing the effects of re-lighting is not easy. The majority of respondents were unable to point to particular effects, either saying things were the same or they didn't know (Table 4.27). The sole exception to this was road safety, where almost half of respondents said that it had improved. Of the positive benefits of re-lighting, the strongest were increased confidence to go out

Table 4.27

Effects of re-lighting

Do you think that the changes made to the lighting of the Dukeries have had any thefollowing effects over the past few weeks?

(N=180)	% of all respondents			
	increased	decreased	samedon t know	
the number of people using the street at night	18	0	58	24
vandalism to cars property	3	11	50	36
noise from those using the street at night	5	3	81	11
groups of youths hanging around the area	6	6	75	13
your confidence to go out at night	22	0	77	1
for people generally, fear of crime	9	15	57	19
your personal fear of crime or threatening behaviour	2	11	85	2
burglary	7	12	47	34
risks to women using the streets after dark	2	35	40	23
risks to elderly people using the streets after dark	2	30	47	30
road safety	48	8	36	8

3% of respondents felt that further improvements could be made to the lighting

Table 4.28

Colour preference of street lighting

(N=180)	*Jc* of all respondents Before	After
prefer orange	10	8
prefer white	41	50
no preference, don't know	49	42

(no significant differences)

at night, and reduced risks to women and the elderly using the streets after dark. Women were most likely to repon on increased confidence but less likely than men to see reduced risks for their gender. Reduced risks for the elderly were reported by older people themselves. Younger people were mostly likely to comment that the number of people using the street at night had gone up, and men to comment that the fear of crime generally had gone down. So in general respondents tended to be slightly more positive about the general benefits of re-lighting and rather more sceptical about the benefits for their sex or age group. It would be interesting to see whether this scepticism is maintained in the longer-term. Re-lighting has increased the proportion of residents with a preference for the 'white' light produced by high pressure sodium lamps as opposed to the orange of low pressure sodium (Table 4.28). No age or gender differences were expressed here.

Some residents' comments about the effects of the lighting improvements..

..it puts burglars off more
(woman, aged 26-46)

..makes people think twice about breaking into cars
(woman aged 60+)

..you can't get people lurking about so much
(man, aged 16-25)

..the lights before weren't very bright, but now it's great, brilliant. You can see who's knocking at your door (woman, aged 16-25)

Table 4.29

Childrens Questionnaire: patterns of response

About play

How often do you play outside ?
17% a lot
61% sometimes
22% not very often

71% have to come inside when it starts to get dark
79% are in by 6pm
6% do not have to come in by 8pm
90% of those who play out After dark do *not* use the Community Play Area next to the school

47% have been frightened by something whilst playing outside
24% by people; 17% by darkness; 14% by noise; 10% by animals

52% have been frightened by something whilst playing inside
32% by something on TV; 20% by something outside; 12% by darkness

About people

Of those frightened by someone whilst playing outside
54% were frightened by drunks
41% by teenagers
23% by adult men

20% said that someone had done or said something to frighten them in the last few weeks. In round terms:
half the children frightened were alone
half the incidents took place after dark
in half the cases the 'offender' was alone
in half the cases the 'offender' was a teenager
in half the cases the 'offender' was a stranger

About their street

the good things:		**the bad things:**	
friendly neighbours	91%	litter on pavements/road	77%
well kept houses	87%	not enough places to play	59%
friends live nearby	76%	stray dogs	52%
good street lighting	59%	fast and noisy cars/lorries	49%
few passing cars/lorries	45%	gangs of teenagers	44%
places to play	31%	badly kept houses	39%
tidy/clean pavements/road	17%	unfriendly neighbours	37%
		bad street lighting	25%

G The special case of children's views

An oft neglected section of the population in criminal victimisation surveys are children. Yet children of school age are significant not just as victims, though the extent of the significance is clouded by their neglect, but also as offenders where the middle teenage years show the peak for involvement in criminal activity. Not least children prey on other children, often younger ones, and this tends to be ignored or played down by adults as mere childish behaviour. And it is the streets near horn, and school playgrounds, that frame much of this activity. The presence of a primary school within the Dukeries study area afforded an opportunity to examine this rather neglected area. Children's views of their local environment and their perceptions as potential victims could bring to light formerly unseen problems/hazards, not only for the child but the adult community. It should be remembered when reading the results of this small study, that the children of today become the adults of tomorrow; the fear of crime learnt in childhood, translates itself as we grow older. Sarah James' (1990) argument that there is a place for children in Geography, can just as easily be transferred to the argument that there is a 'space' for children in Criminology and hence in this study.

Before **the** lighting improvements

The afternoon of Wednesday, 21 st November 1990 was spent working with the the top three classes at Thoresby Primary School - children aged 9 to 11. After a brief introduction to the nature of the group's involvement in the Street Lighting and Crime Project, the children were assured of the anonymity of their answers with the intention of getting a more 'truthful' response to the questions posed. The children's initial task was to complete the questionnaire in their own time. This was a shortened version of the adult questionnaire made relevant to the children's needs. A total of 87 children filled in the questionnaire. The questionnaire tried to discern the children's response to the following broad topics: crime, fear of crime, victimisation and neighbourhood environment, with street lighting included in the last of these. These topics fell within three headings on the questionnaire: 'Questions About Playing', 'Questions About People' and 'Questions About the Street Where You Live'. A fourth heading 'Questions About You* provided individual respondent details without naming the child. Table 4.29 summarises the pattern of responses. A group of twelve comprising four children from each of the three classes was selected for a separate discussion session.

