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Dimensions of Sustainable Urbanism

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*Dedicated to my father
for his appreciation of knowledge and the value placed on learning*

Abstract

The study proposes to operationalise sustainable development within an urban environment and at a variety of scales – strategic to neighbourhood.

The study examines the convergence of ideas within urbanity and sustainability, identifying inconsistencies and contradictions within current thematic research. It proposes a consensual approach to understanding the linked substantive, analytical and procedural attributes underlying a developing chronology of concepts relating to sustainability. This chronology of ideas provides the basis for a systems-based framework that recognises the complexity of urban areas.

The study advocates and introduces an adaptive framework of spatial indicators of urbanism to simplify and communicate an holistic overview of attributes of sustainability. This interpretation of holism is based on thematic (qualitative / quantitative) and scalar (strategic / local) based integration on a consistent (spatial) basis. This adaptive framework is designed to be suitable for locality specific subjective interpretations of sustainability. It is linked to a non-expert methodological 'toolkit' that places an emphasis on currently undervalued qualitative and spatial data collection methods. This is a mixed and multi-method approach to understanding spatial (urban) systems that complements empirical data sets.

A series of case studies are used to test and refine qualitative collection from primary and secondary sources and spatialisation methods. Sample material is then used to test the utility and ease of use of GIS for data manipulation, analysis and modelling. Two detailed and complementary applications of the adaptive framework, the data inventory / collection methods and the use of GIS based digital spatial databases are used to illustrate the potential range of applications and highlight problems of use.

A number of possible future developments of the study are suggested for maximising the utility of the conceptual approach and a developed spatial database for a variety of agents, exploring additional dimensions of the urban system.

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Chapter 1

Sustainable Urbanism

“The streets be appointed and set forth very commodious and handsome, both for carriage and also against the winds. The houses to be of fair and gorgeous building, and on the street side they stand joined together in a long row through the whole street without any partition or separation. The streets be twenty foot broad. On the back side of the houses, through the whole length of the street, lie gardens enclosed round with the back part of the streets. Every house hath two doors, one into the street, and a postern door on the back side into the garden. These doors be made with two leaves never locked or bolted, so easy to be opened, that they will follow the least drawing of a finger, and shut again alone. Whoso will may go in, for there is nothing within the houses that is private or any man’s own. And every tenth year they change their houses by lot.” (Moore 1516 p63)

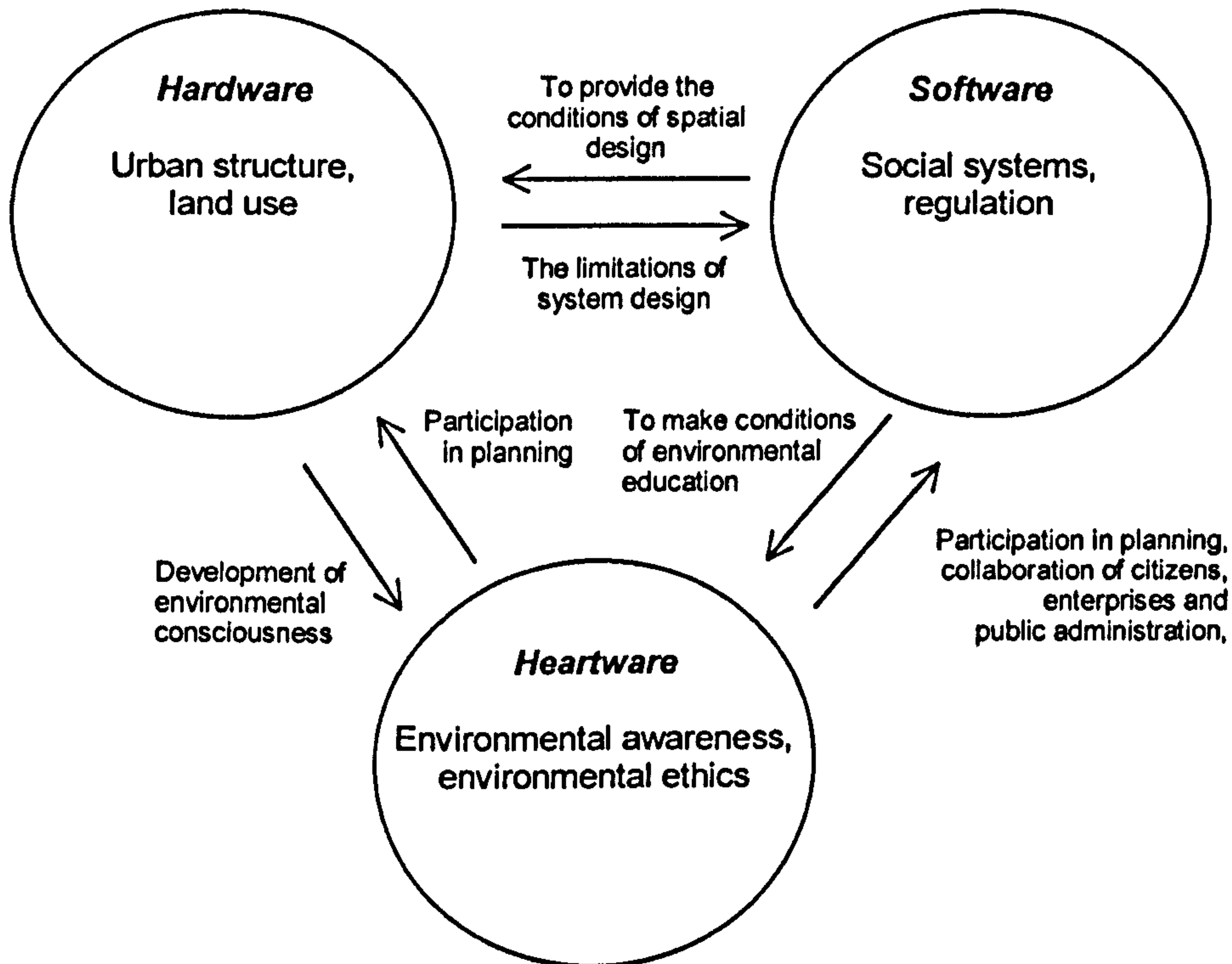
The idea of an urban utopia has a long history as a place that is more than just the physical. It is a place that involves organisational and institutional arrangements for management. It is also a very personal conceptual place as it involves the transference of individual value systems onto the wider community in much the same way that the idea of the sustainable city prevails thinking over our urban futures. The research question is whether either actually exists.

Rees (1997) asks if the idea of the sustainable city is an oxymoron. The response is not a simple one. It requires us to ask questions to clarify meanings and definitions and begin further inquiries around two concepts – sustainability and urbanity. Each has a multiplicity of definitions that will influence our answer and each will have in-built bias, in general favouring the physical manifestation over a more conceptual approach. Yet for both the physical and the non-physical we need to begin to understand these as dynamic definitions, as cities develop and societal values change.

This research begins to challenge approaches to understanding the ‘sustainable city’ in a way that places an emphasis on the conceptual, qualitative and dynamic dimensions. “The argument is not about absolutes” (Rudlin 1998 p60) or the search for some utopian solution to urban living or even the promotion of replicating conceptual models that explain urban structure at macro or micro scale (Frey 1999). It dismisses the notion of a prescriptive approach to substantive design as inconsistent with the nature of both sustainability and urbanity. This is true even for the idea of a multiplicity of prescriptive solutions suitable for a cross-section of urban systems (Haughton and Hunter 1994). It is the search for the characteristics of Lynch’s ‘possible city’ (1968) that provides the physical and conceptual *place* for a potential sustainable future. It is about the tools and methodologies required for each place to define their own future(s) and then to inform the process of change – both of ideas and of environments.

The systems based approach advocated in this research is to explain and integrate the attributes of *place* in any possible city. This is an approach that seeks to combine the substantive, analytical and procedural in a manner that actually works to effect change in any urban system. This has to be in a manner that recognises and assists the way decisions are made by designers

and municipal managers. Theoretically, we have to be concerned with describing real life processes rather than an ideal normative and rational approach to decision-making (Castles *et al* 1971). This approach is one that accepts intuition as an important mechanism for qualitative and political decisions and addresses evidence (data or otherwise) in any level of decision making "... as much psychological, in view of the qualitative character of most administrative decisions, as it is technical in some qualitative sense" (Scott 1967 p225). We also have to work in an evolving technical and policy context on a number of potentially complementary domains.



(the policy context - linking hard and soft urban management, from Mega 1996b p71)

The research objective is then to operationalise the idea and policy aim of sustainable urban development. In this sense, operationalising an idea begins by redefining that idea in a variety of differing dimensions - to take the concepts underlying the idea and explore the significance of them in a number of practical situations. This is intended to be action-research, learning by working within the constraints of real operational frameworks. To effect action and/or change from the idea of sustainability we have to begin to understand this operational context, how and why decisions are made in a partial awareness of the implications for sustainability. In part this is explored in the links between academic work, strategic policy and the direct views of practitioners likely to become responsible for the outworking of the concept.

Possibly the most important aspect of understanding the operational context is to begin to understand the self-contradictory and complex nature of cities themselves. The urban 'hardware' is the physical environment that has been the focus for much of the discourse surrounding the implications of

sustainable urban development. However, the 'software' and 'heartware' (attitudes, values and perceptions) of the city have the potential to inform and effect the research aim to a substantial degree, even independently from any physical intervention into an urban system. Each of these 'urban elements' can be scale specific and under the control of influence of a variety of different agents.

The research objectives are to look at how these scales and agents are linked operationally and to put forward a framework that informs change at all levels and dimensions of urban intervention. This is suggesting a starting point in developing sustainable urban systems that values understanding over prescribing action. As such, it only seeks to be a starting point for decision-makers, be they designers, strategic planners, elected municipal members, community activists or individual urban households.

The research will use the application of *action-research* to specify the multiple dimensions of cities that have a significance on the concept of sustainability. Thus, understanding the nature of sustainability and urbanity is the essential departure point for linking the concepts and exploring the properties of any links.

In part this could be described as '*simplifying complexity*' – developing a multi-dimensional approach to describing the state and working of urban systems, and in so doing, the process itself becomes important in learning about the operational context. This 'learnt' understanding is gained through action-research. It is a heuristic approach - learning by doing. Thus the improved understanding of urban systems and the addition to knowledge, is dynamic and in part retrospective – 'learnt by having done'. This is because learning and understanding are by nature dynamic processes.

The idea of simplifying the urban system is important because the heuristic approach does imply a linked understanding of decision-making frameworks. The level and content of the operational framework does need to respond (including temporally) to formal and informal decision-making processes. Operationalising the concept of sustainable urbanism is achieved by improving an understanding of urban systems by those who make decisions that significantly affect this system. There is a distinction to be made between *knowledge*; based upon collection of information and data; and *understanding*. If knowledge is the possession of 'objective' facts about *what* is happening within the city system. *Understanding* relates to the operating of this system and *why* things happen. This has implications for how information is structured, linked, collected, presented and reviewed in response to the requirements of the decision-making structures. The operationalisation of the concept of sustainable urban development has to have the role of the urban decision-maker and their level and means of understanding as a component. It is this requirement which has led to the *action-research* methodology within this study.

It is recognised that no applied research is value neutral, despite the perceived value of objectivity. This research is underpinned with a cautiously optimistic view of a sustainable urban future, but a future where the nature, meaning and substantive attributes of urbanity and sustainability are not yet fixed.

Chapter 2

Research Context and Theoretical Framework

Scope of the research – divergent thinking within two paradigms

Understanding urbanism by substantive theories

Substantive Strategic / City Region scale urbanism

Substantive individual dwelling / architectural scale urbanism

Substantive urban design / neighbourhood scale urbanism

Understanding urbanism by analytical theories

Understanding urbanism by procedural theories

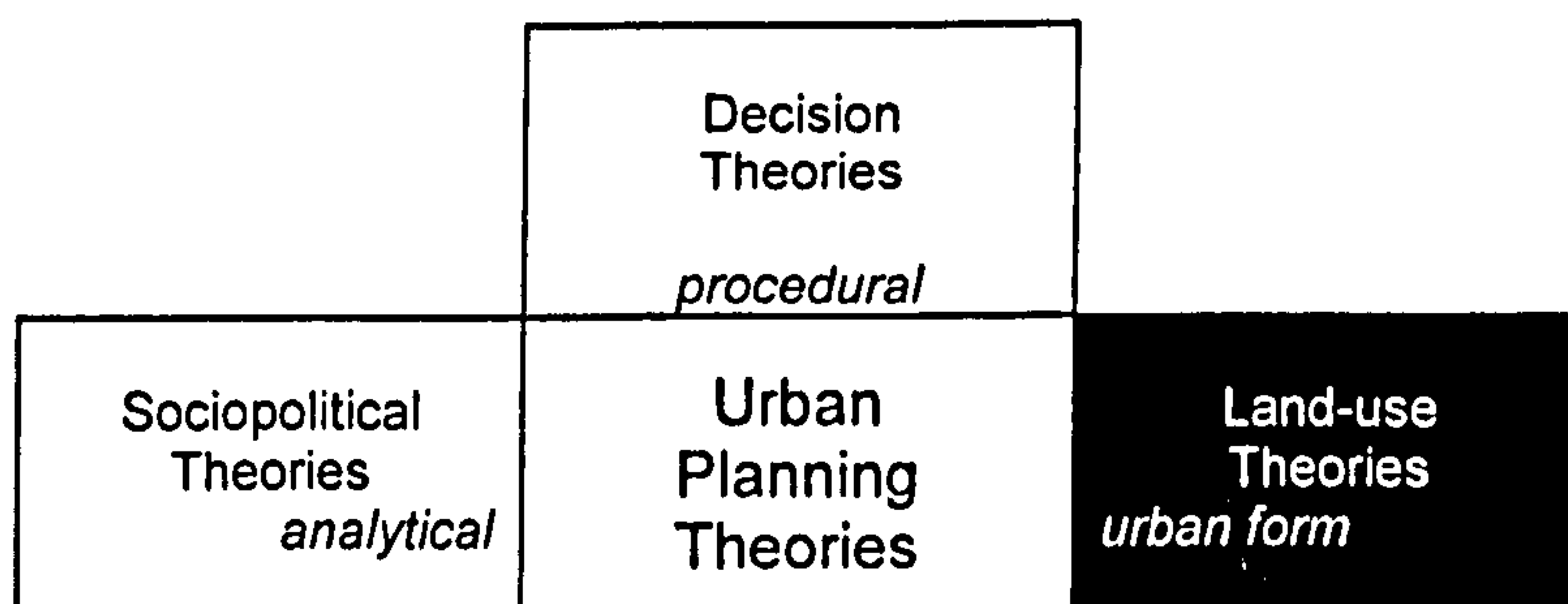
Understanding environmental sustainability

Problems with current research in understanding *'total urbanism'*

This chapter provides an overview of the current academic discourse surrounding urban planning and locates the theme of sustainability within its historical and theoretical context. It sets out some evidence for the argument that the relationship between sustainable development and urban planning has been dominated by physical considerations, to the detriment of a more clearly defined framework for sustainability. The necessary starting point for applied research into sustainable urban form is ensuring that you are asking and investigating the right questions. It is important that this starting position is not constrained by the idea of sustainable urban development as a purely or even largely physical issue. A more complete understanding of both the timing and popularity of sustainable urban development can be gained by looking back to the convergence and evolution of these two distinct threads of thought - the development of twentieth century urban planning and that of environmentally sustainable development.

Scope of the research – divergent thinking within two paradigms

Yiftachel's (1989) understanding of typologies of urban planning is a useful introduction to twentieth century ideas. His characterisation of the evolution of planning theory into three broad questions; analytical, substantive and procedural; borrows heavily from earlier theorists (Faludi 1973, Taylor 1980) who considered there was a fundamental division between theories of planning and theories *in* planning. Within the substantive debate concerning urban form, the emphasis and dominant characteristics have been those of prescriptive architectural theories applied at the urban scale. Innovative architectural and aesthetic ideas within the substantive debate also informed what was considered good planning procedure, namely that the design method was appropriate to city planning. This raises a number of questions over the transferability of concepts from the substantive to analytical or procedural theories and also from the designing of the individual building to the larger urban scale. The design method brought architects into the realm of social theory and it was a failure to understand the complex social systems within which they were now working that brought about widespread criticism of imposed social structures through deterministic physical design - most noticeably in the 1960's and 1970's (Jacobs 1961, Newman 1972, Coleman 1985).

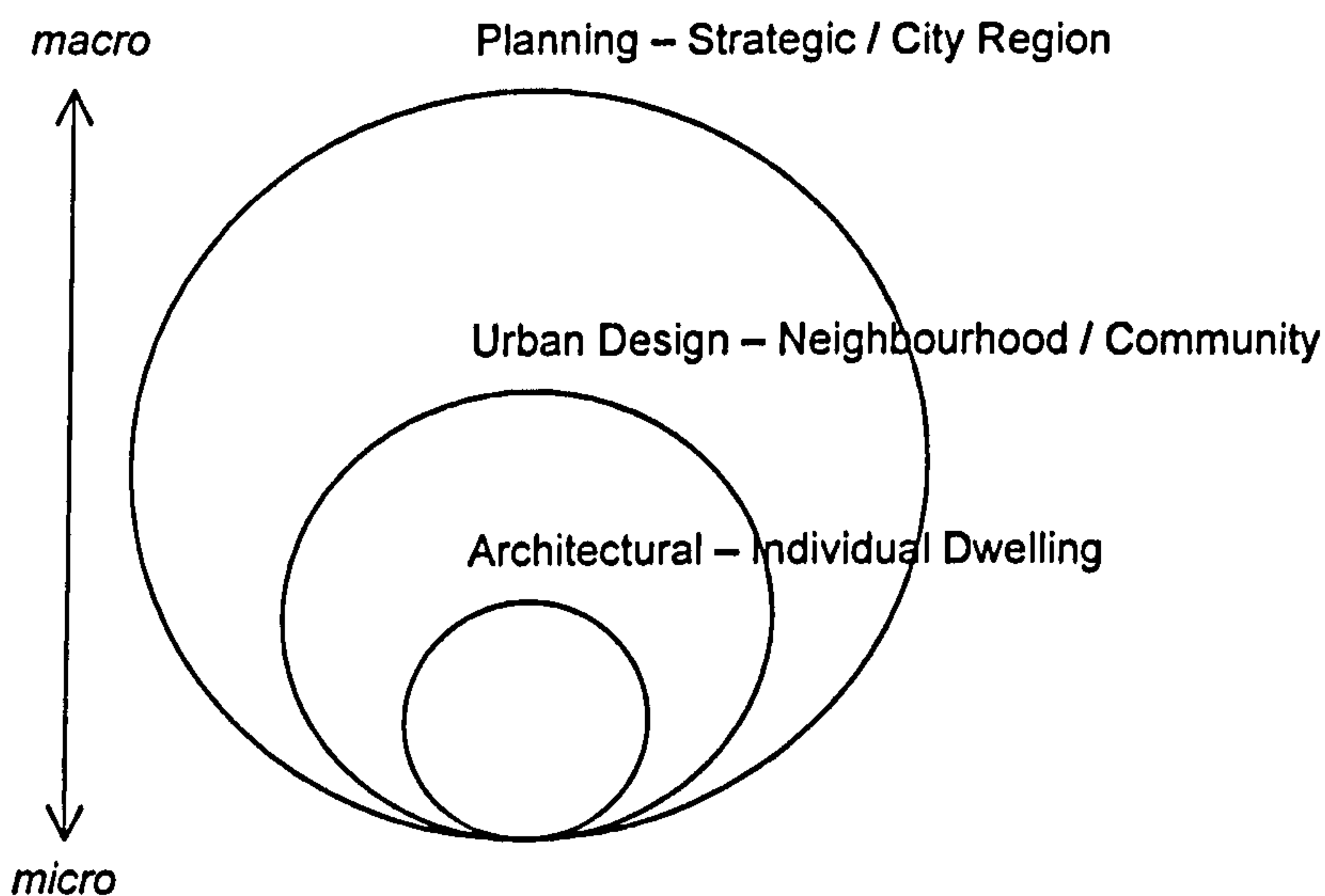


(the interaction of knowledge relevant to urban planning, after Yiftachel 1989)

While Yiftachel characterises the competing theories within each of the three strands; one of which is sustainability; as an outside observer, he also contends that ideological links exist between each of these areas and that these links need to be understood properly by planners.

Within the body of knowledge related to urban form, the dominant paradigm in both theory and practice has increasingly been that of urban sustainability (Newman 1986, Blackman 1995). However, it is important to note that the debate over sustainability within planning is still focused on the substantive area of form, rather than process and the interaction between each of the three areas of debate. In part, this is due to understanding a city as primarily a physical entity, rather than a physical expression of underlying political values and processes.

Understanding urbanism by substantive theories



(the substantive debate – what is a sustainable urban form?)

If our urban areas are considered at a number of different scales, from macro (city region) to micro (individual dwelling), different issues are addressed, and there are a variety of policy responses to the same challenge of sustainable built form at each level. It is interesting and useful to note the sharp professional divisions that appear within the academic literature are reflected in practitioners' divisions, where at the city region scale it is the geographers and planners who predominate. The challenge at the city region is unique in that the commentators are dealing with an inherited problem where solutions are generally seen to be long-term and incremental in their response.

Substantive Strategic / City Region Scale Urbanism

Michael Breheny's analysis is typical of work at the urban scale and his understanding of the debate surrounding the sustainable city has been dominated by competing prescriptive theories - so much so that he has characterised the debate into the broad positions of 'centrists', 'decentrists' and 'compromisers' (1996a and 1996b). The labelling of each 'value-based' position

being comparative, relative and to some extent anglo-centric in its contextualism. His focus is on alternative urban forms where he supports the 'compromiser' position, in the tradition of Howard and the Garden Cities movement (Blowers 1993), between the extremes of high-density development and suburban sprawl. The basis for his position is the social nature of a polycentric city where the English notion exists of archetypal or model communities (Rickaby 1991) enjoying the benefits of both town and country. Extreme visions of dispersal (Wright 1945 or more recently, the low-impact self-build visions chronicled by Fairlie 1996) or concentration are dismissed as unrealistic due to the constraint of perceived public demands or criticised for having an urban idyll (for example, Jacobs 1961). He argues that the shaping of urban form must be seen in the light of continuing social trends - a position of unquestioningly meeting a perceived demand rather than readdressing it. This is a free market position with a conservative (what he describes as balanced and liberal) view of the British public; one where people and politicians are afraid of radical change and unwilling to take risks individually for the greater public good. Thus, at the root of his argument and understanding of sustainability (the low risk compromise and conservative 'garden city' as "decentralised ... self-contained and balanced communities for working and living" (Fishman 1991 p232)) is a conflict between individualism and community. In effect, he questions the narrow physical focus of sustainable urban form and wonders if we should be asking broader research questions (1996b p13) rather than debating generic and non-specific spatial planning issues.

Breheeny's particular research foci are the links between spatial form, densities (1996a) and transportation energy consumption (1995a, 1995b & 1996b) and his findings, combined with a low expectation of the land-use planning system being able to deliver any meaningful benefits towards energy conservation, have led him along the route of least opposition. This contrasts with other researchers (Owens 1995, Plowden 1990, Mogridge 1985) who have arrived at contrasting viewpoints for accessible compact cities based on a more complex analysis of essentially the same data sources. While he does bring a degree of political realism into the debate, particularly questioning the 'Canute' policy of attempting to reverse the overwhelming forces of British counter-urbanism (Breheeny 1995a), a criticism of his work and analysis is that it is topic based, ignoring the complexity of the urban problem. A rejection of extreme prescriptive positions leads him to a 'compromise' (although in reality his compromise is closest to a decentralist position) prescriptive position rather than a rejection of absolutist prescriptive positions. While his criticisms of 'centrists' are well grounded in their weakness of over-reliance on single attributes such as transport energy to suggest sustainable form, his work is open to a similar review. A compartmentalised view of issues and of substantive, procedural and analytical theories has left no room for an adaptive approach to design. His desire for empirical evidence, in historical data or "hypothetical *mathematical* modelling studies"(1995a p411) is similar to the sub-optimal / two-dimensional spatial modelling of energy and form (Rickaby *et al* 1992, Rickaby 1991). Research that provides insight but is severely limited in practice due to its own contradictions whenever scale varies or other decision-making factors are incorporated into the predictive model. Breheeny's work is

acknowledged as contradictory (1991) due to his own recognition of complexity and his unwillingness to address it in anything other than a simplistic and subjective, value-laden 'Garden City' (Breheny *et al* 1993) perspective and his reluctance to address non-physical issues.

In contrast, a more radical manifesto for high-density sustainable urban living has been advocated within the wider European context (Commission of the European Communities 1990). A resurgence of urban lifestyles, with people living within close proximity to one another, requires a particular emphasis on improving urban environmental quality (Sherlock 1991 & 1996) and a willingness to build communities based on locality. 'Centurist' researchers are open about the dangers of the imbalanced 'garden city' (Sherlock 1996) and suburban forms as "... largely antithetical to such concepts as self-sufficiency and containment, energy efficiency and community enterprise" (Hillman 1996 p36). They also see the interconnections between the urban and rural (Elkin & McLaren 1991) in the need for efficiency in the use of our land resource – having clear policy implications for issues such as urban densities, environmental quality, traffic restraint and eventually public perceptions of the interplay between such attributes. Sherlock's views are less centred upon the sustainability debate, but rather informed by a desire for vitality and compactness that he (as a practising architect) sees as the essential qualities of urbanism which have been lost. It almost seems co-incidental that his concerns overlap with the sustainable development agenda within planning.

Much of the weight given to urban compactness is due to the potential benefits in energy use in transportation (Banister 1992 *et al* 1997, Owens 1992 1986 and 1979, Lowe 1994) possibly due to the empirical nature of the study. This is exemplified by the work of Newman and Kenworthy (1989) who suggest a correlation between densities/compactness and transport energy use. This work shows that "... the effect of density is fundamental to automobile use ... an exponential relationship" (Newman 1994 p75) and highlights the centrality of transport policies to urban design and the significant role of urbanists in promoting a compact poly-centric urban form based on contiguous 'urban villages' (pp 81-82 and Owens 1986 p64). The basis for better energy efficiency through higher densities or the scale of development is reinforced by the viability of certain energy technologies: such as CHP (suggestions of a basic requirement of 50 dwellings per hectare) or passive solar upon layout and design (Faulkner 1993, Owens 1992); lifestyle indicators and a necessary population catchment for public transport operators. Although there is some question as to the transferability of these findings (Nijkamp and Rienstra 1996) between different urban cultures, the generalisation of this work suggests intensification of our cities (building up rather than out), an improved understanding of how land uses interact with transport and a consideration of the effect of changing travel/urbanism attitudes on collective behaviour. Therefore, linking substantive design with social theory and societal attitudinal change, an area of sustainability that many commentators refer to but then choose to avoid.

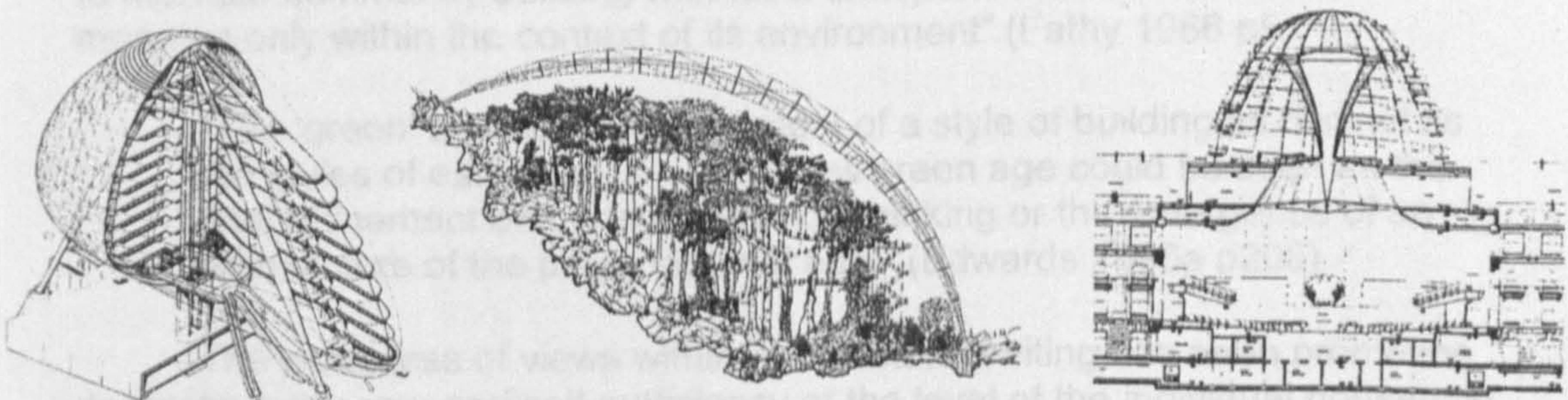
This 'centurist' position has gained credibility, with increasing numbers of policy makers recommending this approach to urban land-use planning (DOE

1995). However, political compromises are still made to the more radical elements, particularly the separation of physical form from on-going environmental management and procedural issues, and thus the nature of policy responses is limited by a myriad of constraints and unsurprisingly appear to be unimaginative if at least realistic. Compact city advocates, in common with 'compromisers', have the problem that the arguments are based on meeting basic criteria regarding urban form, where there is still an implicit prescriptive assumption that there is only one solution to sustainable urban form, one driven by physical parameters (albeit set within a holistic framework of physical criteria).

Policy application is the means by which much of this research is made real, debated and evaluated. Awareness of the issues and some of the potential impacts begin to pose more questions than they answer and authorities have generally been cautious over adopting such generic and sub-optimal research at the urban and regional scales, levels of intervention that by nature are non-technical, political and complex.

Substantive Individual Dwelling / Architectural Scale Urbanism

At the architectural scale, sustainable development is still a minority consideration (Ekins 1997) where ideas are more creative, more visionary and also partially confused with gimmicks. Authorities on appropriate technology have debated the benefits of high (Buckminster Fuller 1981) and low (Vale and Vale 1991a, 1993b, 1980 and 1975) technological approaches to ecological living. Buckminster Fuller followed a belief that growing consumer consumption of resources, particularly in the architectural profession, could only be met by 'radical technical innovators'. He was a pioneer of prefabricated and mass-produced housing, lightweight structures and the "... master of 'more for less'" (Pawley 1990 p15). These technological approaches to building design, with an understanding for the ecological interdependence of 'spaceship earth', have been the inspiration for Future Systems' 1990 climatically controlled Green Building (Pawley 1993), Nicholas Grimshaw and Partner's 'biome' Eden Project (Toy 1997) and Foster and Partners' 1993 redesign of the Reichstag (Herzog 1996).



Sustainable architecture also entails a detailed consideration of resource flows (energy, water, waste) within buildings (Norgard and Christensen 1994) and the potential environmental impact of new built development (Edwards

1996a, Spence and Mulligan 1995), often within a future 'sustainable suburbia' scenario, where concepts of self-sufficiency and resource conservation applied at a household level inevitably suggest a low-density, low-impact urban form (Rodger 1994) or one where the architect adopts a role of adaptation and subtle change within inherited built form (MacDonald 1996, Cook 1994, Kelbaugh 1983). Extensive technical design guides have been produced to give an overview of technological skills and techniques suitable for 'greening' a building, often with an attached ethical and economic justification (Lovins 1997) for adopting such techniques within any particular scheme. These are presented as comprehensive guides or checklists covering an inventory of material selection, embodied energy and energy in use, sick building syndrome, water conservation, insulation, solar orientation and occasionally 'sense of place'. (For examples; see the North American approach of Barnett and Browning 1995, the Royal Australian Institute of Architects 1996 and McNicholl and Lewis 1996 response to sustainable building in the Irish context). Principles are then operationalised in a number of well documented demonstration projects (House of Commons Environment Committee 1993, Vale and Vale 1991b), often simply focusing upon the demonstration of a single attribute within a large development, such as the Dutch low-energy settlement of 'Ecolonia' designed by Lucien Kroll (Edwards 1996b and 1995) or the German eco-settlement of Kiel-Hassee (Neil 1995). Alternatively, the full checklist is applied within a single dwellings.

Other designers have emphasised a new eco-architecture or "green aesthetic" (Vale and Vale 1991a p181) of low or appropriate technology that is dependent upon the local context: the climate, local building materials, landscape, landform and other natural features – and to the needs of the building users. This green aesthetic is a new vernacular form, building upon the established links between traditional architecture and energy efficiency (Fathy 1986 and 1973), varying globally to match physical climatic conditions and 'spiritual and beauty' considerations (Papanek 1995). This could be based on examination of early eco-case study buildings that show a certain degree of commonality in appearance. This is in spite of the supposed indigenous building approach, with the buildings acting as climatic control devices (addressing concerns such as ratio of walls to windows, roof pitches, and simple technology to facilitate community building with local skills) and that this form "... has meaning only within the context of its environment" (Fathy 1986 p5).

"The 'green' age holds the prospect of a style of building as distinct as the styles of earlier ages ... The new green age could be seen as the final refinement of modernist design thinking or the emergence of an architecture of the post-industrial age." (Edwards 1996a p206)

The weakness of views within architectural writing has been promoting domestic autonomy and self-sufficiency at the level of the individual household while failing to consider how the household relates to the wider community and the urban area as a whole. This is most obvious in transportation impacts but also in issues of social cohesion because the dwelling or building is seen as a closed system constrained by its own site rather than as a system within a

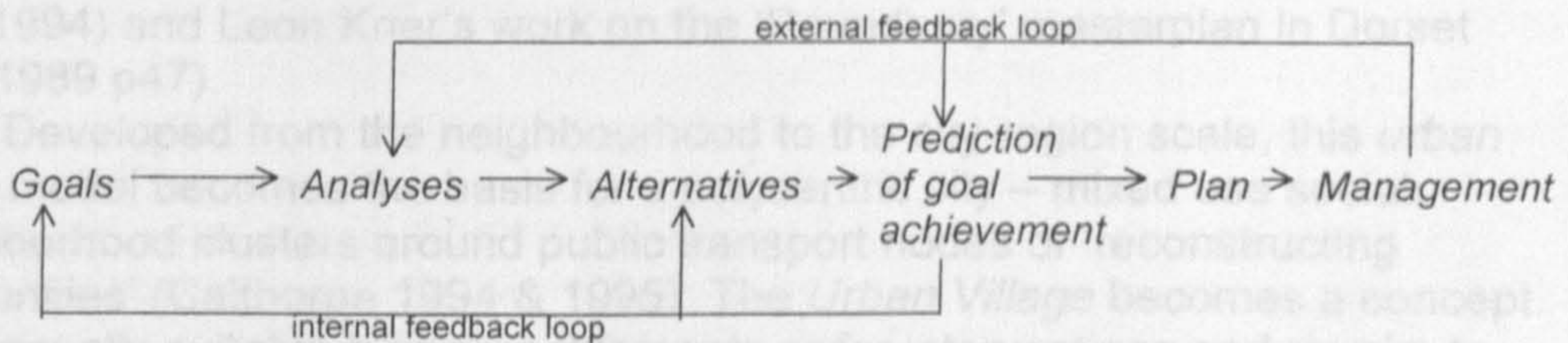
larger and more complex urban system. This is not to say that architects have ignored urban systems but that cities are largely viewed as physical systems and constructs and that sustainable architecture within a sustainable city is part of an historical continuity of grand design-led utopian visions (Edwards 1996b, Vale and Vale 1991 and 1996).

Substantive Urban Design / Neighbourhood Scale Urbanism

At the urban design scale, a level that "... has not featured strongly in the greenhouse debate" (Newman 1994 p69), there is a small core of academic researchers which has systematically tried to understand the complex nature of human settlements or communities and their internal workings. Bentley (1990) characterised sustainable urban design by eight main (but not exhaustive qualities): energy efficiency; resilience; cleanliness; wildlife support; permeability; vitality; variety; and legibility. He argued that these principles can be expanded into design guidelines that provide substantive direction for physical design. The Canadian based landscape architect, Michael Hough (1995 and 1990), approaches community design from an ecological understanding that humanity and nature are interdependent systems that have traditionally developed together. He suggests that vernacular forms of settlements that have evolved and developed over time can provide an urban system closest to that of a natural system. His case is that city design should be based on the natural sciences rather than perceived artistic approaches. This would give us a dynamic and holistic way of understanding, designing and managing our urban areas. His basis for designing sustainable communities (although he is careful not to put it in those exact words due to problems over the meaning of sustainability) would include the concepts of process (with linked evaluation methodology), efficiency, diversity and 'connectedness' (his term). John Tillman Lyle (1985 and 1994) is also a landscape architect who espouses the view that human and natural systems are connected and operated according to the same basic principles. He coined the phrase 'human ecosystem' to emphasise this point maintaining that many of our urban problems today are due to ignorance of this fact, combined with a drastic oversimplification of the workings of human systems. His starting point for sustainable design is a knowledge and understanding of how human ecosystems operate, borrowing a basic concept from the science of ecology; namely, order within an ecosystem; a procedural focus which incorporates management into the design process. He makes a central point that a *plan = spatial form + management*. We need to understand change over time, adaptations in system design (for example see Knowles 1974) and in particular the flow of energy and resources through the urban system. Of interest in his developing methodology of 'regenerative design' is the thinking surrounding 'suitability' modelling or an adaptation of basic overlay analysis into single aggregated maps that give a simple overview and summary of complex ecosystems (1985 pp 247-259).

While these two views are overtly focused upon landscape design and natural systems forming the foundation for sustainable urban form, they each attempt to address apparent contradictions and the complexity of urban areas

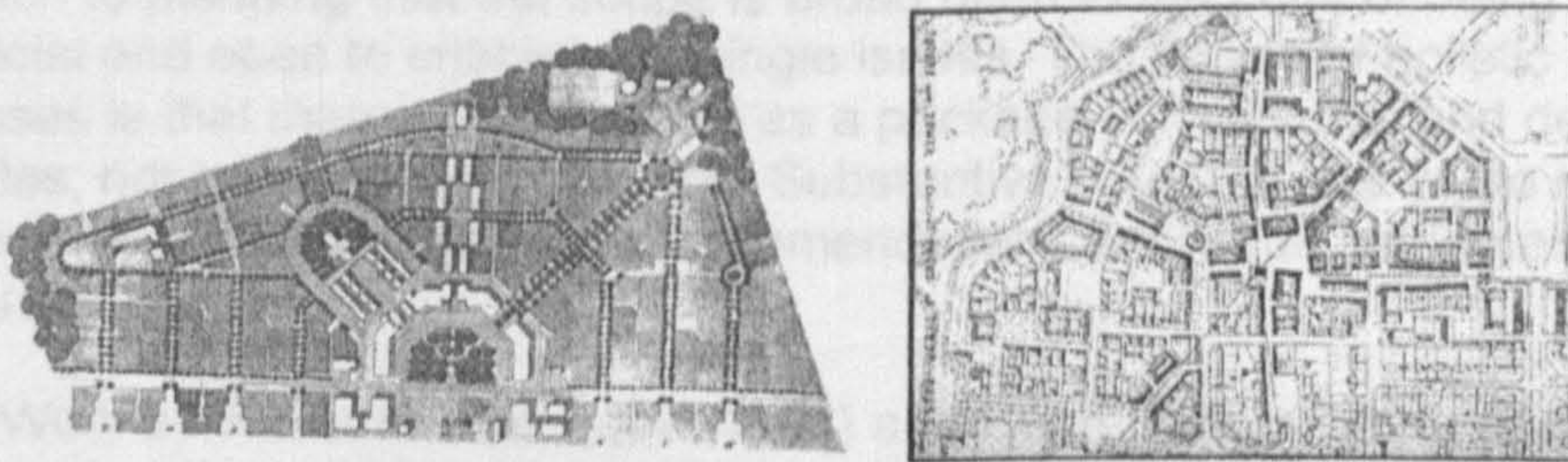
by using systems thinking. They seek a design methodology that allows us to deal with complexity and Lyle's understanding of ecosystems suggests the need for further investigation into systemic thinking. A method of considering human systems is cyclical, in that it allows for re-examination and testing through various feedback mechanisms, thus in essence systemic design becomes a learning process and substantive aspects become integral with procedural steps through feedback.



(rational sequence of ecosystem design involving feedback loops, after Lyle 1985)

Lyle admits that the question of goal setting, an analytical debate fuelled with individual value judgements, is still separated from the design process, although (as in the above diagram) it can be informed by internal assessment as a self-educative and learning step.

Peter Calthorpe (1995, 1994., 1993, 1992 and with Van der Ryn 1986) in the United States and the Urban Villages Group (1992 & 1995) in Britain, have promoted their views of sustainable urban communities through what are essentially design manuals for medium density living based around mixed uses, human scale 'pedestrian pockets' and public transport. They are influenced by a range of morphologists (Rowe and Koetter 1984) and anthropologists (Lynch 1981, Sennett 1972 & 1990) and have, in a limited way, combined the concerns of social theory with the requirements of physical design and on-going urban management. They are seen by many as interconnected models for organising localities on principles of sustainability that "... could begin to satisfy the need to balance lifestyle aspirations with more energy-conscious design layouts and well defined open space" (Thomas and Cousins 1996 p61).



(masterplan extracts from Poundbury, Dorset and Seaside, Florida)

This sort of approach has become grouped together under the banner of 'New Urbanism' (Katz 1997 and 1994) – a physical vision (addressed in the form of guiding principles and urban design code) for towns, cities and suburbs that lies within the ability of the environmental professionals to deliver. Delivery by persuasion (Osborne 1995, Wates 1994) and precedent (Hazel 1997) and a growing body of practical projects (Cowan *et al* 1996, Hill 1996), realised and

unrealised, has given weight and conviction to this work. These ideas now appear less utopian and more possible as one of a number of solutions to sustainable urban form. *New Urbanism* has also resulted in architects used to working at a household level, reconsidering issues at the scale of the urban village and the alterations required with their advocated approaches (MacDonald 1996 p93, Hough 1995 p233). The most famous examples are Duany and Plater-Zyberk's (1994 and 1989 p71) plan for 'Seaside' in Florida (Katz 1994) and Leon Krier's work on the 'Poundbury' masterplan in Dorset (Krier 1989 p47).

Developed from the neighbourhood to the city-region scale, this *urban village* model becomes the basis for a polycentric city – mixed use social neighbourhood clusters around public transport nodes or 'reconstructing communities' (Calthorpe 1994 & 1995). The *Urban Village* becomes a concept that is equally suitable for new settlements or for interventions and repairs to existing urban or suburban fabric because it is built upon key attributes and principles, particularly the issues of mixed uses, scale and density thresholds (Walker 1997, Roberts and Lloyd-Jones 1997). These are policy attributes that suggest a particular substantive 'product', one that considers intensity of activity, social and cultural interaction and thus clearly imposes a value-judgement on the role of cities, where it is good to maximise choice and variety for the individual. New Urbanists (aka. Breheny's compact city advocates and 'centurists') are explicit about the transferability of this neighbourhood concept to a city-region scale – for example the Seattle regional plan (Lawrence 1996a p24).

"Only at the community scale can individual initiative and responsibility be fused with national and regional commitment" (Calthorpe 1995 p28).

Yet much of the evidence for this new urbanism approach is intuitive and open to detailed scrutiny on a number of grounds such as "... there is no theoretical basis for stating that the new urbanism will unambiguously reduce car travel" (Crane 1996 p118). Possibly it is one of the downfalls of any holistic approach to planning that the scope is broad often to the point of being superficial and open to criticism on single issues. The nature of holistic responses is that they succeed or fail as a package of measures and design principles, not on individual attributes. Substantive research has yet to emerge that backs *New Urbanism* policy recommendations and value judgements with measurable results.

Work by Richard Guise (*et al* 1994) and Hugh Barton (1996, *et al* 1995) has extended this poly-centric city thinking in looking at the specific interaction between different scales - how neighbourhood communities are influenced by the individual household and by planning at the city region scale. Also of importance is evaluation and feedback within the design (or their preferred term of 'decision-making') process. Their work is very much a "... synthesis of the literature in the related fields" (Guise *et al* 1994 p223) which are highly dynamic areas of current research. Thus the most recent writings on urban design have considered sustainable communities as systems within systems, although they

still tend towards prescriptive, even a series of linked prescriptive principles, rather than adaptive responses.

The few commentators (for example, Welbank 1996) who have clearly referenced the academic work to the political debate, while adding practicality and realism, acknowledge the continuing uncertainty over the future of urban form. In addition we are continually warned about the reliance upon or even the existence of 'utopian' forms (Thomas and Cousins 1996). Thus the issue of sustainability isn't seen as simplistic, and policy and practical recommendations remain by default ambiguous. Any dismissal of extreme solutions should not lead us to a position of substantive compromise (after Breheny) but recognition of the complexity in the issue and the links with political process. The question arises from practitioners, do we work on best available guidance or wait until there are more answers? Is future work to be based on technical judgements or political value judgements regarding urban form? How useful is applying generalised research when locality specific issues are ignored?

There is a need for research work to be more policy-aware and to provide more consistency between the strategic urbanism and the local urban design. There is a need for more *dimensions*, other than the merely physical, to fully understand sustainable urban form. Manipulating form is not an end in itself, but a mechanism to effect travel change, resource use/efficiency or other underlying factor; most of which are dynamic and dependent upon individual lifestyle choices, technological advances, changing political expectations and broader economic restructuring; the essence of *total urbanism*.

Understanding urbanism by analytical theories

In urbanism and planning theory, 'What is a city?' is essentially an ideological question fitting between the poles of capitalism and Marxism, that is less interested in physical structures than socio-economic systems. This question also has important contemporary implications and commonalities with political processes linking urbanism to distinctive value-systems. There is currency in the cyclical nature of academic social research where the idea of urbanism as a way of life first popularised by Wirth (1938) has been reinvestigated by a new generation of researchers and practitioners (Pahl 1968, Gans 1968, Raban 1974), finally finding a place within accepted government policy (URBED 1999). In this context, urban sociology literature is relevant to explaining underlying socio-economic structure within cities based largely upon the development of political classifications of economic organisation and class distinctions. It can help in the definition of concepts (Beshers 1962) used to simplify urban structures and patterns, the legacy of which are still relevant to urban policy today throughout Europe and North America.

Some principle concepts or values used in urban theory include the consideration of flows and systems, where the city is a "giant resource system" (Harvey 1973 p68) and a mechanism for distribution of these scarce resources (principally financial) and is thus intrinsically linked to distributive justice and poverty. Space itself, is viewed as a commodity (Savage and Warde 1993) as are ecological resources (Short 1984, Hartshorn 1980). Arguably this is illustrated in urban areas being the focus for social inequality, 'underclass'

(Gans 1991) and the resulting social implications of crime, violence and social unrest. The form of these outcomes, linked to the underlying structure of cities, causes us to "... rethink and debate ... the very principles and goals that shape western society" (Badcock 1984 p30). The city as a system for resource distribution raises questions of appropriate levels of intervention for the purposes of management or redistribution. Even the nature of public space causes designers to consider equality of access, opportunity and positive distribution. Pahl (1972) argued that the city is a socio-spatial system where access to resources is fundamentally constrained at the local level but that in any case the city is simply a spatial and physical expression of power within society (Pahl 1972). This view is shared by Castells (1977) who argues that spatial organisation is a reflection of existing social relations and the organisation of industrial production – suburbanisation, gentrification, or the presence of corporate structures being the physical expression of social structures.

A general sociologist's view is that the physical problems of the city have been over-stressed and that it should primarily be understood as a social entity. Social science does not suggest any easy answers to urban problems and only a partial explanation based upon a given theoretical position. However, it certainly refutes the assumption that physical intervention on its own can solve complex problems.

Harvey (1973) argues from a Marxist position that urban decline is inevitable and a necessary consequence of a capitalist mode of production and that intervention in the market is necessary for the purposes of redistribution – a "utopian picture" (Clark 1982 p178) that promises the undeliverable. Such a political position makes a distinction between equality and meeting needs, thus policy variations will arise out of varying needs, based on some evaluation of disparity and poverty at a local (intra-urban) level; for example, spatial indicators of variations in quality of life, accessibility, isolation and social well-being developed by David Smith (1973). The planning system itself is concerned with social intervention that is area-specific and responsible for positive discrimination on a spatial basis. Gans (1972) argues that this nature of planning is essentially 'goal-orientated', serving those who determine these goals.

This view has been criticised as a form of structural or cultural determinism, based upon a reductionist view of complex societal relations; the Marxist 'class struggle'; which ignores the "... uncertainty at the heart of the system" (Willis 1977 p175) and highlights the dangers of euphemisms, generalisation and extrapolation. This is particularly true of the spatial generalities of Burgess, Hoyte, Harris and Unman of the Chicago school of urban sociology. The danger of developing any single dimension of urbanism, such as social systems, as a way to understand a city are the resulting ill-defined urban stereotypes. Sociology produces generalistic models that are 'soft' (based on social groupings and interactive), reductionist and difficult to apply. To illustrate theoretical points, they tend to rely on empirical statistics aggregated upon administrative boundaries, giving unrealistic homogenous groups. They ignore physical links (deterministic or otherwise) where urbanism is simply human adaptation to the environment. More balanced writers and

social commentators argue for integrated thinking, responses and overlapping policies where "... the formation of adequate policies and the forecasting of their implications is going to depend for their success upon some broad interdisciplinary attack upon the social process and spatial form aspects of the city system." (Harvey 1972 p334) The localised nature of many of the decisions and variations in levels of decision-making suggest a need for integration between different professional opinions, scales of operation and more explicit linking with 'value systems'.