Table 4.30

Playing outside and gender

How often (after school & at weekends} do you play outside?

(N=87)	number of children A lot	Sometimes	Not very often
Boys	8	25	6
Girls	7	28	13
All children	15	53	19

* ^_____*_____

Table 4.31

Fears inside home and gender

Does anything frighten you inside your own home?

(N=85)	number of children Yes	No
Boys	15	23
Girls	30	17

On questions about playing outside

The majority of boys and girls (respectively 25 & 28) replied 'sometimes' to the question "How often (after school and at weekends) do you play outside?" Although gender differences are not significant(Table 4.30), it can be noted that 13 girls in comparison with 6 boys said they played outside 'not very often'. On the question of coming in when it starts to get dark the differences are again not significant, but become so quite markedly among those who do not come in at dark on the question of what time they come in. Boys stay out later than girls. Among those who do stay out after dark, hardly any use the Community Play Area next to the school although this is floodlit during the evening (there is further discussion of this well-lit 'problem[1] area later). No significant gender-based responses were found in relation to being frightened by something while playing outside, but of those respondents who answered 'Yes' (47% of the sample) and then went on to say that 'people' frightened them - 36 were girls and 28 boys. Girls consistently claimed to have been scared more often than boys by various groups of people when playing outside. In fact more children (52%) claim to have been frightened by something when playing *inside* as opposed to *outside* (Table 4.31). Among the 52% there is a 2:1 female/male ratio with 32% giving the cause of being frightened as 'something on TV and 20% rating that it was 'something outside* which frightened them. So, girls indoors are more frightened than boys by what goes on there, but perhaps more pertinently are frightened by what goes on onside whilst indoors. Are girls breeding 'fear of the unknown' through lack of experience and is this transferred to adult life as both the household and pedestrian surveys revealed fewer females than males going out at night? Darkness does provide greater potential for fear through reduced visibility and women as a perceived vulnerable group are advised from an early age not to go out at night. It is heartening to see that both boys and girls generally reported that they were not frightened by members of their own family at home, whereas the outside world via TV and what is heard/seen beyond the front door scares the majority.

Questions about people

Both genders of respondent state that while playing outside they are not unduly frightened by children their own age, by old people, or by the police. However, they are afraid of drunks, teenagers and adult men. It appears that *both* sexes are wary of these groups, which is confirmed by the proportion of children who report being frightened by someone whilst playing outside - 54% by drunks, 41% by teenagers, and 23% by adult men. Responses to the more specific question about fears after dark confirms that drunks and teenagers are the people children are afraid of both before and after dark. The following comments about the street where they live (taken from the questionnaire) exemplify these problems (although statements are open to interpretation):

'It has lots of litter on the pavements. And there is lots of men there almost lots of men. They walk up and down the street'

Boy, age 10

'There's to many Gang's of teenagers around' Girl, age 10

'A graveyard is next to our street so you get a lot of tramps hanging around the street'

Boy, age 11

The identification of particular sources of fear is not gender-specific although more girls than boys did say that they are frightened by these sources: 29 girls are scared by drunks compared to 18 boys. Girls are emerging as the 'frightened' sex, but this fear does not appear to be based on direct contact/experience as fewer girls said that someone had done or said something to scare them when playing outside.

Questions about the street where you live

No gender differences were evident among responses to questions on the 'nice/nasty things about your street'. Notwithstanding this, girls outline home/people based options as positive elements in their street more often than boys. For example, well kept houses, friendly neighbours and friends living nearby have respectively 45 girls/33 boys, 46 girls/33 boys, and 38 girls/28 boys answering that these are the good things about their street. Positive responses to good street lighting and not many passing cars/lorries do not highlight gender differences which are worthy of note. For example, 'good street lighting' is referred to by 29 girls as opposed to 22 boys; and 'not many passing cars/worries by 18 girls and 21 boys. Overall 59% ofchildren said that street lighting was one of the good things about their street with 25% saying it was a bad thing. So children's comments on the old street lighting were rather more positive than adults among whom 57% regarded it as a big/bit of a problem.

From this relatively small sample of 87 children, it can be inferred that girls are more fearful of something or someone than boys, and much of their fear stems from the home-base looking out. Non gender-specific fear shows humans (and not dogs or insects) to be the main source of wariness in children's minds when playing outside. The top three offenders are drunks, followed by teenagers, followed by adult men, the first two at least reflecting adults' views about local problems. There is no noticeable daytime/darkness difference in these findings, which could reflect the fact that 71% of the children have to come inside when it starts to get dark.

Pre-lighting discussion group

The pre-lighting discussion group was held the following week consisting of six girls/boys, with four children being taken from each of the top three classes. Questions adopted a loose semi-structured pattern, asking the children about their own experience of movement in the area where they live, with the transference of these ideas into questions of gender and age - the focus being on crime and the the neighbourhood environment, with street lighting introduced in a non-directive way.

Eight of the twelve in the discussion group come to and from school alone, with some riding bicycles and four being responsible for younger brothers/sisters who attend the school. There is no diurnal or seasonal alteration to this pattern, and with the majority living near to the school, this is

probably thought to be a sufficient 'safety valve* by both children and parents. The school's headteacher commented that anything could happen to a child regardless of the distance travelled to and from school. The evidence arising from crosstabulation appears to uphold her comments. The alarming number of children who are frightened by 'people' whilst playing outside, either by direct contaa or otherwise, indicates that children are in need of chaperoning or situational avoidance measures. As one boy's comments on the questionnaire aptly state:

> *'When I come home from karate on a night, I am normally alone. I meet gangs of teenagers and they scare me. I once tried to sneak round a back alley but it was a dead-end.'*

He may be doing karate, but he is still a lone nine year old.