As such, urban planning is about making moral value-judgements and should not be over-reliant on a technocratic profession. If this position is accepted, underlying assumptions then start to become questioned - for example, the deterministic view of poverty alleviation based on localised intervention. The idea of urbanism as a 'value-system' and urban planning as a means of expression of these values suggests that many negatively viewed aspects are simply inherent characteristics of a complex human system but also that the expression of sociological constructs can in its own way become deterministic and a self-perpetuating "vicious circle" (Gans 1991 p336) of false (suggested) causalities. There is also the modernist paradox (Savage and Warde 1993 p122) of urban values such as diversity (physical and cultural) meaning there is no generic urban 'value system'.

Understanding urbanism by procedural theories

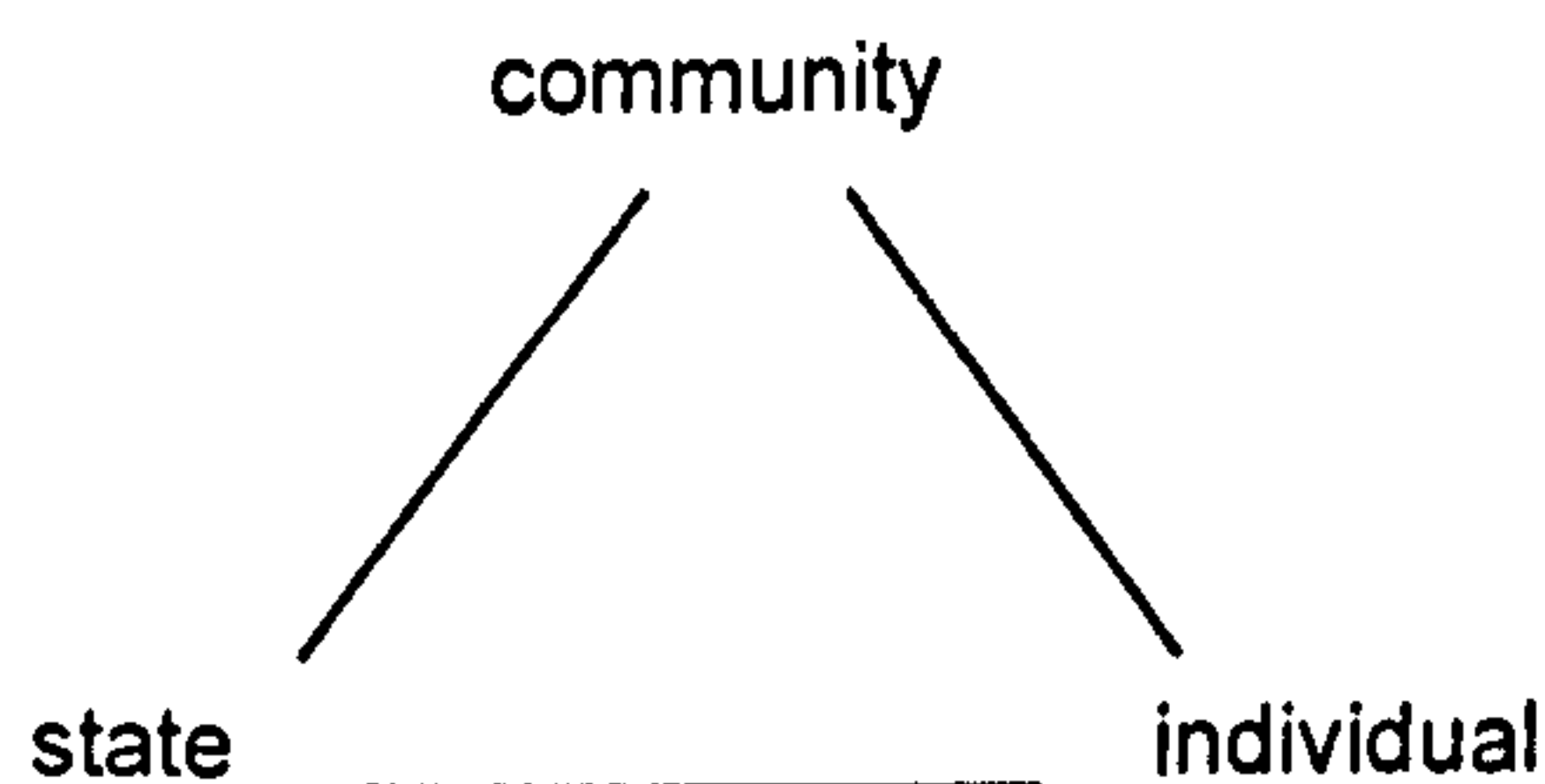
The dominant procedural approaches to planning are interconnected and many are the direct response to perceived inadequacies of rational comprehensive planning (Fainstein and Fainstein 1996) on grounds of technical inadequacy or moral bias. These ideas question reductionist approaches and the ability to acquire adequate strategic thought (Lindblom 1959) and the existence of consensual views within any society (Davidoff 1965) which can be reflected within any planning process. Ultimately, planning and decision-making within a spatial and land-use context is a political process, responsive to prevailing political values and bias towards those individuals and sectors within society that maintain a political voice. This is a widely held view (Forester 1989, Healey 1992, Fainstein and Fainstein, 1996) that challenges the role of technocratic professionals and places them in the role of advisors to politicians and decision-makers at all levels. If this is the case, then the twofold ability to: (i) involve individuals (Davidoff 1965, Arnstein 1969); and (ii) facilitate and inform political debate (Cox 1976); should be at the forefront of the planning profession.

Yet, process models and theories appropriate to sustainable planning appear to have dismissed or ignored the inherent attributes of a sustainable design process. Process or urban dynamics have been considered only where they have implications for urban form. Procedural attributes and theories are important because of the dynamic nature of urban populations, values and thus lifestyles. One key element that has expression through physical form is the loose-fit adaptability advocated by Calthorpe (1992, Karni 1995, Brand 1994) to allow for changing economic structures, demographics, promoting improved lifestyle choice through physical diversity. Housing, for example, is by nature a

dynamic process where flexibility in the dwelling design can help to meet the changing life-cycle of the inhabitants. If a strategy for robustness and flexibility is followed, the long-term implications will go beyond closely meeting the single user's needs, it will extend the life of the structure. Karni's (1995) 'user's flexibility strategy' is one of re-subdivision and reorganising the internal volumes of a building while the structure remains unaltered (through two broad construction alternatives of sub-dividing open floor areas horizontally or vertically). Here flexibility is seen within the context of the building's lifecycle and changing needs and thus both the ease of change and the frequency of change become important design considerations. To help in understanding the various changes that any building will experience, it is useful to consider it in terms of a number of sub-systems (structure, internal space, services etc). Karni has closely examined the individual elements of the structure sub-system of public housing (Karni 1995) and identified possible measurable aspects of robustness that should be considered at the design stage. These same aspects can be seen as pointers to assessing or measuring the potential flexibility and robustness of structures: length of exterior walls; size of unit; location of entrance points; number of open facades; geometry of exterior walls; type of construction system; length of free spaces; location of 'wet zones'; inter-relationship with other building sub-systems etc. The combination of these factors provides the design recommendations for flexible public housing. Thinking dynamically does begin to have direct implications even for substantive issues at the earliest stages in design but it still remains a physical issue compared to process.

Breheny also begins to debate procedural measures and the implications for implementing research into sustainable urban form (1992), raising the theme of holism, the implicit values and subjective nature of sustainable development as a concept, and hence it's locality specific nature. There are questions over how these measures are viewed and valued by others, including directly the public; as consumers of residential areas, reacting commercially to the concept of 'urban lifestyle' and 'city living' (Osborne 1995), and indirectly the property market (Rydin 1992) (questions with no research into demonstrable links between behavioural patterns and environmental awareness or knowledge). What little research there is (RICS 1991) suggests that attributes such as open space are valued and with it, associated lower densities, with perceptions of more open space. Implied is that designers should meet current needs through physical design approaches rather than challenge them directly. Thus, it is possible to consider Breheny's questions over the possible contradictions of the compact city as an admission of complexity that goes beyond the traditional remit of land-use planners, urban designers and architects. His repeated call for caution over extreme solutions (1992) is confused by value-laden language relating to phrases such as suburban sprawl and town-cramming, these are analytical rather than descriptive, and closer investigation of the underlying attributes of many of his arguments (such as quality, accessibility, diversity) are the same as those he calls extremists. Perhaps most significantly are the procedural issues that Breheny raises over social acceptability and the conflict between community and individual.

Etzioni (1995) suggests a way of conceiving a community as a 'self learning system' that itself can reduce this conflict and address the balance of rights and responsibilities between individualism and collectivism. The *Communitarian* agenda and movement that has emerged has high level policy endorsement in America and substantial links with the environmental movement (Etzioni 1997, Mulhall and Swift 1992), sharing concerns for linked social and environmental stewardship. It is a working out of the principle of subsidiarity – taking decisions (and providing rights linked with responsibility) at the lowest appropriate level, where previously, rights were considered the preserve of the individual and social responsibility that of government. The *Communitarian* movement advocates readdressing this imbalance by passing responsibility to locality based community level whose agents are families and households. This clearly requires a change in societal attitudes (Rookwood 1993) and can be seen as a reinvented model for 'participatory democracy' (Etzioni 1995 p24) where shared community values, in the form of a voluntary moral code, can begin to impact upon personal freedom in the same way as moral absolutes (such as the rejection of murder).



Debate over moral restrictions and responsibilities are important at each level of linked decision making (above) and so, crucial to this debate, is the need for better information about actions and consequences and an improved knowledge (Gwilliam 1993) as to how this can be addressed. This is what Etzioni calls 'preventative education'. The methods of gathering and presenting the necessary information then tends towards non-generic and contextual approaches, such as 'mixed scanning' or the updated 'environmental scanning' (Etzioni 1967, Kaufman and Jacobs 1987), and the issues of power and process then need to focus upon those within the political debate who collect, hold, manage or present information.

The practical results of procedural considerations of sustainability have been the development of environmental auditing mechanisms and the acquisition of the technology and information required to input into and carry out this process (Blackman 1995), most often within a Local Agenda 21 and governmental policy framework. The characteristics of such processes aspire to long-term strategic and integrated visions; albeit that each of these words holds a variety of meanings dependent upon the political and procedural interpretation placed upon it. What is emerging is a hierarchical approach to process and implementation of Local Agenda 21 activities, a hierarchy based upon values. This is often expressed in the establishment of sustainability indices and the setting of targets (Rookwood 1993) to inspire, inform and provoke action at the level the activity and/or implementation is most appropriate to. Within this, there is a recognised bias towards environmental behaviour and performance, since

processes of community involvement are focused upon physical environmental issues and actions or behaviours that have direct consequences for physical resources. This increasingly is seen as the answer to the question 'what is a good planning process?'. It is one that begins to address city-wide issues at a community level, by creating sustainable viable communities you can move towards a sustainable city. The procedural weakness is the limited view of urban management at this community level.

Understanding environmental sustainability

Simultaneously with the evolution of urban planning and substantive aspects of sustainability, the analytical questions concerning the meaning and interpretation of sustainability have been the focus of a wider environmental movement. John McCormick (1989) writing about the roots of environmentalism, parallels the emergence and growing importance of environmental issues with a new realisation that the effects of human development have wide ranging consequences on our natural world. Improved understanding of the natural world grew out of a Victorian era where the fashionable study of natural history coincided with environmental and health problems associated with industrialisation and urbanisation. New threats to human health, living conditions and quality of life were linked to the restructuring of society during the industrial revolution and resulted in a growth of protectionist policies and actions together with a re-evaluation of the relationship between mankind and nature. There was a fundamental shift in our common understanding of nature, moving from a view that nature was threatening, to one where it was being threatened. There was a feeling that nature was a system at equilibrium, delicately balanced and sensitive to human actions and that exploitation of nature had unanticipated consequences where mankind could upset the balance. This relationship between humanity and nature is in essence a question of societal values.

"Early American conservation is often represented as a battle between morality (represented by the people) and immorality (represented by private interests set on exploiting the nation's natural resources for their own ends)." (McCormick 1989 p14)

Implicit within McCormick's analysis is that the history of environmentalism is a political history. Just as in politics, in environmentalism there is no single voice of consensus but a range of positions from the left wing / radical / 'dark green' / ecocentric position of 'preservationists' arguing for valuing nature for its own sake, to the more conservative position of the 'light green' / 'conservationists' who argue for the sustainable exploitation and use of natural resources (Turner 1993). There is no reason to think that today there will be any difference in the political interpretations placed on the meaning of sustainable development and that environmentalism will continue as a political movement.

Two strands to draw from this position are that environmental sustainability challenges us on the levels of the individual and as a society:

individually, the theological and moral questions of how we personally relate to nature (McKibben 1990) and how we face the responsibility for the consequences of our actions; collectively, how we value the environment within our society and take steps to protect it from unsustainable exploitation. It is at the societal level where we have a convergence of concepts and where ideas on sustainable development, established with a strong environmental bias, have begun to influence planners and politicians. Consequentially, sustainability is now the dominant paradigm within substantive planning theory. It is an issue that warrants a particular analytical focus within the following chapter to ensure theoretical positions and grounding are used to fully explain our interpretation and understanding of sustainable development.

While environmentalism has influenced substantive planning theory and given weight to the sustainable cities movement, there has still been little understanding of the links between the analytical and urban form debates, leading inevitably to confusion and contradiction in practice or policy recommendations. This compartmentalisation of analytical and substantive issues has been reflected in, and is the cause of, the compartmentalisation endemic within the prevailing literature concerning the sustainable city. The dominant paradigm of sustainable urban form demonstrates two types of internal compartmentalisation: (i) based on a specific scale; and (ii) adopting a sectorial topic based approach to understanding linkages. Unacknowledged links also result in prescriptive deterministic approaches to the design of our physical environment.

Problems with current research in understanding 'total urbanism'

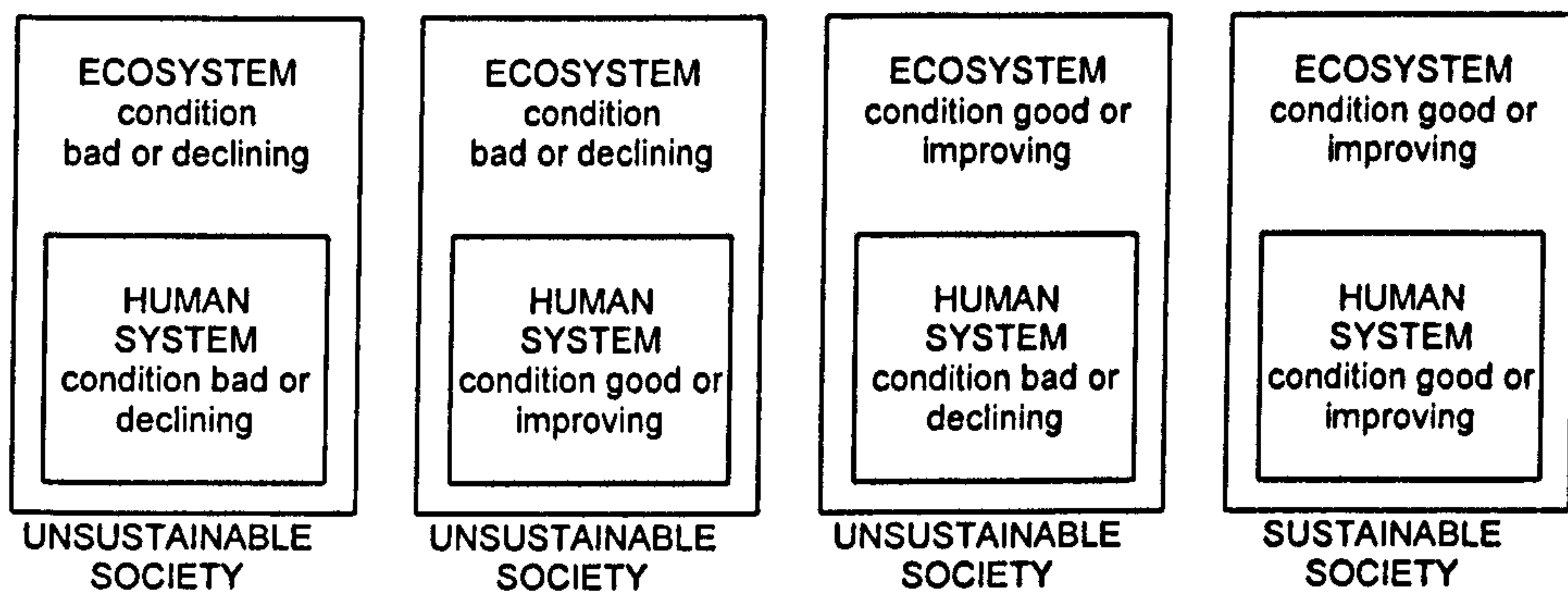
The roots of much of the conflict and contradiction in the understanding of sustainability and urbanity lies in the notion of 'separation'. Research in the area of sustainable development has emphasised the holistic nature of the concept but has then gone on to compartmentalise, sectorise and separate individual issues, specific scales of investigation and the substantive response from the analytical and procedural theories of sustainable development. Sustainable development remains a confused and generalised topic (Redclift 1993), one of the reasons for the numerous contradictions within the literature. In turn this confusion makes the concept impractical and difficult to operationalise (Turner 1993).

current problems associated with our understanding of sustainable development	aims and rationale of the research to overcome current problems
<p><i>confusion</i> over meanings and definitions</p> <p><i>contradictions</i> between topic based advice</p> <p><i>conflicts</i> with competing and incomparable trade-offs</p>	<p><i>consensus</i> at a conceptual level</p> <p><i>complexity</i> in human eco-system thinking</p> <p><i>consultation</i> with endusers about values and emphasis</p>

Recognition of such separations and the ways in which they can be reconciled is central to the research objectives and methodology. An understanding of complexity within urban systems, bringing together of concepts implicit and

explicit within both the analytical and procedural debates, forms the basis for the investigation of what is meant by sustainable urban form. In this process, urban design has to be equally concerned about the setting of goals (the analytical questions about what one is trying to achieve, traditionally imposed on designers by commissioning clients) and the means of decision making (the procedural questions over conflict resolution and the inclusion of value judgements and political weighting).

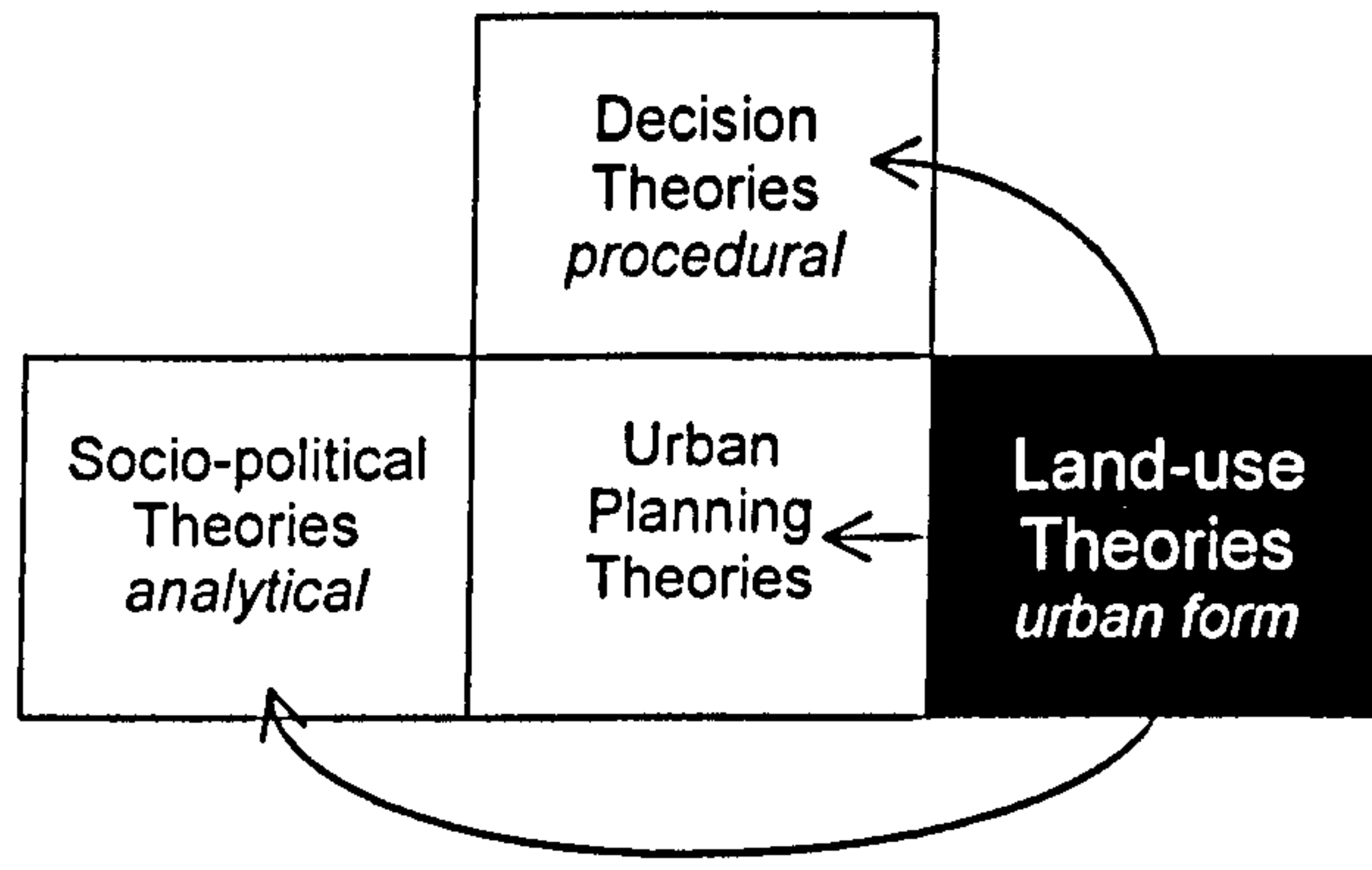
This initial overview suggests benefits from research that is well grounded in both policy and practice and that considers design as part of a process. The aim of this research is then to develop an *integrated* approach to assist in the design and evaluation of specific urban projects, interventions or neighbourhoods. The base requirement will be an analytical consensus over the central concepts of sustainable development that fully integrates physical design with substantive and procedural socio-economic issues.



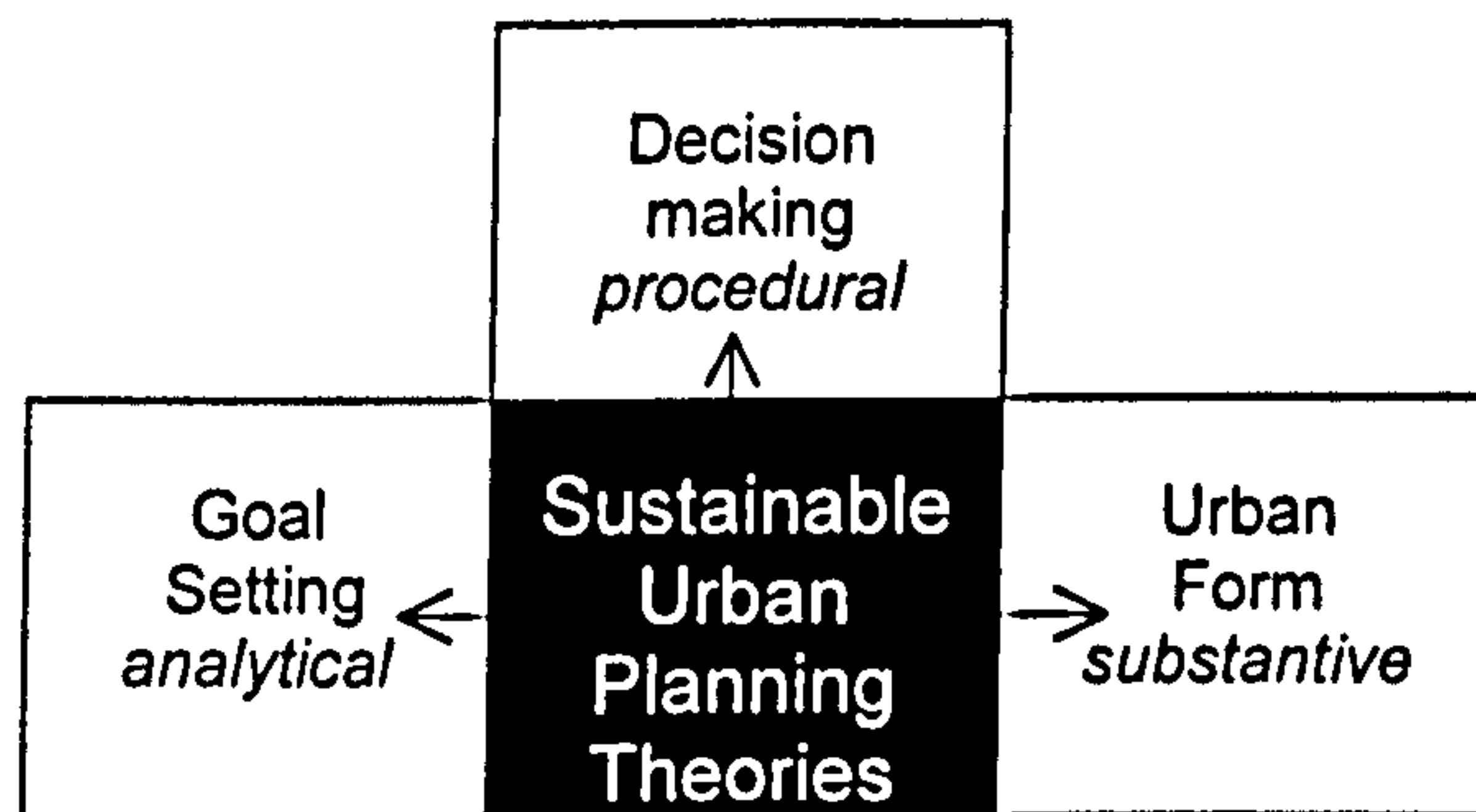
(after MacPherson 1995)

The starting point for this research approach is recognition of *total urbanism* in all its complexity, including the pragmatism and abstraction required to respond to real-life political processes. A basic understanding of complex urban systems and the interconnections between issues will be more productive than in-depth investigations into any singular aspects of physical design. As the above diagram shows, the assessment of any single ecosystem or human system on its own will not be adequate to gauge the state of society as an entity. The importance in this approach is the breakdown of the notion of deterministic and prescriptive theories. If prescriptive approaches to design theory are rooted in the view that substantive debate is separate from goals or procedures then an adaptive theory will need to respond to this by being constructed within a framework that integrates these concerns. Thus, an adaptive framework to understanding sustainability will contain a range of possible solutions and approaches, along which the urban designer / neighbourhood manager / decision-maker will be led, in the light of on-going assessment of available information and feedback from the design process itself. The proposed *adaptive framework* will resemble elements of goal setting, a design guide and decision making methodologies. Applied research into sustainable cities will be characterised by multidisciplinary research adapting generic and localised knowledge and tools for a wide range of users and

decision-makers; both vertical (scale) and horizontal (thematic/ process and product) integration.



(the interaction of knowledge relevant to urban planning, after Yiftachel 1989)



(change of focus to an integrated theory of urban planning - the interaction of knowledge relevant to sustainable urban form)

Chapter 3

Development of the Research – Convergent Thinking within Theoretical Chronology

Practitioner cognitive mapping

Making cognitive structures practical

Emerging theories of sustainable urban development evident in the institutional and political context

International context post Rio

European context

National policy context

Academic community – a chronology of ideas

Integration – the 'holistic' approach or systems thinking

Self-sufficiency within ecosystems – linear to cyclical patterns of production and consumption

Carrying capacity – recognising the limits

Social justice – quality of life and the meeting of basic human needs

Participation – ensuring the end-user's role in environmental decision making

Outcome from the overview

New definitions

New mechanisms

New models

New methods

The continuing conceptual evolution of sustainability, paralleled with the dynamic nature of physical, socio-economic and demographic change within cities, has been considered in isolation from urban form. As the previous chapter has illustrated, ideas have been separated. There is *confusion* over meanings and definitions, *contradiction* between topic based advice, and *conflict* with competing and incomparable trade-offs. Overall our response and thinking has been sub-optimal rather than systemic. Most importantly there is separation between research, policy and practice (Celecia 1996, Clark *et al* 1995). Academic work on sustainable urban form is instigated on an expert / specialist rather than a multidisciplinary basis. Evidence of integration is limited to similar physical empirical issues and, with a few notable exceptions, work is typically prescriptive, generic, thematic and requires end-users to integrate the findings into their own wider context, requiring a certain level of expert knowledge for any useful application of the research findings.

Urban policy and decision-makers approach the challenges of the sustainable city from a very different starting point. They are constrained by time, resources (staff and financial), institutional frameworks and statutory responsibilities. They increasingly tend to be more concerned with making decisions, both reactive and proactive, on a basis of overall effect and there is often an uncritical acceptance of generic research findings, despite variances in local contexts, conditions and communities (Crilly *et al* 1999).

The development of a practical framework for sustainable urban form requires recognition of such 'separations' and needs to identify ways in which they can be reconciled. The basis for a framework for improved decision-making is an understanding of the needs, applications and appropriate means of communication of individuals and organisations who have a role in the planning and management of urban areas. A 'bottom-up' populist and non-empirical approach to designing and testing a framework for sustainable urban form based on these requirements requires a theoretical and conceptual basis.

Practitioner cognitive mapping

The definition of what is meant by the term sustainable development is the equivalent starting point to goal setting within planning processes. This remains a conceptual question about ideas. So rather than immediately addressing the physical manifestation of the concept, I approached a number of environmental professionals working or researching within the field of sustainable development to elucidate their personal understanding at a conceptual level and if their holistic understanding coincided or contradicted with topic based research. This took the form of a cognitive mapping exercise, where in a semi-structured interview, individuals were asked to expand on their views of sustainable communities and to provide details or clarification, where necessary, in response to three distinct questions, each given equal weight and time: (i) the analytical question 'what is sustainability?'; (ii) the substantive question 'what would a sustainable society/community look like?'; and (iii) the procedural question 'how can this be achieved?'. The content of the interview was broken into discrete statements made by the subjects and these statements were set into a hierarchy of ideas and linkages drawn between

them. I also found it useful to step back and group similar ideas and views into conceptual themes. This exercise was repeated for a range of different professionals (landscape architects, builders, engineers, planners, lawyers, ecologists, scientists) in order to provide the basis of a scoping exercise; establishing the range of issues which would be covered by sustainability.

This mapping or scoping exercise was concurrent with two distinct investigations into academic ideas and professional/policy literature surrounding the field of sustainable development:

- policy orientated research findings and governmental policy position statements. This is to ensure that, at a basic level, any subsequent assessment of schemes is inclusive of criteria identified by the governmental and public sector in its widest sense and that involvement in public sector commissions throughout Europe could credibly be assessed against pre-existing sustainability criteria; and
- a review of academic thinking on the nature of sustainable systems following after the seminal work by the Club of Rome (Meadows *et al* 1972), the paradigm breakdown of consensus and the subsequent inclusion of socio-economic theories into environmental planning. In this, I consider the timing of integrative thinking to be directly connected to social and environmental criticism over unanticipated effects of human activity, including that of many 1960's comprehensive development schemes.

This overview recognises that the three strands of academic, policy and practitioners' thinking on sustainable development are closely related and that there are many ideas transferring between these artificial distinctions. Therefore, I have presented the issues as a number of interconnected concepts and then as a chronology of ideas. The research undertaken in investigating each of these three strands was concurrent and did have a certain impact on the direction of the work.

Making cognitive structures practical

"... a realisation that such pictures are fluid and adaptable, and come from many streams and dimensions of experiences can enable people constantly to update and adapt their cognitive maps and make them into functional guides for their action and behaviour ... as human beings each of us stands at the centre of a multitude of self-created maps of reality, each of which charts some dimension of our experience." (Laszlo *et al.* 1996 pp2, 8-9)

The practical strength of cognitive maps are in their inherent complexity and their holistic representation, yet any cognitive structure is still only a partial understanding of complexity, whether it is individual or social (collective), acting as a dynamic model that expresses and represents our perceptions of reality (Madu and Jacob 1991). In addition to physical environments, cognitive structure can map fields of data, information and inter-related value systems used within decision-making processes. Such geophysical and informational cognitive maps are complex *schemata* (Neisser 1976) of connected but limited experiences and perceptions. The developing nature of cognitive maps, limited

by knowledge and memory, does not prevent them from informing decision-making and influencing behaviour. In addition, it has been suggested (Boulding 1956) that such abstractions of reality act as positive feedback loops actually reinforcing our cultural understanding and 'map' of reality. Schumacher (1977) writes about dangers for philosophical maps, that if we try to understand real-world complexity then we maximise the possibility of errors; possibly one argument for the sub-optimal preferences of positivists.

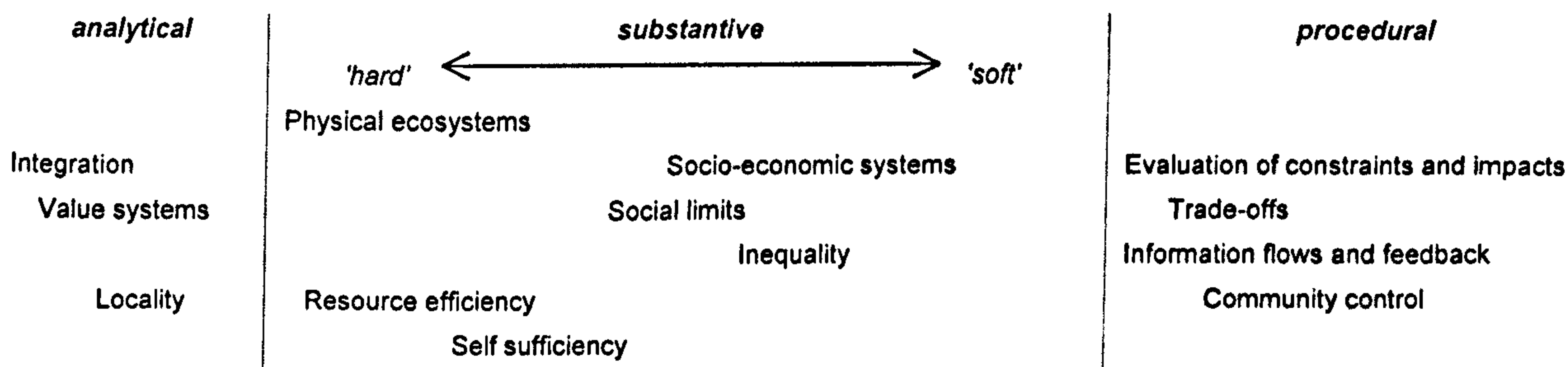
"The maps produced by modern materialistic scientism leave all the questions that really matter unanswered" (Schumacher 1977 p14). Such traditional "map-making is an empirical art which makes use of high degree of abstraction but none the less clings to reality with something akin to self-abandonment" (Schumacher 1977 p17). Maps imply meaning and relationships. Thus the aim of this sort of cognitive mapping should be not simply be an abstraction of reality but to look at the world whole; complex problems requiring divergent solutions that depart from an *aggressive* scientific position and that link ideas and meaning. The exercise is therefore not intended to be extensive or comprehensive, but to test the scope of sustainability within the range of professionals charged with the responsibility of operationalising sustainable development. This is important as Laszlo (*et al* 1996) found that, even within a localised culture such as a university campus, cognitive maps differed between individuals, each with unique experiences and personalities, and between different professional fields of study. A deliberate decision was therefore made to test a variety of professions within different organisations. The schedule of interviews for the cognitive mapping exercise is set out below. Laszlo (1991) charts recent changes in the nature of cognitive maps and dominant elements and ideas. He notes specific changes in the human-nature relationship, with humanity seen as part of the natural system rather than a dominant and external controlling force and the development of a view of nature and society that is organic and evolving rather than conceptualised as mechanistic. Thus the world view is less fragmented and compartmentalised with greater connectivity and wholeness. Changes in collective cognitive maps show that decision-making has become decentralised and networked to give those closest to the problem the task and responsibility of decision-making.

"to have a good map of the world does not require having a map of every thing in the world; it only calls for having a sound grasp of the fundamental nature of the processes by which every thing that is in the world came to be. This is the essence of the emerging evolutionary map" (Laszlo *et al* 1996 p113).

The full record of the mapping exercise is contained within the appendix to this chapter. A summary of the results, highlighting the relevance of sustainability to all three strands of debate, provides a range of concepts and linked ideas that begin to show a level of commonality despite the variety of professional backgrounds involved in the exercise. The range of concepts highlighted will provide an interesting test for, and check against, the extended scoping exercise into academic and institutional thinking using content analysis to look for the presence of ideas, their emergence, linkages and emphasis. This

recognises that the ideas are not independent, but they are linked to developments in other spheres of policy and academic thinking – spheres within which all practitioners are operating.

Map number	Name	Profession	Organisation	Date of interview
1	Jessica Beattie	Landscape Architect	Derek Lovejoy Partnership	04/04/96
2	Andrew Frew	Architect	Irish Sustainable Housing Association	02/10/96
3	Philip Griffiths	Applied Energy Researcher	University of Ulster	17/11/95
4	Bill Lawson	Materials Technologist	University of New South Wales, Australia	07/10/96
5	Kevin Owen	Economic Planner	Luton Borough Council	29/11/95
6	Sharon Turner	Barrister at Law	Queen's University of Belfast	02/07/96
7	Alan Wheeler	Environmental Planner	SERPLAN (South East Regional Planning Conference)	24/01/96
8	Mohsen Zikri	Engineer	Ove Arup & Partners	01/04/96



(concepts highlighted in practitioners cognitive mapping exercise)

Emerging theories of sustainable urban development evident in the institutional and political context

International context post Rio

“Agenda 21 emphasises the need for integrated approaches ... it really does seek to integrate environment and development” (Grubb 1993 p154)

In a global context, the most influential policy development has been Agenda 21, one of the 5 principle agreements signed at the Rio Earth Summit in 1992. This was a bottom-up and strongly participative community based approach to integrating issues of social and economic development with implementation mechanisms, particularly into issues of poverty alleviation and the significant impact and role of human settlements.

The post-Rio agenda has become an urban agenda, developed in part by debates leading up to and including the Habitat II City Summit in Istanbul. Central to this is the setting and promoting of a core set of urban values of processes, priorities and of basic human needs and rights (Cavallier 1996, Valatin 1996). One component of this is the role of the built environment and architecture and the potential impacts of globalisation on the shape and

appearance of our cities into the next century, developing these core urban values and setting them out as requirements for the sustainable city, as "... a just city ... a beautiful city ... a creative city ... an ecological city ... a city of easy contact ... a compact and polycentric city ... a diverse city" (Rodgers 1997 p169 and 1995). Habitat II was a global challenge to address the north/south disparities in quality and humanise cities, where currently "... the deep and ancient voices of communities ... of the common citizen's dreams and rich urban perceptions, has been ignored. The city of money and of competition has triumphed" (Florez 1996 p5). In contrast the future will have to be sustainable, demanding a new and specific role for cities in the global system, one that challenges this simplistic economic position.

European context

"Europe is first and foremost urban" (Mega 1996a p133)

At the European level decisions are made in the context of the developing urban dimension within EU policies (Commission of the European Communities 1997a) and the convergence with environmental and sustainability objectives. The '*Towards Sustainability*' report (the commonly used name for the 5th Programme of Policy and Action in Relation to the Environment and Sustainable Development) includes sustainability of the 'urban environment' as one of its key themes. This theme is linked to the relevant policy instruments of *spatial planning, improvement of environmental data and public information and education*. (European Commission 1996) This set out explicit in policy for the first time, the importance of sustainable development for the economic competitiveness of Europe, the overlap with urban issues and the need for a proactive policy (backed by funding opportunities) to alter institutional and individual behavioural patterns.

Prior to this, the Commission of the European Communities published an important agenda setting 'Green Paper' (1990) that explored no less than the role of the city in the development of European civilisation and placed a broad range of urban based issues central to the work of the Commission. It adopted a positive policy position to what has since become known as the urban revolution or 'urban renaissance', where the role of the city is to enhance exchange, democracy and 'social cohesion' and act as a hub for economic, social, cultural and political dynamics. In effect it provided a plurality of visions by stressing the locality specific nature of many problems and unique processes. Citizen involvement is paramount where the spatial density and variety of people and activities are the key attributes of European 'urbanism'. The paper promotes a high density, mixed-use urban form as the only alternative to a sustainable future. There is no room for the creation of a rural idyll or a garden city compromise in this European policy context. "Re-creating the diverse, multifunctional city of the citizen's Europe is thus a social and economic project for which 'the quality of life' is not a luxury but an essential." (1990 p21).

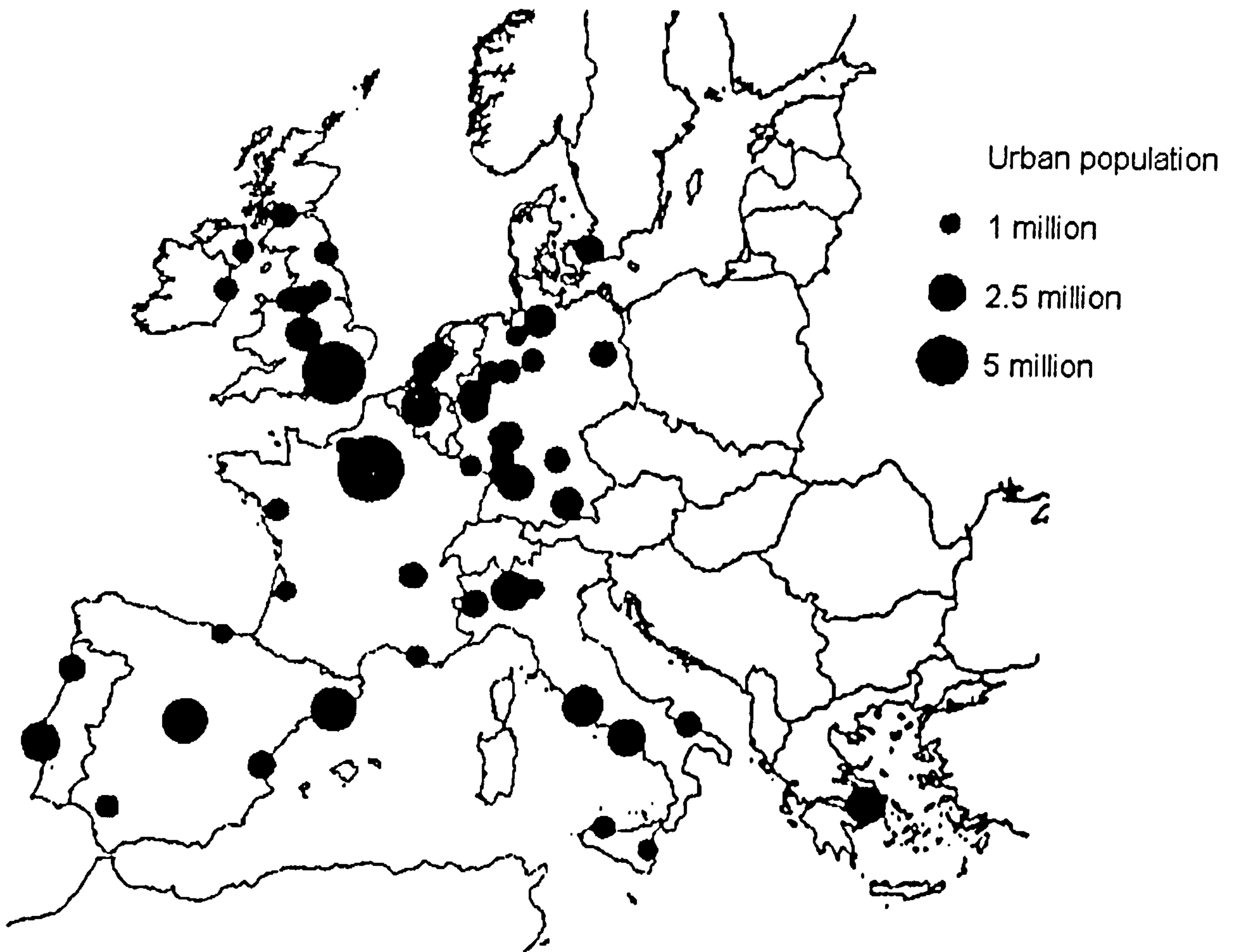
This agenda was further developed in the emergence of a new planning and development strategy for Europe preparing for strategic growth into the

next millennium (Commission for the European Communities 1991). This indicated the importance of spatial planning (as distinct from land-use planning) combined with environmental and natural resource management, as the principle mechanisms for delivering sustainable urban development and guiding strategic investment decisions. The strategy was designed to address the problems and challenges of rapid urban change and improve regional organisation and co-ordination of European spatial planning systems from a community based perspective. In 1991 institutional environmental concerns were beginning to impinge upon spatial planning and economic development but were largely considered separate issues relating to industrial processes, pollution, waste, natural resources and heritage. However, some sense of urgency is evident when the issues are illustrated and linked by empirical data, for example, on levels of air pollution and landfill. Many of these immediate (or immediately evident) concerns are of crucial importance to the sustainability of urban systems, for example, where waste land-fill options are becoming more limited in densely populated areas or where human health is being effected by high traffic levels and poor air quality. This alone highlights the importance of reliable environmental information on urban systems (Commission for the European Communities 1994 p103-104) on which to base decisions on major investments.

The strategy espouses a return to urban living to rebalance the urban system that is witnessing population loss from the larger European cities to 'medium cities' and smaller towns and villages. Such a change is necessary to specifically counter the suburbanising forces that are continuing to threaten and destroy important wildlife habitats. The urban renaissance is promoted by a range of public initiatives that raise the quality of urban living and the ability of urban areas to adapt to dynamic economic circumstances and that promote a positive image of the city as a complete 'value-system' and 'lifestyle' location (Commission for the European Communities, 1991 p148).

The strategy also seeks to integrate environmental and development issues at and between differing spatial scales: (i) by addressing planning at the scale of city regions as a true representation of the European urban system (defining a city region as an urban area with a population of more than 330,000 inhabitants, a core city of more than 200,000 inhabitants and 20,000 jobs and a significant commuting hinterland) to consider regional and intra-urban disparities in income levels and equity, and highlighting the important function of medium cities in providing lifestyle choice and diversity throughout the urban systems of the European Union; and (ii) by linking generic and locality specific problems, recreating "... a dynamic harmony between the *hardware* and the *software* of the cities, to reconcile the body (forms, colours, odours, sounds) and the soul (culture, history, energy, magnetism) of the cities" (Mega 1996 p134). Such unique issues and projects are inherently more qualitative and include the role of urban design in raising the quality of urban life by means of promoting mixed uses, public transport, civic involvement, civic spaces, local identity. There is an implicit understanding of linked hard and soft elements where "the city is also expression, imagery and symbolism" (Cecilla 1990 p33). The development of responsive and quality environments will depend upon building 'connections' between physical places (permeability), people and

ideas/meanings (legibility). The 'city of bits' has to become more than the sum of its parts by better integration of management and design and the development of new tools for community involvement and achieving urban quality.



(Functional European urban regions with more than 1 million population, Commission of European Commission 1991)

The revised (post Maastricht Treaty) strategy reinforced these policy aims and established "... a new framework for sustainable development, with explicit recognition of the central role of spatial planning as a means for achieving this" (Commission for the European Communities, 1994 p17). This model of implementing sustainable development had a number of key elements:

- Themes of integration and urban management – understanding the socio-economic implications, such as exclusion and equity, caused by rapid urbanisation and restructuring with impacts upon environmental resources and urban quality objectives;
- Integrated transport management focusing upon substantive issues of energy consumption and pollution, balanced against personal accessibility and mobility; and

- The balanced development of the urban system – understanding and managing urban flows and testing ideas relating to threshold levels, ideal population size and options for 'decentralised concentration' within unpredictable demographic change.

Overall the spatial development strategies highlight the need for proactive planning and continually stress a positive role for urban areas, with a preference for concentrating future growth in existing urban areas and making the best use of derelict and under-utilised sites. The strategy also suggested the development of new tools and mechanisms to help in the aforementioned processes. This policy direction also highlights the need for mechanisms that provide decision-making tools for urban management and link procedural issues of 'goal-setting' and community involvement with physical regeneration – process tools for integration, collaboration and partnership and for quantifying impacts (EU Expert Group 1994).

New urban planning and management tools should improve our understanding of urban systems, poly-centric spatial networks and linkages between decentralisation (growth of small and medium sized towns) and the management of urban renewal, with a particular focus on housing. A prerequisite to this understanding is the need for better urban environmental information, particularly in the use of urban indicators to identify environmental conditions, human activities and the impact on the regional and global environment. To date, this is being achieved through empirical measures of flows, qualitative attributes and spatial patterns - as exemplified by chapter 10 'The urban environment' within the *Dobris Assessment* (Stanners and Bourdeau 1995). However, environmental data (making the best use of the existing European research infrastructure via *Eurostat* or the *European Environment Agency*, already charged with disseminating objective and policy/action driven environmental information for purposes of education and planning/forecasting) and urban indicators should be *comparable* and *communicable*, addressing concerns over data inequality and reliability. One suggestion has been for a consistent "Urban Audit" methodology for measuring and monitoring sustainability (Commission for European Communities 1997b) using indicators and this has a priority action for the Commission (Commission of the European Communities 1997a).