The diurnal difference (in terms of light and dark) with regards to safety was introduced to the group. The six male participants agreed that boys were *always* safer than girls, and the six girls followed their argument in relation to the night, but were divided 50:50 when it came to the question of girl's safety in relation to boy's safety during the day. The subject of girls* safety was taken further as the group were asked 'How many of you have mum's who go out by themselves at night?[1] Four children replied 'Yes' although this was 'not very often'. One boy claimed that his mum had been the victim of an attack in both Manchester and Hull. The group then considered who or what women are afraid of, as a reason for not venturing out, specifically at night. The general conclusion was - women are afraid of men.

> *'There are too many rapists and perverts'* - Boy.

Although the group found this comment embarrassing/amusing, the girls ventured that 'men pester women'. The question was then posed as to what made them think that. Examples on television were cited as arousing fears, wiih again particular reference being made to recent press coverage of achild kidnapping. In conclusion the TV reports were seen as appropriate as they alerted people to potential risks, and 'what was happening'. In relation to the findings of the Home Office report on 'Fear of Crime' the weight that the children gave to media-fed information should be noted, even though some of the group stated that they may later doubt what they have seen or heard. Of the 52% of children who said in the questionnaire that they had been frightened by something whilst playing outside, 32% attribute this fear to something seen on television.

In relation to the area round the school and their home, the children were asked for examples of places they don't like to go and why. With the exception of one boy, all twelve children said they were afraid of the cemetery near the school. Individual incidents led to personal fears of a local park, and the grounds of a nearby college. It is the people who frequent these places that cause apprehension, rather than the places themselves - ie. teenagers/drunks/tramps. However, these locations can be noted for their inadequate lighting provision as well as the notoriety of the people who frequent them.

Thoresby Primary School should consider itself fortunate in that it has a designated Community Play Area for use as a playground during the day, and open to the general public at night. The results of the questionnaire revealed thai 90% of those children who play out after dark do *not* use this CPA, for the following reasons:

'Bad men might be hanging around'	Girl, age 9
'Not nice people'	Boy, age 10

'Because my parents are frightened that something might happen'
Boy, age 10

The CPA is the best lit section of the survey area (even after the lighting improvements), it is big, and has adequate facilities - so why don't the children go there. The problem lies in the fact that the CPA borders a cemetery which is notorious in the area for attracting drunks/tramps, partly perhaps because it is ill-lit but also in its reputation which is a hangover from its formerly overgrown state before the council had it tidied up. A footpath circles the CPA and enters the cemetery. Access by people, dogs etc. from one area to the other is simple. A brick and iron fence also partly obscure observation of the CPA from outside. It is a haunt for local teenagers. So, aside from the few organised ball games that take place on the site after school hours, the CPA is a much underused resource by younger local children due to their fear of 'crime' in that location; as one woman from the adult's household questionnaire described it - *'pervert's paradise!'*. Still the problem persists.

After the lighting improvements

For the post-lighting discussion groups, twenty-four children were taken from the school's top three classes, and remaining in their class groupings the children split into three groups of eight. Three smaller discussion groups allowed greater freedom for each child to talk. Fourteen of the children lived in the five survey streets, with a further three living just on the boundary, and the remainder living nearby. Each discussion session lasted from 25-40 minutes, with the children's responses being recorded throughout. The discussions took place on 5th March, 1991. Thethoughts of the three groups have been amalgamated to present an overall picture of twenty-four children's views. The post-lighting discussions were specifically focused on the issue of street lighting.

In response to such questions as: 'Why do you think the street lighting has been changed in this area?' and 'What is good about having strong street lighting at night?' the children invariably mentioned cars, driving and street lighting in relation to their own fears about being knocked down. The following ideas were put forward: car drivers can now see better to drive, and in turn see children playing in the street; conversely, children can now see cars in good time and so are able to avoid them. Although cars were generally thought of as being a danger, the idea of car drivers as potential witnesses to crime as they drove through an area was put forward to the children, in order to get them thinking along the lines of:

GOOD LIGHTING = OBSERVATION = MORE PEOPLE = REDUCED FEAR

This idea was pursued throughout the discussions. It is pertinent to note here that adults often forget the dangers that traffic represents to a child, and the restrictions a major road may present to their freedom of movement, ie. many children (with particular reference to those in the youngest age group within this survey) are not allowed to cross a busy road unaccompanied.

Attempting to steer the groups to talk about the benefits of the improved lighting in comparison to the old (ie. it gives off more light) the discussion tended to veer towards the minute, descriptive details of the new lighting fixtures, for example bigger/stronger poles. The old lighting was referred to as making the streets look 'old fashioned', which is the opposite to a number of the adult views cited in the household questionnaire. Linked to remarks on the lights' design were comments on the physical positioning of the lights. Revealing examples were given by the children of a number of mums who complained (initially) about the new lights as they shone in bedroom windows. One girl made the observation that if a bright light shone into 'old people's homes'.

potential burglars would be able to see if there were any valuables inside. So, good lighting provides for good witnessing/observation, but also in a negative sense. One boy gave an excellent analogy in comparing the light from the new fixtures with the old, as he described a torch beam held near and far from the ground. The children were in general agreement that the new lights were 'better', as they are 'whiter, brighter and bigger*.