A development of this thinking, and the overall vision for sustainability for Europe, is evident in the use of testing 'what if?' scenarios "... of sufficient complexity to be useful aids to thinking" (European Commission 1997b p21) and testing "... different trajectories for different neighbourhoods" (Mega 1996a p137). Possibly the most radical of options, looking at both organisation and community dynamics in strengthening the role of local communities have explicit recommendations for "... technical and logistical support for greater access of local stakeholders ... in European and global decision-making." (European Commission 1997b p13) This implies large-scale value shifts beyond those already evident in some areas of public opinion (European Commission 1997c) and the importance of the neighbourhood level for action (and thus the appropriate scale for decision-making tools) within European cities.

	Scenario 1: Opening opportunities	Scenario 2: Guiding change	Scenario 3: Transforming communities
Cities	<ul style="list-style-type: none"> • Cities are refurbished and become attractive again. • Efficiency increases and new applications of telematics obviate need radical overhaul of planning. 	<ul style="list-style-type: none"> • EU-wide strategy for sustainable cities. • Bold initiatives in planning and higher building standards reduce travel demand, energy and water use. 	<ul style="list-style-type: none"> • Eco-villages and towns. • Economic role of cities changes drastically in line with changing social and economic priorities. • Few new buildings are taller than a tree.

(extract from matrix testing different scenarios and responses to common issues, European Commission 1997b p26)

This strategic policy also identifies new flexible delivery mechanisms and processes for better integration and involvement;

- Promotion of sustainable development and the quality of life in cities (Commission for European Communities 1997b, European Commission 1996) through the establishment and implementation of Local Agenda 21 or sustainability strategies, including exchanging experience, best practice and networking (Commission for European Communities 1997a) – with contributions to the *Urban Forum for Sustainable Development* (European Commission 1998) and the *European Campaign of Sustainable Cities and Towns* (Aalborg declaration, November 1995);
- Adoption of a more 'bottom-up' approach to urban sustainability and the development of citizenship and local partnerships, in part to overcome democratic apathy and confusion over the roles and responsibilities of the multiplicity of public urban authorities. While democratic participation becomes more complex as scale increases (Hall 1996), with multiple 'nimbyism' abuse of the simple concept of sustainability (Celecia 1996) and multiple definitions, the involvement of local stakeholders becomes more of a concern. Indeed, this has become one of the central challenges of the European Union to lessen "... the distance between the citizen and the place where decisions are made" (European Commission, 1995 p3) by following principles of democracy, transparency and improved understanding /communication. This is advocating a practical development of the principle of subsidiarity as set out in Treaty on European Union with "... the increasing participation of citizens in redefining the art of governing cities" (Mega 1996a p137); and
- Creating "... trust based relationships between various actors at the local level ..." (Commission for European Communities 1997b p15), promoting local empowerment, shared responsibility and initiative (European Commission 1996).

The aim is to develop an integrated framework for urban and environmental planning that has shared responsibility at all levels of decision-making, recognising the importance of spatial planning as a practical integration tool and delivery mechanism for sustainable development. The principal EC policy and guidance stresses the need for a greater spatial and qualitative approach to social cohesion, the promotion of sustainability and long term improvements to quality of life, with a trend towards a "... more comprehensive and complex form of spatial planning ..." (Commission for the European Communities, 1994 p142). This emphasis on the 'human dimension' of involvement, shared responsibility and subsidiarity has been at the expense of those who advocate a

deep green ecological paradigm as the conceptual basis for sustainability – an alternative paradigm that places the 'software' before the substantive form issues – avoiding "... erroneous interpretations or conclusions and misdirected planning and management" (Celecia 1996 p99).

Aspects of this human dimension include:

- Addressing of social and economic exclusion as the central goal of the European employment strategy and a major issue within the regional spatial planning framework (both concentrating on urban segregation);
- Incorporation and promotion of environmental and sustainability objectives into urban planning strategies with the exchange of information on successful experiments on design, citizen involvement and methodologies (Commission for European Communities 1997a), utilising the networks within the *European Sustainable cities and towns Campaign*; and
- Development of the concept of shared responsibility and actions at Community, regional and local levels.

The European position has been criticised for its inconsistencies between environmental, economic/social policy and for the mismatch in levels of action (Gibbs 1996), where much of their rationale calls for local community action, suggesting a certain imbalance. Thus perhaps the impact at this scale is not related to the strategic policies but the development of demonstration projects and best practice between cities in different member states. While understanding this high level institutional context is important for compliance with legislation. It is also helpful for identifying best-practice examples and guiding possible funding for practical demonstration projects with transferable elements and those that have an in-built requirement for innovation.

National Policy Context

There are certain discrepancies on emphasis between national and European policy – the UK policy basis being 'lighter' green (Porritt 1994), omitting any references to social equity issues and having expectations that it will not restrict economic growth. Nonetheless this represents a darkening of the government's position since the Environmental White Paper (DoE 1990). However, there is commonality in the role of "... the planning system (as) a key instrument in delivering land use and development compatible with the aims of sustainable development" (DoE 1994b) and the use of indicators to measure and monitor progress towards sustainability, consistent with the recommendations of the UK Roundtable on Sustainable Development (DoE 1996c p19). While the UK Government's initial view was that sustainability is best considered an extension of environmental policy, this has been altered by a widening agenda and several changes of administration.

The former UK Secretary of State for the Environment, John Gummer's important discussion document "Quality in Town & Country" (DoE 1994a), was heavily weighted towards urban areas, in the hope of a renewal in urban life and civic activity. This initiative promised a flexible and non-statutory mechanism for ensuring the future of our cities growing out of and complementary to statutory governmental advice. It has been influential on a series of radical planning

policy guidance reviews on urban sustainability. It's publication and promotion was partly an acknowledgement that land-use planning policy acting on its own can be an extremely 'blunt' mechanism for change. It recognised the scale of the threat to our urban areas and the urgency with which comprehensive action needs to be taken, particularly engendering attractive urban places of high quality, in contrast to homogenous, decentralised environments.

The principal planning mechanisms for the delivery of sustainable towns and cities are Policy Planning Guidance (PPG) notes (national advice within which regional, strategic and local land use and spatial planning policy is prepared). A partial overview of this strategic guidance has been provided by Carmona (1996) with a bias to the sustainability and urbanism agenda and covering the specific guidance notes on PPG6 on *Town Centres and Retail Development*, PPG13 (DoE and DoT 1994) integrating land use and transportation decision-making and PPG3 on housing.

In addition, there is also a growing body of work by community, voluntary and professional groups (for example Institute of Civil Engineers 1993, Lawson 1994, Civic Trust 1994) reacting to the sustainability agenda for urban areas. A COMEDIA study (Worpole 1990) arising from a concern over the changing way in which British cities are being perceived, found that they were losing their traditional functions and their focus as a public realm. They were displaying a new kind of 'consumerist identity' due to suburban pressures: access being dominated by the private car; the privatisation of leisure and public space, and an overall loss of urban culture and identity.

The policy and practitioners' concerns are converging and are calling for re-urbanisation lead by high quality, sustainable design. Walker (1997) has provided an accessible synthesis of the institutional arguments at European and national scale that cross-reference each other and reinforce the policy backing for compact cities based upon a local interpretation of the mixed use urban village model.

Academic community – a chronology of ideas

A model is "... an ordered set of assumptions about a complex system" (Meadows et al. 1972, p20).

Any substantive research activity requires grounding in theory, whether that is social, economic or political. The importance of such theory in the research activity is partly to provide a sense of order and insight into the research being undertaken but also to provide a context for the investigation methods selected. A basic premise of undertaking an act of research is that the methodology adopted is derived from a theoretical starting point. This interrelationship between theory and method has been described as 'interaction theory' where "... the very act of engaging in social research must be seen as a process of symbolic interaction" (Denzin 1972, p83). Thus, at the centre of designing any research method is the concept under investigation.

It is therefore appropriate, when investigating the issue of sustainable development, to identify and extrapolate its underlying concepts. Tracing the origins and subsequent progress of the key concepts which are commonly

associated with the idea of sustainable development will be beneficial in ensuring that any methodological approach taken is grounded in a theory which is easily understandable and which clarifies complex issues while ensuring any assumptions made are openly identified and explained.

One of the most influential publications in helping to establish the notion of sustainable development in the political conscience (if in retrospect, not on the political agenda) at the global level was the Club of Rome's report on the predicament of mankind (Meadows *et al* 1972). The theoretical grounding behind 'the Limits to Growth' report was the recognition of complexity in, and the interrelated nature of, the global system. The major trends of accelerating industrialisation, rapid population growth, widespread malnutrition, depletion of non-renewable resources and a deteriorating environment were considered in the report as interdependent components.

The Club's aim was to gain an understanding of this complex global system and its interactions by constructing an ambitious model which could be used to inform decision makers about possible future implications of policy and technological changes. Their approach to constructing a formal or mathematical model of the global system was open to the criticisms inevitable in all systems modelling - that it was imperfect, oversimplified and unfinished. Even following the best available computer modelling techniques of the time, all the limitations of taking such an approach were acknowledged by the authors themselves. One of the contemporary commentaries made the poignant comment that "computer models cannot replace theory" (Freeman 1973 p8). No matter how well constructed and impressive a mathematical or computer model may be, its value will always be dependent upon the reliability of both the data sources used as inputs and the underlying assumptions made. It is more important to test the reliability of the assumptions (the 'soft' inputs) implicit in the model which form an ideological and theoretical background. However it is missing the point to concentrate upon the weaknesses of the predictive value of this model rather than the strength it had in testing the possible impacts of various policy changes and thus, ultimately in generating political and academic discussion about dealing with the apparent contradictions of future growth in a finite world.

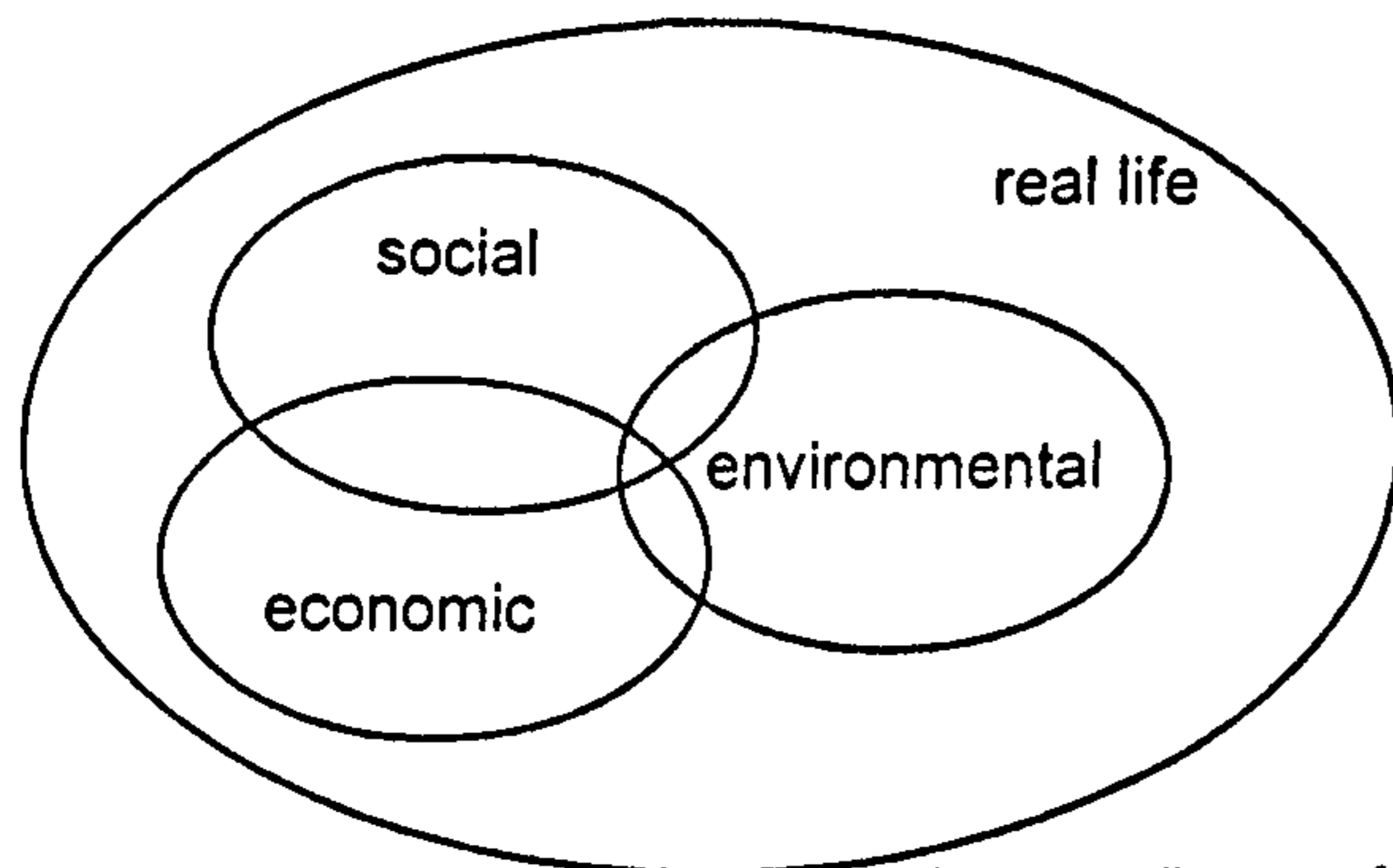
Among the conclusions drawn from the running of the model was an acknowledgement that there will be absolute limits to unchecked growth, dependent upon our levels of production (agricultural and industrial), population, pollution and natural resources. The basic behaviour of the world system is one of exponential growth of population and capital, followed by collapse. It predicted that if present trends continued then the limits to growth on the planet would be reached within a century. Far from leaving us with this pessimistic outlook, the report suggested that it was possible to alter these trends to "... establish a condition of ecological stability that is sustainable far into the future" (Meadows *et al* 1972 p24). This notion of a sustainable global system was clarified in terms of a state of equilibrium where basic human needs are met within global limits and where equal opportunities exist for all to reach their individual potential. It is fair to say that every recognisable formal definition of sustainable development since the publication of the Club of Rome's report is simply a rewording or a further clarification of this statement, still recognising the underlying concepts inherent in our complex global system.

The reaction to the report was a public disbelief in predictive modelling and also a denial of the issues and questions that arose from the work due to the pessimistic 'negative utopia' or 'dystopia' (Vargish 1980 p183) view of the future.

Integration - the 'holistic' approach or systems thinking

The complexity of the global system and the interrelated problems of traditional disciplines led to an integrated approach to considering socio-economic and environmental problems together (Clayton and Radcliffe 1996), one of the main strengths of the Club of Rome's approach. The construction of the global model provided a comprehensive and integrated analysis of the world situation. Many of the recommendations were straightforward in advocating lifestyle changes, intervening in population demographics and increasing social equity, all factors which could have rightly been considered part of the cultural, social and political realms rather than of physical science. Thus it is ironic that one of the first commentaries on the report ('Futures' in February and April 1973 devoted two entire issues to the limits to growth controversy) expressed the view that a more holistic understanding of the world model was required as the Club of Rome's approach had an undue emphasis on physical constraints and a commonality of faith in systems dynamics.

What is clear is that economic development does have environmental consequences and thus the issues are inextricably linked and part of the same global system. If we are to properly understand this system then an integrated approach to decision making must be adopted in preference to compartmentalised thinking along the lines of the economy, the environment and society. Even then, our so-called integrated thinking will only form a sub-set of real life.



(systems diagram after Carley and Bustelo 1984, Johnston 1975)

"Does economic progress impose too many social and environmental costs? Does environmental pollution require too many economic sacrifices? Are social programs too expensive economically?" (Johnston 1975 p153)

The trend towards integration and the adoption of an holistic approach to decision making is perhaps symptomatic of a dissatisfaction with traditional methods of economic analysis (as raised by Pearce's economist's view *et al* 1989, and exemplified by the New Economics Foundation work on the Index of

Sustainable Economic Welfare ISEW (MacGillivray and Zadek 1995, Daly and Cobb 1990)) combined with a concern over the depletion of non-renewable resources. While procedures were set up for the assessment of environmental impact of development projects, they were unable to incorporate the social impacts on a comparable economic basis (Button 1993, Glasson and Heaney 1993, Cairncross 1991, Dixon *et al* 1986) due to difficulties in or obstacles to evaluating and obtaining social costs (Adams 1993, Lichfield 1993, Quinet 1993). However, the ultimate need to trade-off competing benefits and costs requires an integrated approach, even if it is criticised as simplistic. It is accepted that the question of integration is fraught with difficulty but it must nonetheless be pursued as the effects of various developments cannot really be separated. "At some point in the decision process the results of various types of studies must be integrated as trade-offs are made among project benefits and social and environmental costs." (Carley and Bustelo 1984 p4) The question is not "How can the environmental impacts of development projects be identified, quantified, and valued?" (Dixon *et al* 1986 p4) but 'does comparison have to be on an economic quantitative basis?' and 'is it even valid to place monetary values on environmental assets?'

Environmental Impact Assessment is the process of predicting and evaluating an action's impacts on the environment, utilising a range of matrices and cross-tabulated criteria. It is considered an essential tool for decision-makers, being enshrined in national laws and European directives, providing them with better information on the consequences of development action. As methods for integrated assessment, Environmental Impact Assessment and Social Impact Assessment share common roots and involve similar tasks (Bond 1995, Therivel *et al* 1992) in assessing the direct and indirect effects of a particular development (or policy approach) and considering multiplier effects (or 'synergistic impacts') to establish net impact and the spatial distribution of its effects, ideally being both systematic and comprehensive (Bisset 1988, Odum 1971). However, Social Impact Assessment is perhaps considered the less scientific of the two processes because it also seeks to deal with intangible aspects of the development; for example, sense of place, community, social and psychological effects. Such subjective perceptions are however, part of the social environment and represent the more holistic view of society and it has been argued that at the core of any achievements in sustainable development is the recognition and integration of human needs, values and impacts (Clark 1991).

As these intangibles seek to consider personal and individually subjective impacts, it is essential to involve end users in establishing the various feedback loops. This participatory model of assessment is very different from the numerical calculation of an economic impact assessment or the best scientific practice of an environmental assessment. The evolution of this type of participatory model over the last 15 years has seen a new focus on systems of indicators where the affected parties are involved in defining indicators relating to cultural values and quality of life issues.

A further trend in the area of social impact assessment is the inclusion of more subjective indicators to measure perceived changes in the quality of life. This form of impact assessment has tended to be used at a more strategic

scale, having a policy rather than a project focus, in areas of investigation such as urban impact analysis. The aim of urban impact analysis is to evaluate the socio-economic consequences of land use options, often with a spatial dimension, using asset-mapping techniques. Again as with the parallel procedures of EIA, urban impact analysis has inherent limitations.

Commentators argue for a more holistic measurement due to the complexity of issues (Glickman 1980, Massey 1980), particularly the need for understanding the spatial focus of policies and assessing private developments. "One cannot understand urban development without knowing how the effects of private action are felt in our cities and regions". (Glickman 1980, p.88)

Massey (1980) argues that if any method of assessing the impact of development is to be of use, it must take account of the 'interaction' of different policies or developments. The combination of different actions can have a total effect that is greater than the sum of its parts - termed synergistic impacts. She concentrates on the 'soft inputs' involved in any assessment and avoids overly technical and complex models which are trying to reproduce synergistic effects. "The real methodological problems facing successful urban impact analysis are those of sensitive and thoughtful conceptualization rather than those of a search after a (probably spurious) quantitative rigour." (Massey 1980 p133) It must be remembered that the technique is intended to be used as nothing more than an aid to making difficult decisions in a political climate where trade-offs are necessary. As such it must also be understandable by policy decision-makers. It would appear that a tendency towards holistic thinking and inclusive of moral values makes decision-making less empirical, less suitable for economical evaluation and more uncertainty.

Techniques have been appropriated from EIA and SIA in the Ultimate Environmental Threshold (UET) method (Kozlowski and Hill 1993) to provide a means of assessing 4 distinct types of systems: territorial; qualitative; quantitative; and temporal. It offers a way of thinking similar to EIA in allowing environmental factors to be considered as limits to particular developments provided by clear goals as defined by the local community. Direct and indirect impacts are rated against these limits within a matrix (Kozlowski 1984), later work (Kozlowski 1990) developing this integration on a spatial basis, looking at the territorial distribution of impacts and linking them to their measurable qualitative, quantitative and temporal effects.

In practice, there will always need to be pragmatism over the selection of holistic evaluation approaches to policy or product, to suit the data, time, resources and context within which decisions are being taken, remembering that the intention is to aid, not complicate, decision-making. In some cases it may not suggest appropriate actions but only additional questions as to the relative weighting given to subjective and qualitative factors – valuation is not always possible or desirable, and there are often better methodological alternatives (Quinet 1993, Barde and Pearce 1991).

The underlying assumptions of adopting an integrated approach are that: (i) it is process orientated and seen as a decision making tool and not as an end in itself; and (ii) there is a distinction to be made between objective and subjective evaluation.

A constant thread throughout the academic thinking and practical application of these ideas over the last 20 years, since the Club of Rome's report, has been the importance of systems thinking and the need for greater integration between socio-economic considerations and environmental consequences in real life decision making. Systems thinking, by its very nature, seeks to integrate a variety of concerns by identifying links and feedback loops. It appears that this type of thinking, as it applies to our physical and cultural environments, is closer to reality than any individual specialism and has more to offer the process of sustainability. Thus, multiple perspectives and multi-disciplinary approaches provide one of the most appropriate means of integrated and systemic thinking within the area of environmental and/or policy decision making (Chechile and Carlisle 1991).

Self-sufficiency within ecosystems - linear to cyclical patterns of production and consumption

Systemic thinking is a consistent theme underlying sustainable development and learning to control the global system is an additional major theme in the chronology. Self-sufficiency is a means of describing the control of and living within current systems limits. Schumacher (1974) challenges the prevalent basis for continuous economic growth by beginning to describe it as a means to an end (being concerned with political and moral priorities) rather than an end in itself. He advocated (in common with Packard 1963 and 1961) what has since become known as 'downshifting' and the move towards a more simple, 'prudent' and self-sufficient lifestyle. His critique of neo-classical economics influenced a popular search for a new understanding of development, not necessarily pertaining to material growth but personal and spiritual growth. Schumacher's economic response to developing a sustainable society was popularised at the individual level (or household system), simply because it is at this level people are able to control the inputs and outputs to their system.

Self-sufficiency and equilibrium at the global level were themes underlying the *Gaia* Hypothesis put forward by James Lovelock (1979 and 1989). Lovelock understands the world system (or biosphere) as an ecological or scientific system that has developed its own feedback mechanisms and become self-regulatory. Here the links are not simply between resources, economic growth and population levels, but between different species and habitats. He effectively popularised a hypothesis and view that the earth itself regulates and maintains an environmental state that is comfortable for sustaining life, a position that self-sufficiency only really makes sense at the biosphere level. He demonstrated the feedback and regulatory properties of the global ecological system by means of a computer simulation and visualisation programme (Daisyworld) – not as an accurate or scientific description of the earth, but a way of viewing the global system and the relationships within the system, which is growing in recognition (Tickell 1996) and application (Natural Step UK 1993).

In both examples (economic or physical/individual or global) of self-sufficiency the transition towards a sustainable society has been characterised

by reducing both the inputs and outputs of the system in question, by resource reduction, efficiency, recycling. A common language is starting to emerge which uses ecological and evolutionary analogies to explain the structure and make-up of both natural and human systems ('hard' and 'soft' systems). Jeffrey (1996) has commented upon the extent to which evolutionary analogies are used to describe aspects and attributes of sustainability. Concepts such as resilience, diversity and adaptation are used to describe properties of self-sufficient ecosystems and of organisations, within the context of sustainability (Levine 1991). Self-sufficiency and the move towards a more cyclical society, borrows analogies such as these and applies them at a variety of different spatial scales, from the individual to the biosphere (including settlements, catchment areas, etc). Virtually every example of cyclical systems refers to physical systems such as energy, water or waste. They rely overtly on technological changes in energy efficiency or recycling (dealing efficiently with the natural resources) to achieve this transition to a self-sufficient society and to live within the limits of the system in question. Sustainability means controlling human intervention in the natural system and seeking to improve resource efficiency within systems through a combination of growing regulation, demand management and technological solutions. Yet it is clear that in applying new or alternative technologies, there will need to be behavioural change and major impacts upon lifestyle. It is also vital to recognise that 'open' economic and human systems cannot be treated in the same way as the physical systems of 'spaceship earth' (Turner 1993, Vickers 1983, Boulding 1966).

Concepts of self-sufficiency are significant in the operationalisation of systems thinking and the limits to growth. It is an idea that simplifies and communicates the operations of the global system to a point where individual actions can be seen to be based on such an analysis and to a small extent influence the course of the system. However, we need to recognise the difficulties of incorporating values when this useful concept is transferred to human systems such as a city.

Carrying capacity - recognising the limits

It is the consideration of both resource and behavioural implications that form the next major chronological theme underlying sustainable development. One of the characteristics of an integrated approach is the identification of a chain of causes and effects, what is known as a feedback loop. One example of this is the feedback into rising economic costs and prices whenever non-renewable resources become scarce. The casual relationships and the feedback loops contained within the global model were gained from a thorough literature review and a wide ranging consultation with professions working within the field of study.

In any finite system, constraints (negative feedback loops) will exist, whether natural or self-imposed. It is perhaps obvious that the ultimate determinant of the limits of growth is the level of resources required to meet our basic human needs and the physical necessities. These are tangible and countable items which can be used to inform us of the upper limits (termed the 'crisis point' or the 'carrying capacity') to Malthusian population pressures and

capital growth (Brown and Kane 1995). However, the Club of Rome also raised the importance of social necessities (such as education, employment, peace and stability) and the difficulty in setting a subjective limit for these. We need to consider both physical and behavioural aspects in the transition towards a sustainable society.

To be considered in conjunction with the notion of limits to growth is the impact that technological advances and innovation may have in extending such limits, both physical and subjective or behavioural. Thus, even the limits to growth can be considered as a dynamic within the global system (Meadows *et al* 1981, Daly and Cobb 1990). "The limits of growth, which have been made popular by the Club of Rome ... are fundamentally due to limits internal to the production mechanism, rather than simply external limits" (Giarini 1978 p19). Arguments have been put forward for the inclusion and/or consideration of more political and social limits to growth (Freeman 1973, Turner *et al* 1994, Harris 1995) and challenging "... the inevitability of economic growth" (Redclift 1993 p449) that threatens any ecological limits. This ideally should be combined with a different understanding of what is meant by the terms 'development' and 'growth'. However, political and socio-economic problems that provide constraints cannot, by their very nature, have technological solutions, so it is not possible for technological fixes to continually extend the limits.

"... a whole culture has evolved around the principle of fighting against the limits rather than learning to live with them" (Meadows *et al* 1973 p150).

The only way to avoid global collapse is to choose to live within the limits by accepting a self-imposed restriction on growth (Weenen 1997a).

When we begin to discuss subjective limits to growth, we start to move away from the scientist's and technologist's overview of sustainable development and enter the political field. We depart from the technical literature of systems, ecology and modelling where "... carrying capacity is a measure of the highest population density a species can sustain in a given environment" (Levine 1991 p50) and look at ideas raised by governmental organisations. The concept of carrying capacity begins to be recognisable in targets, limits or standards. These can be quasi-scientific environmental standards (eg: on air or water quality), directional goals for resource efficiency (eg: fossil fuels, brownfield and derelict land) or emissions/pollution. A close examination of any individual limit reveals some degree of subjectivity as demonstrated even in what constitutes acceptable or safe levels of pollution. When we have subjective limits we have to have 'political' involvement in the process of determining levels and targets. We also need to provide the tools by which policy-makers can begin to make decisions and incorporate value-judgements. Value judgements are by their nature 'political' decisions and reflect the political bias of the decision-makers. Thus, a wide range of issues relating to environmental decision making in the political realm become relevant to the cause of sustainable development.

The most familiar form of carrying capacity is the development of a generic hierarchy of protection or standards – both nature and human resources

are assessed in respect of their ecological, economic or cultural importance. This is evident in a raft of planning policy at the European, national and local levels. The most recent thinking regarding a hierarchical system of resource conservation and protection, describes carrying capacity in terms of environmental capital. There is a hierarchy of 'critical' (rare species, unique buildings etc. that should be defended at any cost), 'constant' (resources where it is the overall quantity or total which is important, eg: open space, play areas) and 'tradeable' environmental assets. The aim of this sort of approach is to provide a useful framework for policy makers to make better decisions.

An alternative approach to understanding carrying capacity has been established by Rees (1992), again a policy-orientated approach to aid in the understanding of limits. Rees combines the concepts of natural capital and carrying capacity in the development of his 'ecological footprint' methodology, which identifies the aggregate amount of land required to support human population. Rees's description of urban 'black holes' is supported by the calculation of the ecological footprint for London being the total land area of England. The Sustainable Development Strategy for Ireland estimates that Ireland's ecological footprint is already 1.23 times the size of the land available, despite its low population density for a developed country (Department of the Environment 1997). The notion of an ecological footprint is in effect an aggregate total, a combined limit to all the finite resources considered. Thus, perhaps a better basis for policy decisions because it has a common basis of comparison. Rees also raises questions regarding those developed nations who have ecological footprints that have exceeded their own national land boundaries. It clearly implies transboundary impacts, for example, in the form of pollution, waste disposal or the global re-allocation of resources.

"... although never stated in quite these terms, the appropriation of most of the world's carrying capacity by the urban industrial North (and reluctance to give it up) and the insistence by the South of its right to a fair share (and the threat to seize it through sheer growth in numbers) was really the only issue at the Earth Summit in Rio in June 1992". (Rees 1992 p129)

Social Justice – quality of life issues and the meeting of basic human needs

The Club of Rome report's sequel '*Beyond the Limits*' (Meadows *et al* 1992) reran the model and restated the results as a challenge rather than an inevitable future, and specifically that there should be more emphasis on equity and quality of life in any actions directed towards sustainable society. This recommendation closely reflects the Brundtland Report definition of sustainable development (1987) which was the basis for discussion at Rio and the main entry point for political input into the sustainability debate, and correspondingly, the establishment of sustainable development on the mainstream political agenda. However, it is useful to reflect on the background to the Rio conference, including a review of the first '*Earth Conference*' at Stockholm in 1972. This was characterised by a 'battle' between dark and light green political

positions. At the strategic level, there was acceptance that nations were interdependent on the planet's resources and each other; and there was consensus over a shared responsibility (characterised by the background report 'Only One Earth') for the management of these resources. McCormack (1989) argues that the legacy of the first 'Earth Conference' was the inclusion of human systems into environmental thinking and their linkage to issues of social justice (internationally between developed and developing nations). In addition, there was recognition of a growing role for NGOs (Non Governmental Organisations) and the community sector in environmental issues, which could be viewed as a rise in participatory democracy.

The Brundtland Report (1987) from which the most commonly accepted definition of sustainable development is taken: "... sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (1987 p43), has been described as the 'concept's political coming of age'. Most commentators view the inclusion of social equity issues in the environmental debate as the key influence of '*Our Common Future*'. It has a strong ethical stance that recognises the need to guarantee a basic quality of life for everyone (international and intergenerational equity). The report described inequality as the most pressing environmental problem on the planet and put forward a framework for action where sustainable development could be achieved within a framework of equity.

The previous concepts of negative limits and standards placing constraints on our development are effectively replaced by positive targets; ie: meeting basic needs of all (although there are still value-judgements and arguments surrounding the remit of 'needs' compared to 'demands').

The Rio Conference was partly intended as a five-year progress report following the Brundtland report. The striking aspect of this period was the effective greening of the sustainable development agenda and many commentators have since been highly critical of the imbalance and bias towards the environment which emerged, at the apparent cost of equity issues. The debate had become driven by the developed nations and by the growing influence of environmental NGO's (particularly Greenpeace and Friends of the Earth). One reviewer has described the process at Rio as "... the North turned 'green' and the South was turned away." (Kirkby *et al* 1995).

The remaining elements of social equity from the Rio conference lie only within the vast documentation of Agenda 21, a broad action plan for sustainable development and an action plan that remains anthropocentric, stating that "human beings are at the centre of concerns for sustainable development ... they are entitled to a healthy and productive life in harmony with nature". Jonathon Porritt in a five-year review of Rio and Agenda 21 refers to the recurring theme that "... sustainable development as a concept means very little if its two fundamental elements – environmental sustainability and social justice – are not being given equal attention". This highlights the need to understand complexity of the global system (environment and economy linked) and the need for balance in policy responses. It is important to recognise that sustainable development does not equal environmentalism and, Porritt (1997) argues that we need to be wary of equating the two fields due to a perceived bias towards the environment. However this is more than a question of including

social issues and needs within policy decisions, it is a question of dynamics, change and adaptation. As needs change, so we must manage change within systems to meet these needs, raising the attributes of resilience and adaptability (Pearce 1989 and 1993) as a necessity for stability or equilibrium (O'Riordan 1994) within a system.

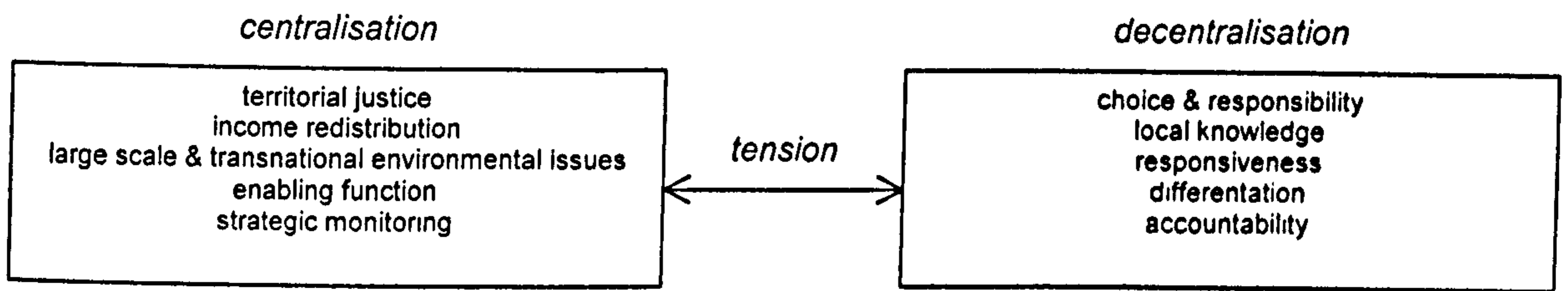
Participation – ensuring the end-user's role in environmental decision making

The model constructed by the Club of Rome effectively asks a range of questions with conditional responses leading to a number of alternative futures all requiring political decision making and value judgements. One constant in all of the possible future scenarios investigated is the ultimate need for trade-offs between competing demands. At the most basic level, this can be the trade-off between present benefits and future benefits or it can be the trade-offs between continuing industrial production and the reduction of pollution levels etc. "... all of these trade-offs arise from one simple fact - the earth is finite" (Meadows *et al* 1972 p86) and the closer that human activity comes to the earth's carrying capacity the more apparent and unresolvable the trade-offs are likely to become. Unchecked growth in the global system leads to a growing demand for resources, simply exacerbating the shortage of time required for action to control this demand.

In seeking to resolve trade-offs between competing demands, value judgements will inevitably have to be made. Value judgements are by their nature 'political' decisions and reflect the political bias of the decision-makers. Thus, a wide range of issues relating to environmental decision making in the political realm become relevant to the cause of sustainable development and participation and political involvement are essential when dealing with such value judgements (Turner *et al* 1994).

Ensuring the balance between environment and development issues, particularly at a localised level, is one of the major aims of the Agenda 21 agreement and the means of achieving this is the fifth key concept in the chronology (and the most recent) underlying sustainable development. Participation and empowerment in environmental management and decision-making is perhaps the current focus for many Agenda 21 (and Local Agenda 21) initiatives.

In the need to husband and effectively manage our environmental resources there is a tension between the forces of centralisation and decentralisation. At one level there is an argument for centralised control to integrate socio-economic and environmental issues at the regional level, to protect key resources and to resolve any uneven spatial or social distribution. On another is the need for local efficiency, responsiveness and community involvement. Thus, one of the unresolved dilemmas of working towards sustainable development is deciding the correct scale for action, be it the neighbourhood, the town, the region or the nation-state. "Both (top-down and bottom-up forces) must be harnessed to the needs of sustainable development in a flexible and balanced approach sensitive to local circumstances." (Carley and Christie 1992 p131)



There may be no right answer to resolving this tension between the 'top down' and the 'bottom up' approaches to sustainable environmental management. The hypothetical equilibrium has been described as 'subsidiarity', a principle of decentralisation first put forward by Kohr (1957). The subsidiarity principle states that tasks should be undertaken at the lowest level in society by which they can be effectively managed. Higher levels (for example, those of national or regional government) should support the lower levels and ensure they have sufficient means to undertake the necessary management tasks. This principle then relates to the procedural aspects of environmental management and the need to define appropriate functions and tasks at each particular level. It could be further explained as the integration between different levels to achieve complementary action. However to be achievable, this does assume that there is a consensus over the meaning of sustainable development between the different levels of decision-making. In reality this situation is seldom found.

Outcome from the overview

Within the academic community, as in the institutional and professional thinking, there is a strong but complex, recognisable link between issues of urban form and sustainable development. However, directions have been lacking, as conflicts are inherent in aspects of urban sustainability when there is separation between form and processes (Burton *et al* 1996). Sustainable urbanism must be all encompassing and inclusive of management processes, physical form and responsive to changing political value systems. A clear outcome from the conceptual evolution of sustainability is that we must stop looking for single substantive and prescriptive solutions and seek a new, holistic perspective.

New definitions

Sustainable development as a value-laden term is a dynamic and evolving concept. Definitions have been collated and summarised using content analysis (Pearce *et al* 1989), and revisited (Turner *et al* 1994) with a recognition that there is a high level of consensus and that in spite of criticisms, sustainable development is far from 'all things to all people'. This needs to continue to be redefined, hopefully towards a more consequential and less confusing outcome and definitely with a bias towards more localised and culturally specific definitions. In addition, substantive responses need to be appropriate or resilient to this evolving concept, a question "... of finding a sustainable path" (Harris

1995 p444) towards an ever changing goal, based on changed societal values (Johansson 1995). New definitions need to focus on the management of change and restructuring rather than achieving a set goal.

New mechanisms

Social limits on the feasibility of certain compact urban forms are essentially qualitative limits defined by wider 'lifestyle' implications. Further research is required in issues of public perception and acceptability of changing lifestyles, the marketing of 'urbanism' as a value system and means for public involvement, perhaps as part of Local Agenda 21 activities, in the shaping of such shared 'lifestyle' values.

New models

Too often there is a vested interest group behind substantive research into sustainable urban form. This is a situation that has resulted in the propagation of contrasting extreme examples of density, structure, scale and movement, each seeking to influence statutory policy mechanisms. This lack of objectivity has left much research stranded in generic arguments concerning the pros and cons of the form they are advocating, and avoiding the need to examine localised and inherited challenges. There needs to be further development of models of intensification and adaptation of existing urban areas and locality specific approaches to models of sustainable urbanism that are honest in their recognition of implementation problems, and not driven by an additional agenda.

New methods

It is recognised that there is a "... need for tools for reconciling the competing concerns of the compact city" (Burton *et al* 1996 p232) due to the complexity of city structures and processes. A multitude of approaches will be required, "... not only institutional decision-making models and processes in general, but also ways of inserting technical criteria, such as 'visioning' sessions and participatory 'eco-audits'" (Atkinson 1996 p11), essential due to the mix of issues and the real need for practical responses. The challenge is then to link empirical and qualitative approaches to understanding cities, including ways of identifying and removing existing procedural barriers.

We need to generate new methods and integrate multiple tools for urban assessment and monitoring aimed at improved knowledge of complex systems. Particularly relevant in achieving these aims is the use of indicators of sustainable development, these then being adapted by policy makers into task specific tools such as urban capacity studies.

It should be remembered that the concepts within the historical chronology are not mutually exclusive and there are myriad areas of overlap due to the inclusive and interconnected nature of sustainability. Interestingly, I found that procedural and goal setting decisions were inexorably linked already

in most people's minds; the need to 'meet needs' demands a dialogue with end-users and, as needs and users change over time, management must be considered in the initial design stages. The confusion that people were sensing about the contradictions (as people perceived very different alternative futures) within sustainability were actually due to the inclusion of analytical and procedural aspects into an exclusive substantive debate about sustainable built form. In this sense, sustainable development is fundamentally different from other 'big ideas' which started with a set of given goals and objectives. Part of the outworking of sustainable development is that in each individual project it will partly define itself within this given 'commonality of concepts'.

The investigative tasks provide the basis for the evaluation framework or matrix established within the following chapter and to be used and refined in testing through a series of UK based case studies later within the research. In this framework I have continued to use the presentational technique of five key concepts which were repeatedly referred to within the scoping exercise, setting them out in my own terms.

Chapter 4

Development of Operational Definition of Sustainable Urban Development

Practical context and end-user prerequisites

System rationale for a new type of urban model

Spatial indicators of sustainable urban form

This chapter establishes the systems basis and role for a practical approach to sustainable urban development in all its multi-variant facets. It then suggests the role of indicators to simplify the scope and complexity of urban systems, together with a linked methodology for examining both the scope and the connections within an indicators based model as the most appropriate tool for communicating the scope, linkages and integrated nature of sustainable development.

Practical context and end-user prerequisites

The first requirement for a practical framework of urban planning and management is the recognition that even a simplified understanding of complex urban systems, and the interconnections between issues, is more productive than in-depth investigations into any singular aspects of design (Alger 1990, O'Regan and Moles 1997, Checkland 1992, Christian and Harper 1982). The need for a comprehensive overview is also central to the holistic nature of sustainable development. Thus, I would argue that systemic thinking is the central practitioners' prerequisite for operationalising the concept of sustainable urban development. A systems based approach allows us to go beyond the question of 'what we build?' and link issues of 'goal-setting' and processes with those of physical urban form. When we begin to consider the totality of urban systems, over and above linked sub systems, we tend towards real-life scenarios (Berry 1964), where decision-making is based on spatial systems, rather than thematic concerns. "Understanding ... (the urban system) ..., how it is structured, how it changes and impacts on peoples lives, is 'policy-relevant'" (Smith and Timberlake 1995 p94).

The characteristics and advantages of thinking systemically about a framework for urban decision-making are:

- Our understanding of urban systems will be based upon a multi-variant and integrated reflection of real-life complexity (Goldsmith 1978, Clayton and Radcliffe 1996);
- Responses will be locality specific (Smith and Timberlake 1995), non-prescriptive and non-scale dependent;
- Understanding the co-evolution of sustainable development and non-linear urban systems will reflect the temporal/dynamic aspects to meeting needs, changing definitions and emphasis within sustainable development, thereby avoiding 'end-state' planning; and
- Any decision-making framework will be flexible/adaptable to ensure feedback mechanisms between process and product.

The rationale of this approach is to think systemically and overcome current problems of separation by starting from a ***consensus*** at a conceptual level, based on the meaning of sustainability, rather than the implementation of the concept. It is an analytical/flexible rather than a substantive and prescriptive starting point. It then has a framework able to reflect the ***complexity*** within urban systems, and is adaptable during ***consultation*** with end-users to ensure feedback about the usefulness and functionality of the framework. In effect it suggests adopting a 'bottom-up' approach to urban systems focused, on the

specific requirements and geographical scales of decision-makers, breaking down the notion of deterministic theories and replacing them with non-generic responses. Such responses that by nature must be criteria based and designed rather than directed by the application of prescriptive standards. The framework is intended to provide responses to issues of sustainable urban form that will be policy relevant (Local Agenda 21, statutory land-use/spatial planning), reactive to changing needs, participative, accessible, understandable and meaningful. This adaptive framework stresses the importance of the utility of an approach that is based upon an understanding of 'real world complexity' rather than the behaviour of a mathematical model (Goldsmith 1978 p306).

On balance, there are limitations of a systems approach to developing an urban management tool. Ultimately it is a 'technocratic diversion' (Ferguson 1975) to empirically model every aspect of a system as complex as a city. Within any overview there will be concerns over data error and reliability, information 'gaps' and limitations (often caused by empirical and public domain bias). Additional concerns include metadata (precision and reliability), objectivity and attribute weighting, data practicality and resource implications. However many such concerns over systems modelling are also applicable to a critique of sub optimal modelling.

System rationale for a new type of urban model

Some of the concerns of a systems approach can be addressed by developing the adaptive framework as a heuristic urban 'model' aimed at improving our understanding of complex and dynamic urban systems rather than being a predictive tool (Portugali and Beneson 1995).

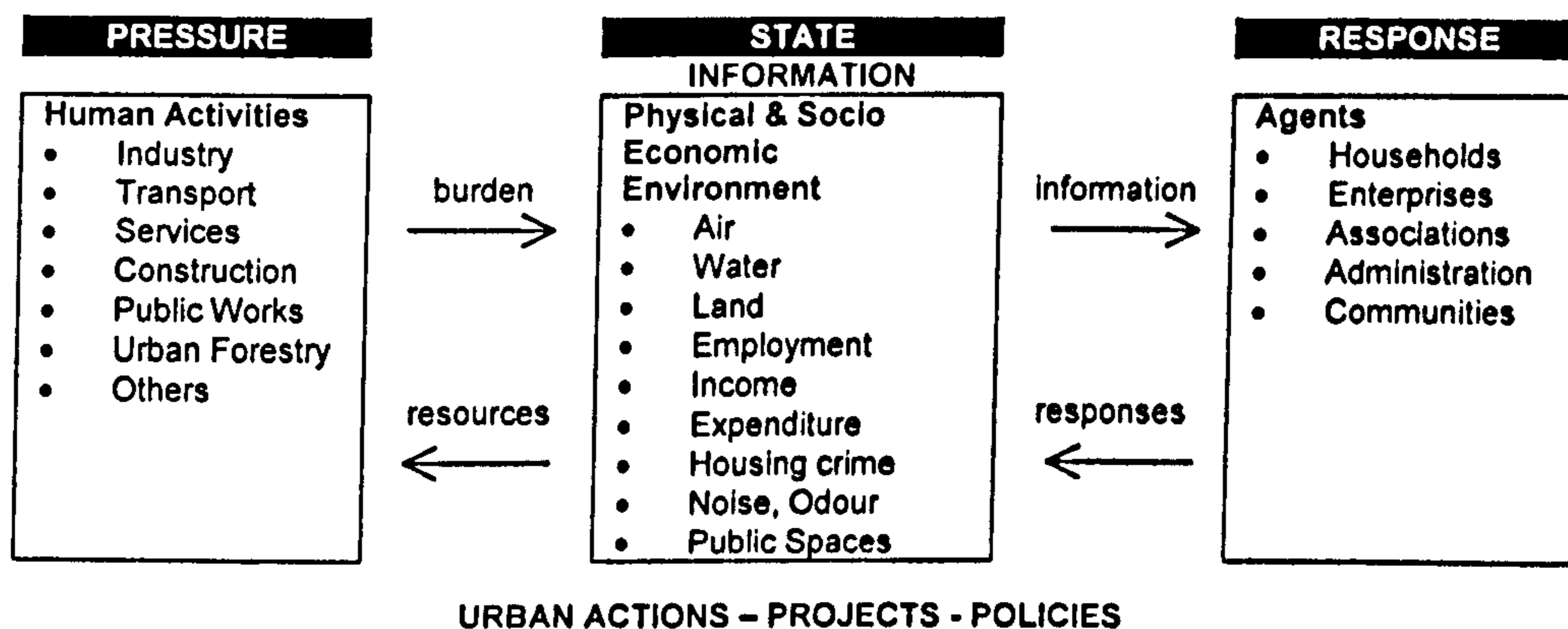
Rees has argued that we need to rethink how we define our urban areas "... conceptually and in spatial terms" (1997 p308) in a way that recognises the city as a 'parasitic subsystem' within any spatial hierarchy. We require conceptual tools and methodologies to improve knowledge and understanding of interaction and dependence between different levels of spatial abstraction (natural ecosystems, city-region / urban hinterland, urban neighbourhoods and households). These 'concepts' of urban systems should allow us to map linkages, trends and relationships. Concepts of cities as 'multilayered networks' of resource flows (Smith and Timberlake 1995, Meier 1995), 'ecosystems' and polycentric communities all have similar components. In this context, commentators have argued that sustainability demands a new type of urban model: one that is flexible and non-determinate, being more of "... an interactive methodology rather than a model" (Clark *et al* 1995 p85) where sustainability is promoted by adaptive change (Jeffrey *et al* 1997); one that has a spatial dimension (Wallner *et al* 1996) where boundaries, as the interfaces between different systems, help us determine structure and interactions (internal and external) to the specific area being modelled, including the micro level (Batty 1995). One that values monitoring and links forecasting with feedback to check 'homeostasis' (system diversity and resilience) and to correct errors (Grossman and Watt 1992); and one that uses gaming approaches to improve our intuitive understanding of urban processes (Portugali and Benenson 1995). Ultimately we require an urban model that is aimed at improving understanding and

decision-making rather than being concerned with a representation of reality. The system in use, must be systemic, flexible, simple to use and objective. Information within the model will be based on the principle of Best Available Data Not Entailing Excessive Costs (BADNEEC).

Spatial indicators of sustainable urban form

System requirements and limitations/concerns can best be met by the use of indicators, proxy measures of sustainable development packaged together to meet the requirements of thematic scope, linkages between issues and ease of communication / understanding. A 'package' of indicators can raise the public prominence and understanding of sustainable development by providing an overview that highlights many of the links between the different facets in a manner which shows correlation if not also causality.