The link between street lighting and crime was not automatically made by the group, and so prompting/direct questioning was required. Role play was used as a good means of focusing their attention on various sections of the population, and their differing regard for crime either as victims or offenders. The first group thought that the following were 'more afraid of crime than others' - children of the group's own age, the elderly who were referred to as 'easy targets', and with the subject of gender highlighted, women were also included in this category. The second group said that ladies 'especially old ladies' and children their own age would be 'more afraid than others about being out alone at night'. (This was concluded after the group had supposed themselves to be a sixteen year old male out alone, at night, with the question - 'How safe would you feel?'). The question was then posed - 'What kind of things do you think could worry these people in particular?' Drunken men coming out of a local licensed premises in the survey area were said to 'pester women' (a reflection of adult females comments), and this example was related to the children's own experiences of being chased by drunks. Likewise, burglars were considered a problem for 'frightened groups'. Gypsies and 'dogs down side passages' manoeuvred their way into the conversation, as the group proceeded to talk about their own fears. This was evidenced in the reply to the question - 'Would new lighting remove people's fear of crime ?', as the group answered 'Yes', because the new lights meant that you could 'see cars and avoid drunks'. Group three's comments mirrored groups 1 & 2, as the particular advantages of new street lighting/or *children* came to the fore. The adult survey omitted to consider children as a particular group vulnerable to certain types of victimisation - namely harassment and frightening behaviour from (a) other children (especially teenagers), (b) drunks, and (c) adult men in general.

The children talked extensively about back alleys and the local 'tenfoots' (rear access). Role play as a burglar allowed them to think as a potential criminal might. It was agreed that a burglar was more likely to break-in at the back of a house than at the front, but the groups were divided as to whether the new lights sufficiently lit back passages for observation/witnessing purposes. Some of the children noted the self-activating beams that a number of households had installed in their back-yards. One comment re-emphasised the concept of GOOD LIGHTING = OBSERVATION, and captured the popularity of television featuring the likes of 'Crimewatch' & 'Crimestoppers' amongst the children:

> *'If you see someone going down a back passage and next day hear there's been a burglary, you might remember what they look like ....'* and so inform the relevant authority was the implication.

Children's interest in back-alleys could stem from their use as play areas, with a badly lit ten foot altering a child's perception of such places as 'safe' or otherwise. The presence of a dog in a poorly lit passage would be a greater threat to many of the children than a potential burglar. Again, childhood fear is in a separate realm to that of adults', and as a result the benefits of good lighting are perceived differently. However, the 26% increase in the number of women out on the streets late at night after re-lighting is a powerful indicator of the extent to which such fears can be alleviated.

As with the pre-lighting improvement discussion group, the third group of children post-lighting (the eldest) talked extensively about the CPA. Use of the CPA by the children does not appear to have increased with the upgrading of the lighting in the surrounding streets. In answer to

the question - 'Has the area become more or less safe since the new lighting was put in ?' the general response was 'It has become safer'. The problem with the CPA does not lie with its neighbouring streets or the play area itself, but with the cemetery which borders it and the notoriety of the people who frequent this place, as the children describe them - 'strange people'. Parents are aware of this problem, and dissuade their children from going to the CPA after dark. New lighting may have made it safer to go to and from the CPA, but it hasn't changed *what* goes on at the site, and *who* goes there.

Summary

Children' s fears of crime' are predominantly personal and not property (theft) related as with adults. As a group who do not as a general rule frequent the streets after dark, the advantages of improved street lighting are either learnt through listening to parents/older brothers and sisters, or have to be imagined and thought through in role play situations. Similarly the disadvantages to the criminal are analysed through role play.

What does emerge are children's concerns for their own safety in what are their play areas ie. the street, the back-alley. With a lack of open space to play on (24% of the adult survey said 'lack of safe, clean play areas' was a 'big problem' locally) and the designated CPA virtually a *no go area' after dark, the children want to see and be seen by traffic in the street, whilst they want to be aware of potential dangers in the back-alleys.

These dangers do not simply refer to dogs, but are evidenced by the number of children who say they have been approached and/or frightened by someone - 'someone' being teenagers, drunks and adult men. Adults share similar views regarding 'problem' groups to those of children, but their impact is lessened for older people as illustrated by the fact that although 41 % of respondents in the pre-lighting adult survey reported youths hanging around locally, only 11 % felt upset or frightened by this. Similarly, 89% of adult respondents (pre-lighting) had experienced problems of noise at least once in the last year from people who had been drinking, which raises the issue of how far a *noise* problem relates to children's experiences of being frightened.

Overall, the children's views echo the adults in that:

(a) The Dukeries area is not a particularly dangerous place to live in

and

(b) New street lighting can only serve to enhance the neighbourhood

As one girl summed-up:

'If the whole place was a much nicer place, I think people would care more'.

CHAPTER FIVE

IMPLICATIONS FOR COMMUNITY SAFETY AND CRIME PREVENTION

A The Dukeries in context

Criminological literature is not well endowed with studies of street lighting. Until recently studies were sporadic and piecemeal, often treating the issue at a very superficial level. It is only with the London studies of Kate Painter (Painter 1988, 1989, 1991a, 1991b), and the yet unpublished research by the Home Office on Wandsworth (Atkins & Husain), that a comprehensive approach to the evaluation of street lighting has been adopted. No attempt is made here to evaluate the comparative elements of the five parallel studies in the present suite of research.