Sustainability only makes sense as a coherent policy goal if it is measurable (empirically and relatively). Indicators have an important role in this task because they are linked to policy aims (and in some cases explicit targets) and actions. At the European level, frameworks for indicators (see below) are at the city or city-region scale. If a set or framework of intra-urban indicators were constructed it would be more consistent with the increasing European Union emphasis on community based decision-making.



(a conceptual framework for urban sustainability performance indicators – after Mega 1996a p140 and Mega 1994 – from a distinct theoretical position based on a policy position that has since been surpassed)

“sustainability indicators is one of a number of projects based upon citizens' participation, "... decentralization, empowerment and devolution” (Mega 1996 p154)

From investigations into the identification and use of indicators there are certain factors that have influenced the nature of the data collection and testing process. At the national and international level, the World Bank has been looking at ways of measuring progress towards sustainable development using indicators to produce a 'report card', an attractive idea of a single integrated measure of sustainability. This represents a divergence away from more empirical resource accounting and eco-audits towards a more integrated synthesis of socio-economic and environmental values. Within this 'report card',

indicators will be tailored measures for the particular local situation with an emphasis on feedback as to how the public reacts to the information and amends or restricts behaviour as a result. They recommend the use of indicators in a pressure-state-response approach, where the public evaluation of the physical state of the environment is of crucial concern. An environmental problem is the physical problem plus society's evaluation of the impact. Thus, distinct indicators are suggested in the three areas: (i) sources of environmental *pressure*; (ii) *state* of the environment ;and (iii) the human *response* to the problem.

These are the criteria used for arranging and selecting indicators in the 'report card' matrix below. This typical section illustrates how these criteria provide the structure for the matrix. Within the matrix, indicators are 'clustered' around issues.

Issue	#	A. Pressure	B. State	C. Response
II. Social				
Urbanization	5	---	Population in Urban Areas	---
Housing	6	Population Density	---	% EDP spent on Housing
Water Quality	7	---	Dissolved Oxygen	---
Air Quality	8	Energy Demand	Concentration of particulates	---
Health	9	Burden of Disease (DALYs per 1000 persons)	Life Expectancy at Birth	% EDP Spent on Health, Vaccination
Nutrition	10	Prevalence of Underweight Children	Dietary Energy Supply	---
Transport	11	---	% of Total Produced Assets	---
Women's Status, Caring Capacity	12	Maternal Mortality Rate	Total Fertility Rate	Females per 100 Males in Secondary School

(Extract from table *Initial Indicators for a "Sustainability Matrix" on Environmentally Sustainable Development*, John C. O'Connor 1995 – policy indicators linked to action/responses)

In his review of the research undertaken by the World Bank, O'Connor (1995) concludes that to be effective as comparable indicators, a common unit of measurement is necessary between the pressure, state and response. One way of achieving this comparability is by compliance with official policy goals with equal weight given to each indicator and then combining them based upon 'distance-to-goal'. Other forms of alternative weighting are possible but these can be considered as additional to branches of 'monetization' (environmental economics and accounting). Measures should refer to sensitivity and stability. Stability relates to the why and when of a system leaving equilibrium, the limit beyond which there is negative or irreversible change. Ideally, the stability limit or threshold should be the informed basis for official policy goals and targets. Indicators should reflect the interface between socio-economic and environmental issues by looking at indicators of change and their locational or geographical context.

These suggestions have a degree of convergence, as a form and method of spatial measurement would provide the comparable basis for various and disparate indicators. The inherent problems of obtaining qualitative spatial data at the national level are perhaps a barrier to the particular research interests of the World Bank. However at the neighbourhood level, the notion of user defined indicators integrated on a spatial basis does warrant further consideration. O'Connor suggests the exploration of the use of geographical information systems (GIS) to help with data collection, initially at a sub-national

level or ideally, at the scale of the eco-system. At a lower level of abstraction than the pressure-state-response approach, there is scope for overlaying spatial data and examining the interconnections between different layers and issues. The potential for integration between issues is greater on a spatial basis and at the local level. The discrete separation by the World Bank of environmental, economic and social issues is partly due to the lack of comparability of data at the national scale. It recognises that overlaps will always occur between these issues, as the methodology implicitly accepts, "the framework just says that the state we observe is subject to pressures and elicits societal responses designed to reduce pressures and improve the state." (O'Connor 1995 p93) The aim of an integrated 'report card' is dependent upon overcoming comparability problems and highlighting linkages between strategic issues. The gaps in the above matrix indicate the complexity of the issues and an uncertainty over the direction of the indicators research.

There is now a recognition of the complexity of systems of living organisms, including human systems, and the need for different statistical methods which include responses/feedback to the state. It is not enough to just investigate the state of the environment within a policy or response vacuum, as the complexity of our social system means not just interconnections between different interests, but also between states and responses.

The 'report card' approach has been adopted at a national (DoE 1996a), regional (Crilly *et al* 1997, GreenGauge 1996, SERPLAN 1994) and city scales (ALG 1997, LPAC 1995), and is popular because it can "... widen strategic thinking from traditional narrow land use and transport planning, to a broader economic and social dimension" (LPAC 1995 p1). A 'report card' is taken as a baseline for on-going monitoring and where there is a significant role for information exchange as feedback on policy and decision-making (Selman and Parker 1997, Selman 1996, Day and Brandon 1996), including policy targets where appropriate. This entails developing new partnerships between different levels of decision-makers and raising the issue of citizenship within local government. As indicators work has developed, long sets of measures have been reduced to 'core' or 'headline' sets (DETR 1998) that are more focused on public media attention while still being interrelated and linked to governmental action.

Indicators are concerned with change and decision-making, implying a distinction between data and information, where the weakness of current practice is that it is data rich without making a connection with action and changing behaviour. Specific criticisms are the lack of integration with political issues and public participation (Riglar 1998, Pinfield 1996) which require creative and imaginative approaches to community involvement. To do this they need to be locally defined, both individual indicators and the process, (Pinfield 1997, Henderson 1990) to ensure they result in better decisions and actions. This is because they do represent a specific locality or cultures' value system and as such the selection and use of indicators can be highly political (Crilly *et al* 1999).

The policy relevance of any indicators set also depends on a multi-layered understanding of the urban system (Pearce 1997, Brugmann 1997a and

1997b) gaining new layers and mapping these spatially and as flows or networks. "... a systems approach, in this context, has much to offer. It provides a multi-dimensional framework in which information from different disciplines and domains can be integrated without being forced into a one-dimensional mapping" (Clayton and Radcliffe 1996 p12). Key 'gaps' are the recognised "... dearth of relational data on all social phenomena" (Smith and Timberlake 1995 p91), a lack of spatial dimensions and an over reliance upon empirical information and models (Clark *et al* 1995). The proposed framework is dependent upon the possibilities of filling these qualitative gaps with a common unit of measurement for each indicator - a spatial unit.

"within the context of designing and managing sustainable communities, planners require an understanding of the interactions between the macroscopic dynamics of the regional or urban system and its component sub systems... (such a) ... defined spatial zone can be seen as a complex system which evolves over time" (Jeffrey *et al* 1997 p58 and p61)

Interaction with urban form, by its very nature, means that each area of socio-economic indicators should have spatial manifestations. The identification of these spatial implications is suited to the ability of GIS to analyse the interactions between various indicators on a comparable basis. Conceptually this direction in research has much in common with the idea of the 'ecological footprint' (Rees 1992). Rees argues that a consistent basis is required for effective and efficient environmental decision making and to date all the attempts to achieve this have certain inadequacies. The spatial impact is suggested as a suitable consistent basis.

"However brilliant its economic star, every city is an ecological black hole drawing on the material resources and productivity of a vast and scattered hinterland many times the size of the city itself." (Rees 1992 p125)

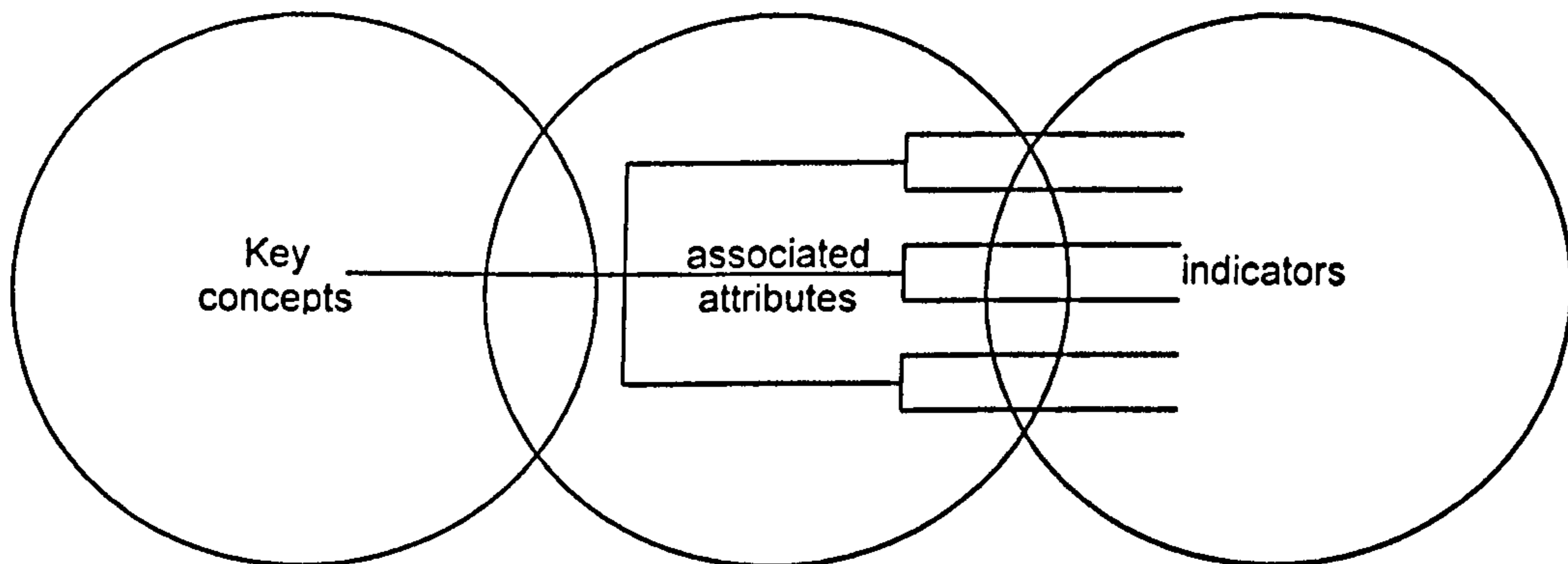
Considering the environment as critical and constant capital based on economic costing does not help to assess the impact of urban living, as it fails to see interconnections and synergistic impacts and to consider any form of spatial impact. Indeed Rees poses the question of how considerations such as carrying capacity and natural capital affect urban form and the spatial scale.

The spatial representation of indicators of sustainable urban design is a means of representing the nature of the urban system, ensuring direct significance to issues of quality of life, physical design and urban form; while ensuring objectivity in highlighting linkages. It allows end-users to recognise patterns, 'hotspots' and connections between two or more indicators, fulfilling the prime concern that indicators are integrated and understood as a set of measures. A complex spatial systems model can allow us to "... describe the connected behaviour of sub-systems" (Allen, 1997, p.107), linking existing modelling and areas of policy work through an adaptable framework for spatial indicators of sustainable urban design. It can also help identify repeating

patterns at micro and macro scale that are linked (Wallner *et al* 1996) and coexistent (Allen 1997).

As the use of indicators is based primarily upon an intuitive and qualitative way of understanding urban systems they remain "... a sub-optimal tool for technical assessment and even public education" (Brugmann 1997a p59). There remain issues over control of the information, its source and dissemination and achieving the correct balance between simplicity and utility (Ghazi 1998).

The resultant proposed role of spatial indicators is within a semi-hierarchical structure that clearly sets out the theoretical basis, in the form of generic and shared concepts, and the 'package' of attributes that may be appropriate for any specific locality. Suggested indicators will possess a combination of spatial, dynamic and qualitative attributes.



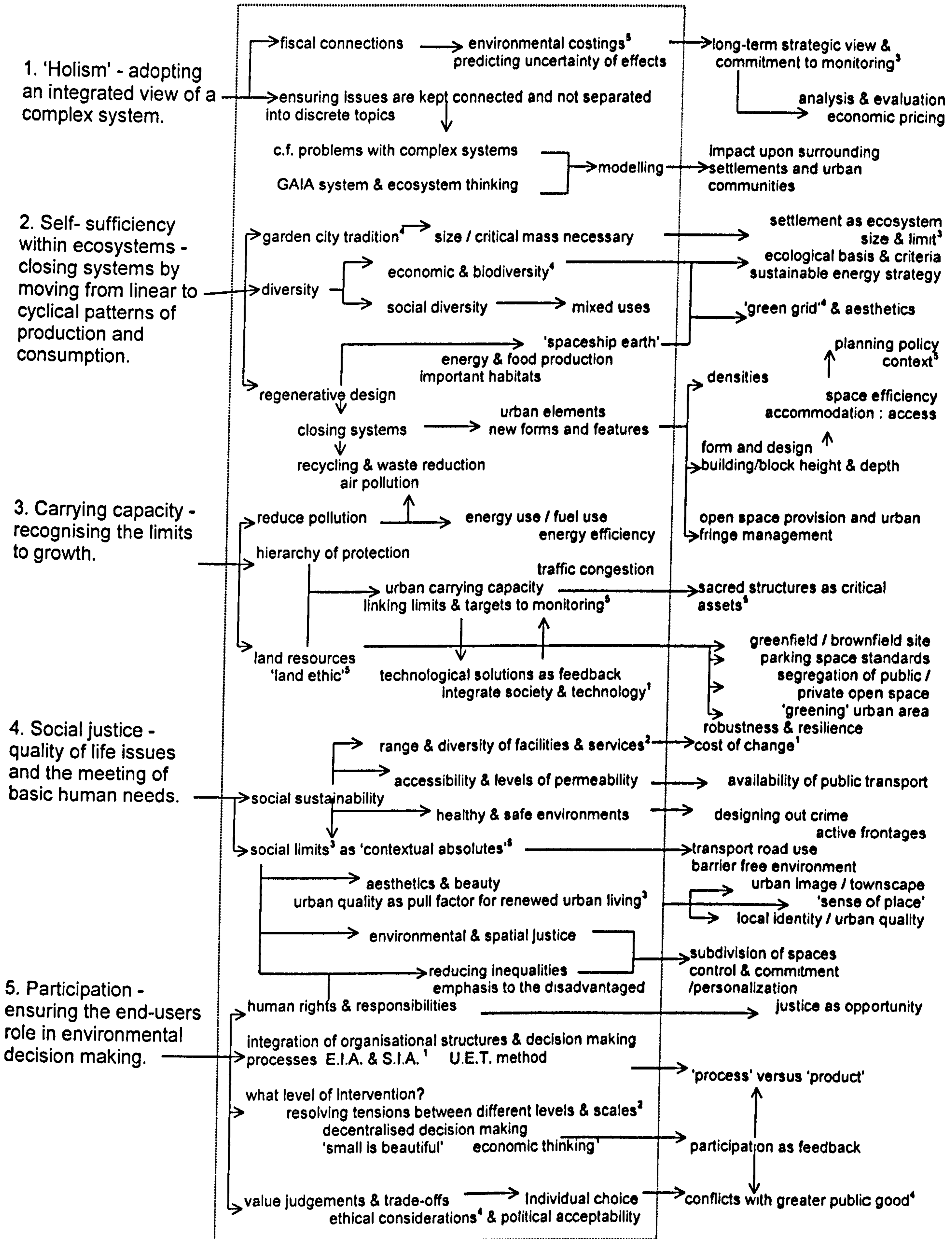
hierarchical basis for linking concepts of sustainability with spatial indicators

This 'loose-fit' structure is deliberately simple and flexible to improve utility and decision-making. The starting point for any location is in identifying the specific requirements of the decision-makers, with the assumption, that while there will be consistency and continuity concerning the key concepts, many of the associated attributes will vary over time, within different actors/agents and between locations. Thus the adaptive framework (shown over) is an indication itself of the sort of development of detail anticipated with this hierarchical framework, showing the scope of spatial indicators required to simplify any urban system. The adaptive framework is based on locality (physical and values) and individual involvement in its' operation. Each of these indicators will require a simple and low cost method of indicator acquisition / collection to make this framework operational. This is the subject of investigation of the following chapter.

commonality of concepts

attributes specific to urban design

possible indicators



adaptive framework for spatial indicators of sustainable urban development

Chapter 5

Interactions between Epistemology and Methodology in Research Design

Reflecting on physical attributes and quantifiable indicators

Qualitative attributes

The empiricalisation of subjectivity – indicators of quality of life

People watching – participant observation, recording and analysis of social networks

Phenomenological questioning – personal interviews, documenting and content analysis

Indicators of community

Social networks

Social interaction

Imagery and information – cognitive maps as tools for understanding geophysical communities

The recognition of visual images (photographs of landmarks/places)

Indicators of adaptability and resilience

Indicators of change and management

Reflecting upon qualitative indicators

Presentation, functionality and applications – connecting attributes to case study data collection in a methodological 'toolkit'

Toolkit to case-study

This chapter is an investigation into the collection, spatialisation and presentation of 'soft' indicators. The thematic 'gap' in decision-making, if not also in knowledge of urban systems, is the qualitative attributes of place and community. These 'soft' attributes are assigned to possible indicators, each with its own means of collection on a spatial format. While many of these approaches superficially appear to be unscientific in their collective / individual representation of values, or the transference of mental constructs to a geophysical Cartesian base, it is argued that they are as objective as quantifiable indicators. If they are presented as complementary to 'hard' indicators, they can significantly improve the understanding of patterns and interconnections within a spatial urban system. This series of linked methods provides the theoretical basis for a number of individual case-studies.

Reflecting on physical attributes and quantifiable indicators

Historically, quantitative data has been dominant in both research and informing policy. A positivist review of the collection and use of qualitative data suggests it is "... nonsystematic and nonrigorous ..." (Glaser and Strauss 1967) and thus by definition non-scientific and non-reproducible. Quantitative data has demonstrable strengths in the potential rigor of its collection and flexibility in statistical and spatial analysis. But such data also has its limitations in the narrowness of its scope (as exemplified by the widespread dissatisfaction of rational comprehensive planning), doctrinal professional arrogance (Denzin 1972) and lacks the potential for intuitive analysis and linking. In addition, it is a positivist myth that quantitative techniques are value free (Philip 1998, Huff 1973, Reichmann 1964) as every methodology involves *interaction* with the subject.

It is suggested that there is no conflict between quantitative and qualitative research methods, but rather it is a case of emphasis and a challenge of integration. There will be overlap in the operation of techniques that historically have been artificially divided between different academic research disciplines.

Qualitative attributes

Madanipour (1996) provides a useful and thorough review of 'soft system' issues relating to the built environment; factors which link perceptions and behaviour and the physical and mental constructs of our environment. One of the key factors of such qualitative and subjective aspects of urban design is the need for a bottom-up or "micro-perspective" (p74) analysis, based on locality or individual specific studies. This challenges the designer to include such complex factors in understanding urban structures and demands a diversity of techniques to collect and analyse soft systems data directly from the individual or community being studied.

Qualitative research is still influenced by scientific method, resulting in two distinct approaches to the collection, coding and analysis of soft systems; (i) the numerical abstraction of qualitative data sources, and (ii) the adaptation of

collection methods and/or decision support frameworks to accept non statistical data sets.

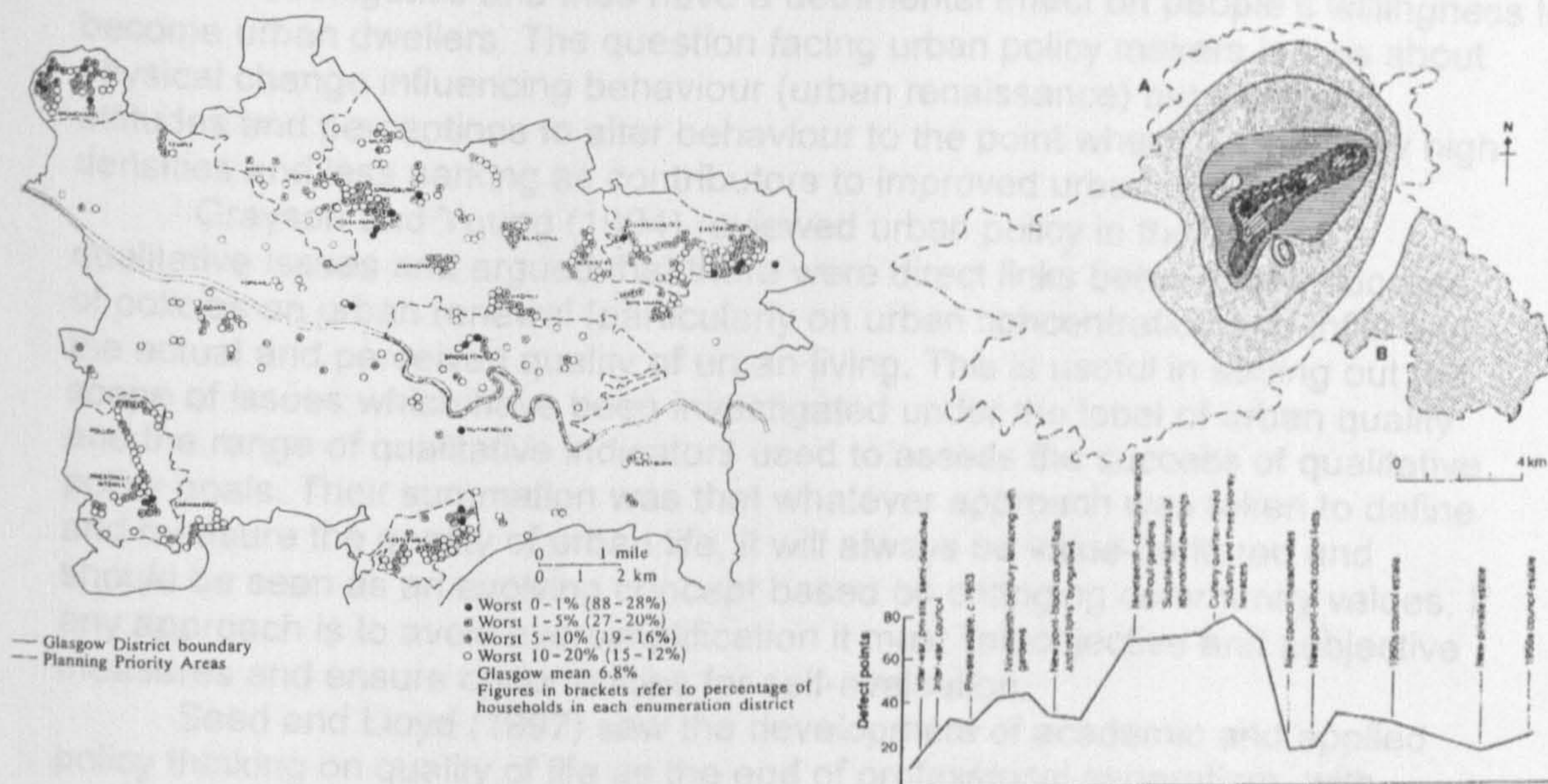
The empiricalisation of subjectivity - Indicators of quality of life

“Quality of life has many different aspects and dimensions. Values hold these together.” (Seed and Lloyd 1997 p206)

A symposium led by Buckminster Fuller (Delos Seven 1972) extended the prevalent systems theory and thinking at that time to the question of urban quality. Reflecting on the systems that organise and shape our daily lives, the symposium concluded that simple measures of physical quality are inadequate. We should be thinking about ‘networks’ and interactions rather than purely physical structure, and investigating ways in which quality can be maximised within these variable networks (the scope of quality being about: scale; sophistication; diversity; homogenisation; concentrations; activity; interaction; and community). No indicators were suggested to measure these attributes.