Crime

The Dukeries is not a high crime area: it falls about the average in national terms. Crime rose substantially in England and Wales during the study period and the Dukeries was in line with these changes. If there is a local problem, concern might be expressed about the increase in burglary. The main impact of re-lighting on crime appears to have been a slight displacement of crime from the re-lit streets and from evening hours. However until a longer period has elapsed, these conclusions must remain tentative.

Fear of crime

The anxiety about crime expressed by Dukeries residents is not high, only 3% worry a lot about being robbed in the street compared to 25% in medium-risk areas in the 1984 British Crime Survey (Maxfield, 1987) and 66% in the Landor Walk study (Painter, 1991a). While other worries are less dramatically different in the Dukeries, the picture remains of an area in which perceptions of crime are not highly charged. The fact that the re-lighting scheme did not lower them substantially further is not surprising.

Precautions against crime

What is surprising in view of the unexceptional crime rate and low levels of fear is that so many Dukeries residents are inhibited in going out after dark. It is clear that, in this project, the biggest single impact of street lighting is the increase in the proportion of people no longer afraid to go out after dark once the new lights had been installed. Three out of four people who

formerly avoided going out after dark no longer did so. This effect is stronger than in Landor Walk and shows that where crime is less of a problem, it is easier to restore confidence lost through fear. These affects are much stronger for women and the elderly.

Perceived effects of re-lighting

At a personal level Dukeries residents' views are similar to those in Landor Walk, though the greater confidence of Dukeries residents shows here too. Where the difference lies is in views about general community safety where Dukeries residents are less likely to say that things have improved, perhaps again as a reflection of the fact that safety was less problematic in the first place. On the other hand Dukeries residents became more aware of drunks after re-lighting, perhaps a combination of greater street activity and the greater visibility of the problem.

B For the individual

There is no doubt about the positive benefits of re-lighting for individuals in the Dukeries area. Hardly anyone reported being worse off. For most, above all for women, children and the elderly, the re-lighting brought improved confidence, increased mobility, especially at night, and a feeling that many aspects of life in the neighbourhood had been enhanced. The fact that these improvements are so strongly indicated in an area where the problem of crime and the fears it generates were not exceptional suggests that re-lighting is not just as beneficial in lower crime areas but may in some respects be more so. The substantial increases in the numbers of women (including those out alone) and the elderly using the streets after 9 pm is clear evidence of this impact. While young children are less likely to be out late at night, their positive feelings about neighbourhood streets need reinforcing. Young children rapidly become older children, some of whom learn to utilise the negativities in criminal or anti-social behaviour. The focus of our 9-11 year olds' fear on older children is powerful evidence of the danger of allowing negative images to breed.

For the neighbourhood

For the Dukeries area, increased personal confidence and mobility brings benefits, mainly through the enhancement of social ties. Women and the elderly are less restricted in their availability for activities that form the backbone of the supportive community, visiting friends and relations, going to the community centre, etc. Strengthening community support then feeds back to further increase individual confidence. Street lighting therefore acts as a trigger to initiate a reinforcing loop of effects. In an area where crime is not a big problem, lighting may be a sufficient trigger on its own. In a high crime area where a negative loop of self-reinforcing decline may already be in operation, lighting may on its own be insufficient to the task of reversing the trend, and other measures of community improvement, environmental, architectural and social may be needed (Painter, 1991b). Whatever the situation street lighting is a powerful and visible symbol of the quality of community life in the hours of darkness: to improve bad street lighting should be the flagship for concerted action to reverse neighbourhood decline.

D For crime prevention

While this study is not able to indicate unequivocal benefits in crime reduction, some of the issues for crime prevention begin to emerge. The direct effects of improved street lighting lie in increasing the risks of offenders being seen. More indirectly, the vulnerability of targets is reduced by greater visibility. The opportunities for crime may not always be reduced by better street lighting - indeed they may be enhanced if more people use the streets and thereby provide more targets - but the overall effect is positive. This was clearly seen in the Dukeries with the trouble caused by drunks. Increased awareness was not accompanied by increased anxiety. However in the Dukeries, some evidence began to emerge of crime displacement. While this remains slim, it should not be ignored. More burglars seem to be using rear access which continues to be poorly lit. Car thieves seem to be avoiding the busier evening hours. While many of these targets remain poorly defended, such displacement may continue. The lesson here, perhaps, is that re-lighting and target hardening need to proceed hand-in-hand to realise their mutually reinforcing benefits. Cenainly individual defences against property crime should be protected against erosion by the increasing confidence which residents feel in going out after dark. While the Dukeries study is solely concerned with re-lighting, this should not be allowed to obscure the benefits of a multi-agency, multi-level approach to crime prevention in which improved street lighting is one of a range of measures covering a wide spectrum of direct and indirect crime prevention. The suite of measures suitable for a neighbourhood will depend on the accurate profiling, not just of crime, but of the possible responses to crime in that particular social and residential environment (Davidson & Locke, 1992).

The final balance sheet

Any final assessment of the benefits of a crime prevention scheme such as the lighting improvement project must place a range of criteria on the scales not all of which respond to ready or easy quantification. The costs of crime in particular are manifold. First there are the direct costs to victims - property loss, damage, injury, time off work, psychological reactions, practical problems and so forth. Then there are indirect costs borne by other members of the community such as fears, worries, diminished social life and the costs of personal and household protection. Beyond this all citizens bear through taxation the costs of the police, courts, prisons, probation, health and welfare services that cope with the consequences of crime. Individuals also "pay" for crime through higher prices and insurance premiums. Some of these costs are indeed substantial (£130,000 has been recently quoted as the cost of providing an additional prison cell), others may be trivial. Too often the benefits of crime prevention are narrowly conceived and nebulously presented, though to answer this criticism is beyond the scope of this project. The final balance sheet has to weigh the savings which accrue from the crimes prevented against the direct costs of the scheme together with any other indirect costs such as crime displaced to another time or place.

The Dukeries study has shown that re-lighting can bring substantial benefits to a community. Small reductions in fear of crime were accompanied by large reductions in precautionary behaviour,

more people on the street in the late evening and more confidence both personally and in general.

These benefits are concentated on women and the elderly whose reactions
to be the most negative. Costing these benefits is impossible, but crime its
each household in the area on average about L50 just in terms of value of
Added to this must be the wider cost to society indicated above. One burg
appearance and a three month sentence has recently been estimated to cos
Marwick, 1990). Permanently displacing just one such offence has very m
capital cost of the re-lighting scheme in the Dukeries would be met by the
burglaries. The remaining social benefits for each Dukeries household are
against an increase in annual revenue costs of just 88p. This is the bottom

crime.

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APPENDIX A

TECHNICALDETAILSOFTHE'DUKERIES'LIGHTINGIMPROVEMENT SCHEME

Background

The original purpose of public lighting was to allow for safe movement of pedestrians. This function was usually invested in the local 'Watch Committee' with lighting being installed under powers incorporated within the Public Health Act. Lighting was first installed in the 'Dukeries' around 90 years ago and would have comprised of utilitarian gas lanterns fitted to cast iron columns giving a mounting height of some 3.5 m. These lanterns were required to be manually switched on each night and off each morning.

The lighting remained unchanged until, approximately, the 1950's when conversion to electrical operation took place. A 'strap-on' steel box was fixed to each column at ground level to receive the electrical service and an electric luminaire was fitted. The luminaires utilised a standard type of tungsten lamp commonly found in domestic property today. Being of side-entry type the luminaires were fitted to the columns via swan-neck brackets which increased the mounting height up to around 4.5 m. A rime switch was provided to automatically switch on the unit at dusk and off at midnight. A further conversion was carried out in the late 1960's when the luminaires were replaced by high pressure mercury units giving a higher light output and reduced running costs in comparison to tungsten lamps.

In the 1970's, with the onset of the energy crisis, a third conversion programme was undertaken which entailed fitting a side entry lantern utilising a low pressure sodium lamp of lower wattage. This light source had a light output of 180 Lumens per watt, compared with 12 for tungsten and around 60 for high pressure mercury. Consequently, lighting levels were increased and energy consumption decreased. If conversion had not taken place at that time then around one third of the lighting points would have been switched off or expenditure on energy for lighting greatly increased.

Definitions

Lumen: a unit of measurement for the amount of light emitted by a source

Lux: the derived unit of illumination which is equal to 1 Lumen per square metre.

Luminaire: the housing containing the light source

E min: measured in lux is the minimum value of illumination at any point of the surface under consideration.

E aver: measured in lux is the average value of illuminance over the area under consideration.

E max: measured in lux is the maximum value of illuminance at any point on the surface under consideration.

Codes of Practice

Lighting practices in early years were based on the provision of a light at known points of concern. As circumstances changed so did the Codes of Practice to accommodate for the increase in pedestrian and vehicular traffic on the highway. Over the years there have been a number of Codes of Practice (CP1004) which, in the 1970's became British Standard 5489. The design principle was based on the provision of luminaires which gave the required light output within the lower hemisphere. In the case of residential roads luminaires were required at 5m or 6m mounting heights with light outputs of 2000 or 3000 Lumens respectively. As long as luminaires were spaced at the specified distance of 34m ±10% it was assumed that the road and footpaths were adequately illuminated. This practice had a number of drawbacks, not the least of which was the assumption that all luminaires had the same optical performance. Hence there was little incentive for manufacturers to develop luminaires with improved performance.

In 1989 a revised British standard BS5489 Part 3 "Code of Practice for Lighting Subsidiary Roads and Associated Pedestrian Areas" was published. This emphasised that, in residential areas, the needs of pedestrians should be accorded greater priority than the needs of road traffic. Good lighting designed in accordance with the new code should not only enable pedestrians to find their way around and see obstacles in their path, but should also discourage crime against person or property and engender a greater feeling of security.

In order to achieve this it has been necessary to specify the average and minimum illumination levels for various categories of road which have been classified according to :-

a) night time public use
b) crime risk
c) traffic usage

From these factors three categories of illumination are recommended.

The lowest category recommended in the new code gives an average illuminance of 3.5 lux and a minimum at any point on the area (footpath, carriageway) of 1.0 lux. These lighting levels are horizontal illuminance measured at ground level.

The other two levels recommended in the code are average illuminances of 6 lux and 10 lux with a minimum illuminance of 2.5 lux and 5 lux respectively.

All the horizontal illumination levels recommended in the code have a correlation to vertical illuminance which is an important factor in the recognition of other people and their possible intentions.

So, for the first time, schemes are designed to meet specific lighting objectives which are specified according to particular circumstances.

Experimental Site Details

Existing Lighting

The lighting currently installed on the site consists of 4.5 metre mounting height units installed on the front edge of the footpath at a spacing of about 38 to 42 metres. These are fitted with

side entry lanterns incorporating a 26 watt SOXE lamp giving an output of 3,400 lumens.

A number of specific areas of the site were chosen and light readings taken under the old lighting. An average of 2.49 lux with a minimum of 0.1 lux were the values recorded.

The column spacing is well in excess of that recommended in the old Code of Practice and the lighting levels fall far short of those stated in the new code, even for the lowest category.

Re-Lighting

The area in question consists of 5 streets running parallel to each other with an interesecting street approximately at mid point. Following discussions with interested parties the site was classified as requiring illumination in accordance with category 3/2 of the new code i.e. an average illuminance of 6 lux and a minimum of 2.5 lux.

The width of the highway, including footways, was 12 metres. As the lighting units were to be installed at the rear of the footpath, a mounting height of 6 metres was chosen. The column was fitted with a 0.3 metre projection bracket giving an outreach of 0.5 metre to the centre of the light source. From this data a lighting scheme was produced (see Figure A.I). The photometric data of the chosen lantern indicated that a mounting height of 6 metres a spacing of 28 metres was required between columns to achieve the desired levels of illumination.

A great consideration was given to the colour rendering properties of the light source to be used giving due regard to the way in which the human eye reacts differently to light of various colours. Whiter light offers many advantages and because of this it was decided to use a 50 watt Son T lamp, which, with an output of 3800 Lumens gives a high efficiency as well as good colour rendition.

The remaining parameter to be considered was that of uniformity. Although this is not a specific requirement of part 3 of the new code the uniformity needs to be as high as possible so as to avoid apparent areas of darkness between the brighter areas directly below the luminaires. If these levels are greatly different then this will be recognised by the individual who may perceive the darker areas as the source of a possible threat. Hence this may make the individual feel uncomfortable about a street lit to a low uniformity.

The level of uniformity achieved on this design was Emix/Emax) = 13.4% and (Emin/Eav) = 35.3%.

Financial Implications

Capital Costs

The capital cost of the lighting scheme was £67,395. This can be analysed in a number of ways, but detailed below are the costs per lighting unit, street and house.

a)	Unit cost	£607.16
b)	Street cost	£13,964.68 (Belvoir Street)
c)	House cost	£68.45 (Belvoir Street)

The figure quoted includes the removal of the old lighting equipment, electricity services and reinstatements of the footways.

Revenue Costs

The revenue cost has been analysed by street, unit and house and includes routine/residual maintenance and electrical energy charges, and are recorded as costs before and after the re-lighting.

		Before	After
a)	Street cost	£	£
	Maintenance	100.57	93.84
	Electrical Energy	148.60	333.91
		249.17	427.75
b)	Unit Cost (Per Lighting Point)		
	Maintenance	5.92	4.08
	Electrical Energy	8.74	1.64
		14.66	18.60
c)	House Cost		
	Maintenance	0.49	0.46
	Electrical Energy	0.73	1.64
		1.22	2.10

From the calculations it can be seen that there is a substantial increase in revenue expenditure due basically to the increase in electrical energy consumption. On a 'per lighting unit' basis there is a small drop in routine maintenance and repair costs due to more reliable equipment and less frequent maintenance operations.

These costs should reduce further as lamp life improves on smaller wattage high pressure sodium lamps.

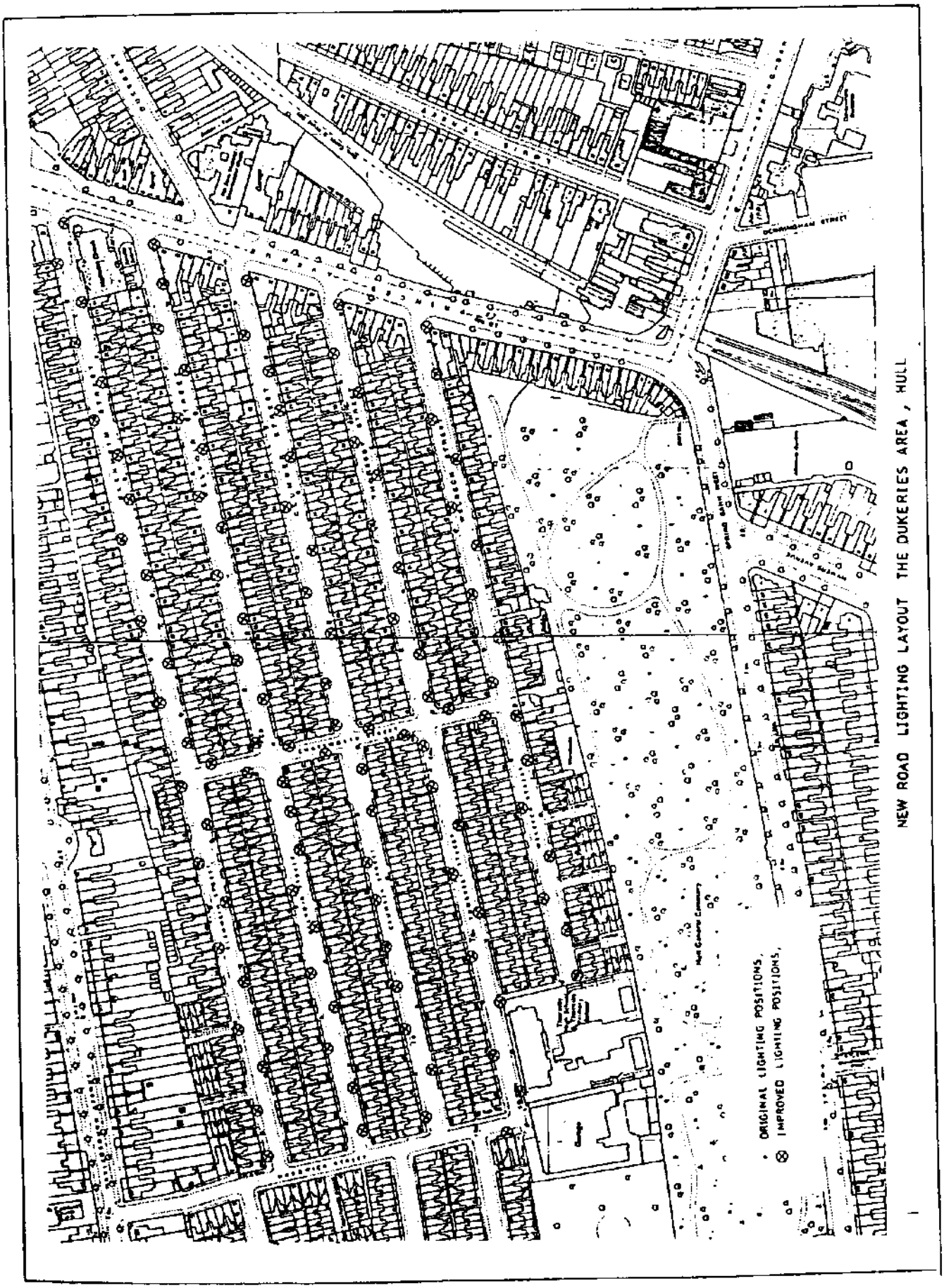
Conclusions

A night-time inspection of the site under the new lighting reveals excellent levels of illumination for the pedestrian and enables safe use of the carriageway be vehicular traffic.

Due to the relatively low lumen output of the chosen light source the light emitted within those portions of the polar distribution which should be restricted are well below the maximums recommended in the British standard. Consequently a glare free scheme has been achieved.

In addition, the closer spacing required by the low output lamps gives good uniformity. It should be noted that uniformity plays a major role in determining the perceived quality of a lighting scheme and may permit a reduction in illuminance values as long as there are no dark areas which remain to inhibit visual acuity.

Figure A. 1


NEW ROAD LIGHTING LAYOUT THE DUKERIES AREA, HULL
ORIGINAL LIGHTING POSITIONS.
IMPROVED LIGHTING POSITIONS.

Appendix B

SIGNIFICANCE TESTING WITH PERCENTAGES

(method outlined by WAV Clark and PL Hosking (1986) Statistical Methods for Geographers, pp259-61)

Basic Equation: Z = (PI - P2)/SQR((P1(1-P1)/N1) + (P2(l-P2)/N2))

but with assumptions
1) that the two variances are equal
2) that p=0.05 is taken
3) that the sample sizes are the same for the two percentages
4) that the target percentage is the one furthest away from 50%

MINIMUM SIGNIFICANT PERCENTAGE DIFFERENCES AT THE 95% LEVEL

	Target percentage P =									
	50	45	**40**	35	30	25	20	15	10	5
N =										
215	9.4	9.4	9.4	9.2	9	8.6	8.1	7.4	6.4	5.0
210	9.5	9.5	9.5	9.3	9.1	8.7	8.2	7.5	6.5	5.0
205	9.6	9.7	9.6	9.5	9.2	8.8	8.3	7.6	6.6	5.1
200	9.7	9.8	9.7	9.6	9.3	8.9	8.4	7.7	6.7	5.2
195	9.9	9.9	9.8	9.7	9.4	9.0	8.5	7.8	6.8	5.3
190	10.0	10.0	10.0	9.8	9.6	9.2	8.6	7.9	6.8	5.3
185	10.1	10.2	10.1	10.0	9.7	9.3	8.7	8.0	6.9	5.4
180	10.2	10.3	10.3	10.1	9.8	9.4	8.9	8.1	7.0	5.5
175	10.4	10.4	10.4	10.2	10.0	9.6	9.0	8.2	7.2	5.6
170	10.5	10.6	10.5	10.4	10.1	9.7	9.1	8.3 "	7.3	5.7
165	10.7	10.7	10.7	10.5	10.3	9.8	9.3	8.5	7.4	5.8
160	10.9	10.9	10.9	10.7	10.4	10.0	9.4	8.6	7.5	5.9
155	11.0	11.1	11.0	10.9	10.6	10.2	9.6	8.8	7.7	6.0
150	11.2	11.3	11.2	11.1	10.8	10.3	9.7	8.9	7.8	6.1
145	11.4	11.5	11.4	11.3	11.0	10.5	9.9	9.1	8.0	6.3
140	11.6	11.7	11.6	11.5	11.2	10.7	10.1	9.3	8.1	6.4
135	11.8	11.9	11.8	11.7	11.4	10.9	10.3	9.4	8.3	6.5
130	12.0	12.1	12.0	11.9	11.6	11.1	10.5	9.6	8.5	6.7
125	12.2	12.3	12.3	12.1	11.8	11.4	10.7	9.8	8.6	6.8
120	12.5	12.6	12.5	12.4	12.1	11.6	11.0	10.1	8.8	6.9
115	12.7	12.8	12.8	12.6	12.3	11.9	11.2	10.3	9.1	7.2
110	13.0	13.1	13.1	12.9	12.6	12.1	11.5	10.6	9.3	7.4
105	13.3	13.5	13.4	13.2	12.9	12.4	11.8	10.8	9.5	7.6
100	13.6	13.7	13,7	13.6	13.2	12.8	12.1	11.1	9.8	7.8