However there have been many attempts to measure quality of life on a comparative ranking basis between cities (Engel 1997, or the US example Hartshorn 1980) by evaluation of the use of best-practice approaches (Roberts 1997) or within cities. Pacione (1986a and 1986b) has investigated the structure and distribution of quality of life aspects within the city of Glasgow, going beyond physical measures of quality and linking them with indicators of social disadvantage. His work is a good example of locally defined indicators, albeit selected from a limited list of census variables available at the ward and enumeration district level, with a particular strategic policy focus on deprivation. Pacione used two generalised aspects of quality of life: (i) environmental conditions; and (ii) human attributes. From this he developed a composite index which linked physical and subjective indicators, the spatial dimensions of which could be mapped at a local level. He is one of the few geographers who have investigated the issues of scale and the varying results obtained between examining interurban and intra-urban indicators. His view is that too much aggregation will tend to hide local patterns, and it is at that local level where we begin to find the real human scale problems. It is at the local scale we need to investigate the spatial specifics of deprivation and urban quality. The limitations of localised spatial analysis are caused by a lack of data, particularly on human attributes and perceptions. If we are to fully understand qualitative aspects at a localised level, we must achieve it through direct questionnaire and survey work. This primary data collection is necessary whether examining multiple measures or a single index. The survey work carried out by Pacione (1986a) was used for statistical analysis (regression) with small area census data. His findings suggested that: (i) social indicators were directly linked to physical attributes (overcrowding, lack of amenities); (ii) spatial links exist between separate social indicators (for example, unemployment and poverty); and (iii) different spatial patterns of deprivation and quality of life begin to emerge when you compare a city-wide analysis based on wards to a localised enumeration district level. A criticism of this work, is the reliance on personal value judgements in the selection of indicators connected to quality of life. Its strength

is the recognition of data availability at the community level as a major constraint and the need to fill particular 'data gaps' by undertaking primary survey work, ideally attitudinal survey and standardising responses (Knox 1995).



Example of subjectivity in indicator selection – where the presence of single parent families in Glasgow is considered a measure of social deprivation (from Pacione 1986a p1507) and environmental quality in Sheffield (from Knox 1976 p105) as a spatial configuration of a single quality of life index.

This work from Glasgow was carried out in a rigid policy framework and was intended to provide the statistical basis for allocation of resources and planning priority areas. This policy focus placed more emphasis on the city-wide findings than the localised mapping. However, the work at the neighbourhood level was innovative in the manner that local communities were asked to self-evaluate the quality of their own areas. The questionnaire returns showed a connection between objective self-evaluation measures and more generalised externalised census variables. It suggests a number of useful directions for looking at changing patterns of quality across a city and between different levels of abstraction. It also highlights some possibilities of linking subjective and objective measures combining primary (local) and secondary (strategic) data.

The importance of a policy focus for quality of life research has been raised by both practitioners and commentators (LPAC 1997, Monboit 1998, Hugill and Tredre 1998) who have identified an implementation 'gap' between policy research and reality. This can be described as a 'qualitative gap'. The focus of city-wide policy is 'urbanism' as a package where both lifestyle and the environment rely on quality as the main attractor. In a policy framework, the attribute of quality is considered separate from quantitative measures of density and compactness and is more concerned with qualitative criteria, or principles, than a set of empirical standards being used to determine quality of life. Principles become generic (car-ownership and parking, security, usable open

space, diversity and mixed uses) and link the physical and procedural (municipal management, personal perceptions and preferences). Crookston (*et al* 1996) argues that principles of urban quality are currently caught in a self-reinforcing negative feedback loop where high density and compactness are perceived as negative and thus have a detrimental effect on people's willingness to become urban dwellers. The question facing urban policy makers is less about physical change influencing behaviour (urban renaissance) but changing attitudes and perceptions to alter behaviour to the point where people view high densities and less parking as contributors to improved urban quality.

Grayson and Young (1994) reviewed urban policy in the light of qualitative issues and argued that there were direct links between the success of policies on urban renewal (particularly on urban concentration and infill) and the actual and perceived quality of urban living. This is useful in setting out the scope of issues which have been investigated under the label of urban quality and the range of qualitative indicators used to assess the success of qualitative policy goals. Their summation was that whatever approach was taken to define and measure the quality of urban life, it will always be value-centered and should be seen as an evolving concept based on changing community values. If any approach is to avoid oversimplification it must link objective and subjective measures and ensure opportunities for self-evaluation.

Seed and Lloyd (1997) saw the development of academic and applied policy thinking on quality of life as the end of professional separatism, with quality of life possibly becoming a unifying idea for social scientist (because it requires multi-disciplinary working and co-operation between professional domains as it becomes more explicit within government policy thinking). They also note a move away from empirical comparisons (ranking lists of towns or regions based on aggregated public-domain quantitative data) to qualitative social survey. This survey work providing an 'individualistic' (p25) measurement of social relationships and networks (two-way relationships between the observer; including agencies, local government; and the observed communities) and their links with environmental factors. The development of an holistic understanding of the "... needs of the 'whole' person" (p56) that is an understanding of problems that favours breadth and flexibility in particular policy responses. As such, quality of life is central rather than marginal to the concept of sustainable development (Lloyd 1997); it reflects management processes and values in understanding certain attributes, especially holism and the adoption of a long-term view.

Values Promoting Quality of Life	Counter-Values Undermining Quality of Life
Universal opportunities, Choice, Freedom from oppressive restraint, Access, Personal protection and protection for vulnerable groups, Personal assertiveness, Renewal of resources, Ethical production, Consumer protection, Openness, Long-term perspective, Non-violent conflict resolution, Positive health promotion, A holistic approach, Service integration, Reciprocal relationships, Social responsibility, Peace of mind	Opportunities limited by competition, Chance, Unrestrained oppression, Restricted Access, Reliance on self-protection and exploitation of vulnerable groups, Dominance, Resource exploitation, Unregulated production, Consumer exploitation, Secrecy, Instant solutions, Violent confrontation and war, Treatment of disease symptoms, Fragmentation, Dependent relationships, Irresponsibility, Anxiety

(quality of life values and countervalues, from, Seed and Lloyd 1997 p62)

Coinciding with this view is the suggested measures of quality of life, substantive and procedural indicators. The development of these sorts of qualitative values has to be positive and pro-active rather than reliant upon regulatory systems, although Seed and Lloyd's (1997) view does place an over-reliance upon the ability of land use and physical planning to deliver improved quality.

More recent policy research by London Planning Advisory Committee (LPAC 1997) has examined the physical characteristics of sustainable urban residential quality and reinforced the importance of design and direct observation/evaluation. This work has a number of common features with previous studies into urban quality: (i) quality is associated to and measured by empirical indicators (proximity to services, density, car parking); (ii) quality thresholds are established in the form of basic standards or aspirational targets; and (iii) subjective aspects of urban design can have a major impact on perceptions of quality.

There are many cases where attributes of quality are linked to both perceived and physical factors. For example, security (Newman, 1972), traffic and travel (Appleyard 1981). Further work in community planning suggests that it provides the correct scale for both involvement in substantive planning issues and qualitative design concerns (Smith 1984).

The major points to draw from research in quality of life issues are the tested techniques of open-ended and specific self-evaluation (by the local community, designers or local policy makers), direct observation and the direct implications of physical design considerations. If we are to use measures of 'quality of life', they must be linked to values and the emphasis should be on identifying and recording the networks and connections rather than discrete domains. We must also be aware that these connections and networks can operate at specific scale domains, from local to global, and can be both personal and collective. Hence, indicators of 'quality of life' should be defined by the existence and strengths of the links within this 'soft' network.

People watching - participant observation, recording and analysis of social networks

Direct observation at the local level can be useful in determining qualitative elements of urban design and their importance to collective behavioural patterns (Newman and Lonsdale 1996). The traditional ethnographic function of participant observation techniques is to improve understanding of complex social situations through objective, consistent and inclusive descriptive recording of activities. The strength of participant observation as a suitable technique for mapping social interactions is the possibility for adapting this methodology to fit most situations that concern urban designers. Indeed, observational and intuitive analytical skills could be considered essential skills for designers seeking to understand complex social situations. Spradley (1980) simplifies the three main elements of any observation method as *place*, *activities* and *actors* - the same primary elements concerning design professionals.



The primary elements of a social situation that concern the ethnographer/observer. (Spradley 1980 p40)

This simple triangular model can also be the basis for a *cluster* of 'social situations' that are linked by location and proximity, as distinct from a *network* of situations linked by common actors or activities. As social situations cluster they begin to adopt a measurable spatial element. In the recording of individual and clustered social situations, the observer seeks to identify individual actions and actors from a stream of linked activities taking place within an identifiable place. Every observation is a simplification of complex and linked activities and so is partly limited by problems of *actor* identification and the physical accessibility of observation points. Ideally the observer/researcher should be both systematic in data collection (Bogdan and Taylor 1975) and unobtrusive, blending into the background setting and accordingly, relative anonymity through a "... detached voyeuristic gaze" (Madanipour 1996 p76) is one of the advantages of participant observation within the public realm in a free social setting. Spradley (1980 p58) has categorised the different levels of participant observation being used within social science research.

Degree of involvement	Type of participation
High	Complete
	Active
	Moderate
Low	Passive
(No involvement)	Nonparticipation

The well known research work by Foot-Whyte (1943) into detached social networks within North American slum quarters is one of the first and best know studies adopting the highest level of involvement in social observation, supplemented by informal interviews. His study investigated spatially defined ('street corner' neighbourhood gangs) attachment to social networks (networks which could habitually be defined by behaviour and self-perceived roles in the local community). Through observation he defined a model of youth culture/community based on social obligations producing internal group equilibrium, unity and hierarchy. The members' perception of their community was "... as a closely knit hierarchical organisation in which people's positions and obligations to one another are defined and recognised" (p269). The street-corner community also fitted into a city-wide hierarchy of social groups and communities and Foot-Whyte's particular concern was how the detached network and "disorganised community" (p272) of street gangs could be meshed with the wider social structures. Direct observation, people watching recorded in mental-shorthand, and unstructured interviews based on informal contacts achieved through the process of observation produced recognisable patterns of social networks that had locally specific findings and methodological conclusions for other social researchers. His reflections on participant observation (p299) stated that the methodology adopted depended heavily upon the unique social setting being studied. Problems of transferability are

consistent with more recent writing on qualitative methods (Okely, 1994) which suggest, that while observation techniques are useful, you cannot generalise research findings beyond the area of study.

There is also a concern about observation without understanding the prevalent ideological context of the area/community and an inappropriate level of data abstraction that can result in reductionist assumptions explaining some of the spatial characteristics. Madanipour (1996) makes an argument for small scale locality studies which base their understanding on the individual's perspective and internal, personal subjective factors that are at the correct level to most accurately reflect reality, and thus be useful for policy planning.

Phenomenological questioning – personal interviews, documenting and content analysis

The focus of in-depth interviews as a means to increase *understanding* of social situations and processes is in the phenomenological tradition. It matches the aim of understanding spatial behaviour and meaning with open-ended qualitative methods, particularly interviews, detailed accounts of processes and personal documents directly linked to the social situation under investigation. "Fewer questions allowing for open-ended answers are more effective than batteries of questionnaires ..." (Seed and Lloyd 1997 p137) for qualitative responses. Direct transcripts of interviews and intimate conversations with social researchers can be treated as *personal documents* and used to understand events and processes which are not directly observable (Berg 1989, Bogdan and Taylor 1975). As such, they should be considered complementary to other *personal documents* (for example: letters; autobiographies; newspaper articles; historical documents; and for the purpose of the physical environment; photographic essays; and historical photographs) and other qualitative methods.

Examples of collection and analysis of personal documents includes case-study based research projects using in-depth household and social group interviews that focus on understanding and extracting underlying reasons why things are the way they are, rather than simply describing what is happening.

Rowland (1973) undertook an extensive social survey (detailed semi-structured interviews) to improve understanding of local economic systems in deprived (as suggested by empirical micro-economic indicators of poverty and alienation) areas of proposed redevelopment in inner London. This complementary qualitative work was deemed necessary because of inaccuracies of governmental statistical information, as used in the empirical analysis, that failed to record many socio-economic trends. Such matters went unrecorded because they were simply too localised within individual census areas or because of subject unwillingness to provide extremely personal information on household income, conditions and deprivation. An intuitive analysis of community based on interview responses was combined with statistical data to provide an improved understanding of the state, trends and linkages within the local economic system.

Methodological difficulties are the selection of appropriate subjects and the extraction and analysis of the completed records, in whatever form they

take, particularly in any underlying symbolism. Sampling of any document, or the selection of individuals for interview, will to some extent be dependent upon access and are thereby inherently limited. In balance, there is the potential for direct spatial recording of phenomenological questioning onto localised maps of events or indirect geo-referencing physical features from a content analysis of interview transcripts.

Quantitative approaches to content analysis can provide complementary data that is objective, systematic and precise, looking at the presence or absence of elements within any text or personal document. This is not just a word count analysis but the basis for a diagnostic tool (George 1959) where the researcher has identified what to count prior to the analysis and makes direct links between language and "... estimates of the speaker's intended meaning" (George, 1959 p25), understanding the context of the communication and the goals of the communication. The important factor is the presence of a particular theme and not the frequency of its occurrence. The approach has particular benefits in being unobtrusive, non-reactive and low cost (Webb et al 1981).

The functionality of research findings derived from in-depth interviewing and/or other personal documents is subject to the same limitations as participant observation methods. They are too reliant upon the collection, analysis and interpretation of an individual researcher, ignoring subjectivity and bias, and too specific to the locality or individual subject. Although any bias and lack of objective weighting could be corrected and would suggest a need for consistency (ie: the individual undertaking the research) in approach. The lack of general and local uniqueness of the research findings could alternatively be seen as a strength of the method, where the research aim is to understand behaviour and processes in a specific place.

Indicators of community

Frankenberg (1966) has investigated the structure of communities as social networks and tested the hypothesis of whether these networks change radically as communities become more complex. Notionally he considered urban communities to be more complicated as they involve more networks that are not as geographically specific than social networks within rural communities. Urban communities were characterised by a 'progressive specialisation of roles' (p20), tending towards networks of interest groups, whereas rural communities were more homogenous and thus more spatially defined. In effect, Frankenberg was articulating the differences between and complexity of communities of interest (social groups or 'associations' (p286)) and communities of place (neighbourhoods).

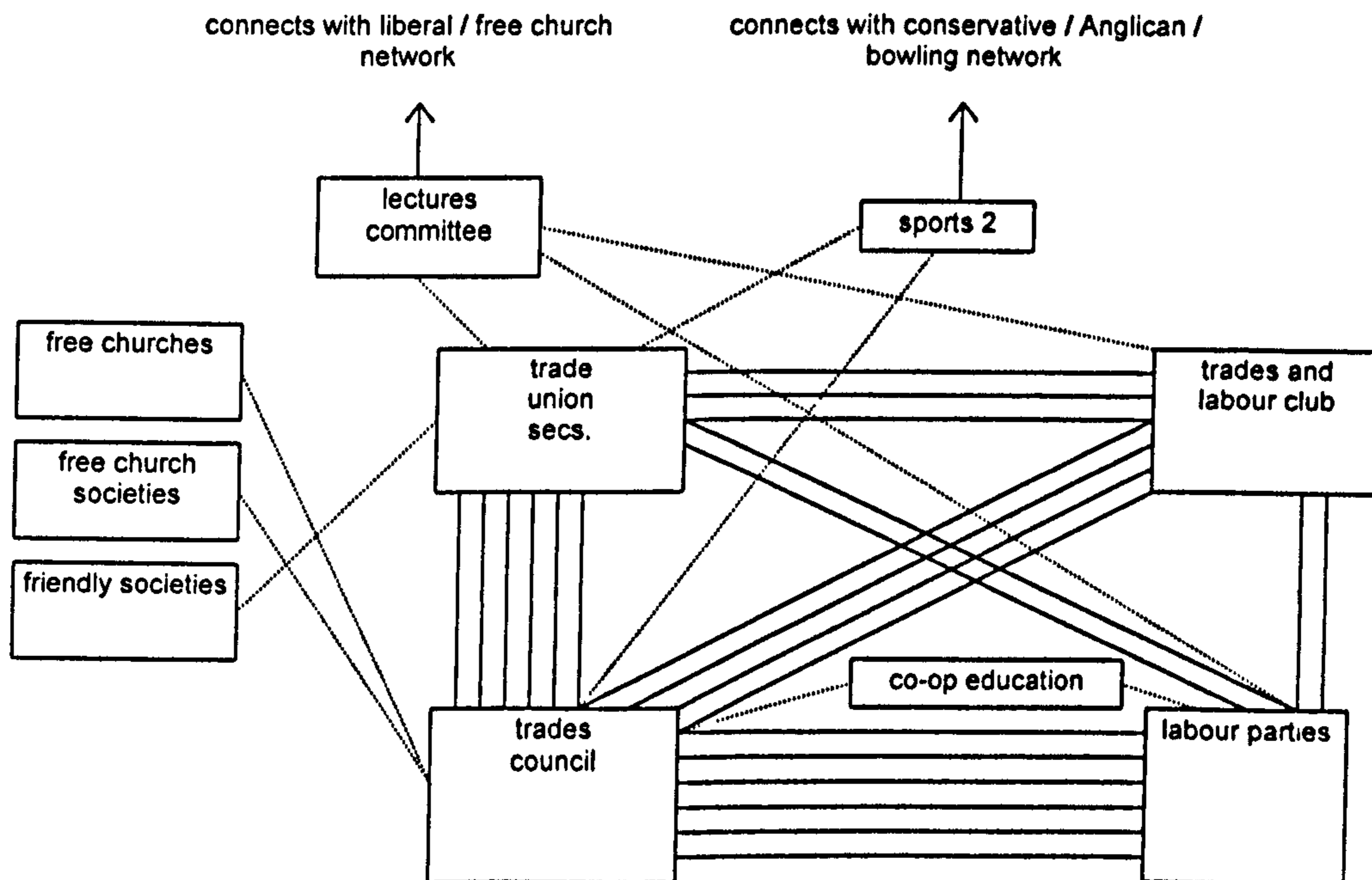
All communities are societies, but not all societies are communities. Communities are peculiar in several ways ... community implies having something in common ... (and) ... cannot be described as a simple form of society. (p238)

These notional differences led to a variety of techniques being applied to the studying of social networks in a variety of locations throughout the British Isles.

Formal and informal networks were constructed based on links between individuals (membership of groups or families) and then additional links were established between apparently independent social networks. There were both work and business related economic networks and networks of recreational, political and social interaction. His findings showed how many of the English social networks were class or status based. Size, in terms of population, and geographical area was important in the level and characteristics of community and was partly responsible for defining social roles within communities. Of most interest to this research were the methods he adopted in his descriptive analysis of communities. A range of community indicators was used as proxy to describe the characteristics of social networks. These measures were not formally structured within Frankenberg's research and thus the table below and the three classes of indicators (demographic, behavioural and perceptual) is my partial, personal, analysis of his disparate data sources relating to community characteristics.

Demographic	Population density, occupational structure & level of differentiation / specialisation, educational attainment, socio-economic diversity
Behavioural	Class / status segregation, voting patterns & levels of political involvement, social contacts & associations
Perceptual	Sense of belonging, level of alienation & estrangement, perceived status

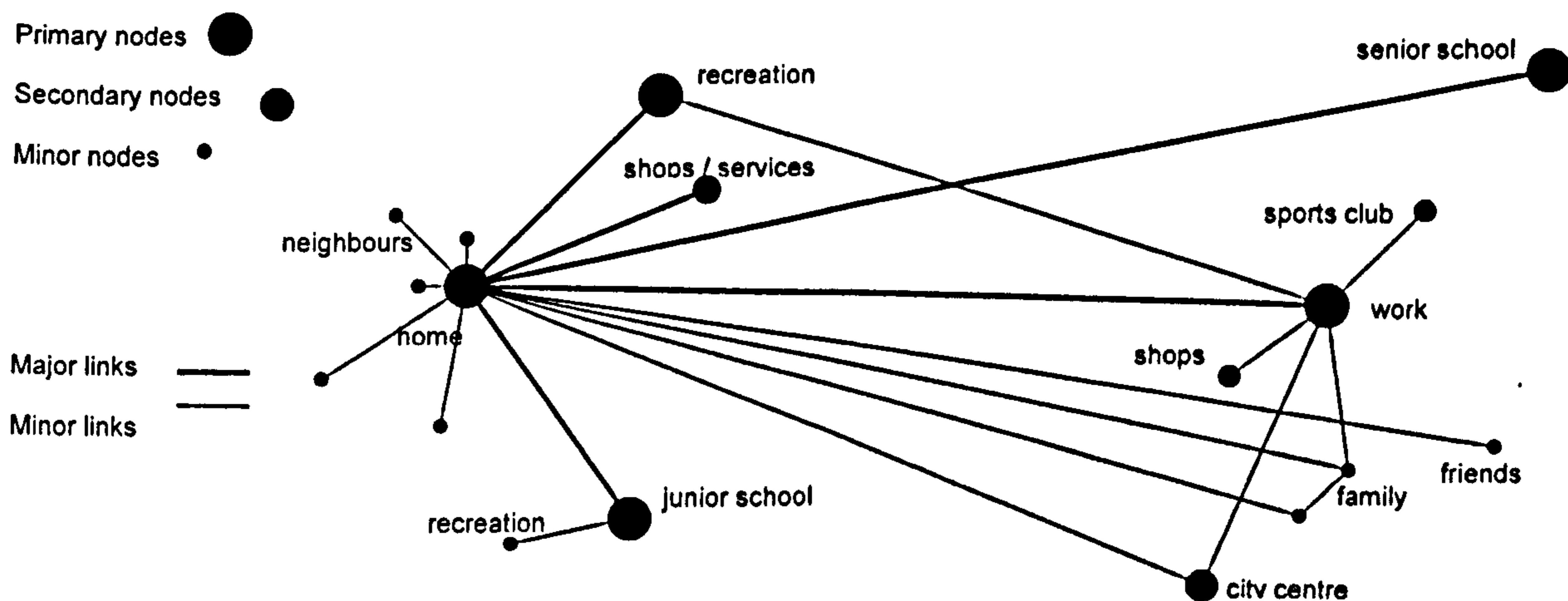
This empirical data collected through interviews, secondary records and direct observation was also presented in graphic form.



Example of a social network of Labour Party/Trade Union connections in Banbury - each line represents one committee member (adapted from Frankenberg 1966 p169).

Social Networks

Golledge was one of the first geographers to examine the spatial characteristics of urban communities on the basis of social networks or behavioural units, partly in response to the potential for establishing spatial linkages and because of a perceived over-emphasis by geographers on purely physical aspects of spatial analysis (Golledge and Zannaras 1973). He suggested that spatial behaviour is not rational and that people's cognition of the human environment does not just affect how individuals understand the city, perceptions can also have a significant feedback on the physical development of our urban areas. In so doing, he acknowledged that "... considerable difficulties have arisen concerning the extraction of information from individuals in order to develop a cognitive representation, and in trying to incorporate the information thus extracted into a map or model of the representation." (Golledge 1978 p77) He developed a conceptual framework for the development of social networks (and eventually neighbourhoods) based on an individual's hierarchical 'psychological mapping' of points, lines and areas (echoing the landmarks, routes and districts proposed by Lynch 1961). The first stage in constructing a cognitive structure is the establishment of significant nodes (points) around an individual's home and workplace with significant routes (lines) linking these points. Over time the individual's network increases in scale as minor nodes of significance are added – this network provides the basis for a neighbourhood or spatial community.

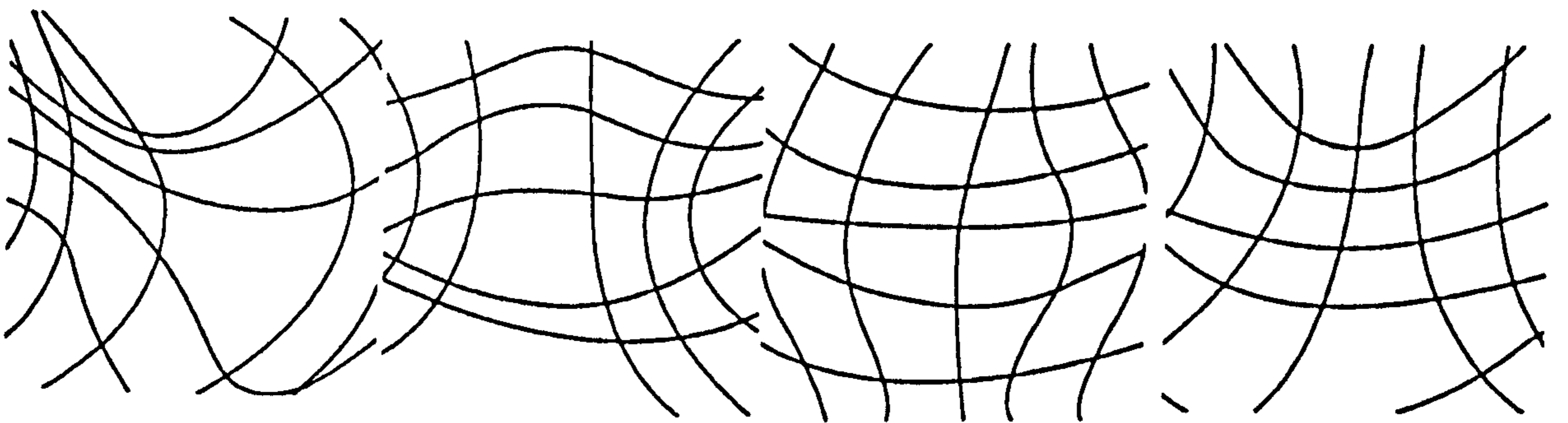


Activity patterns - spatially learned environments where neighbourhood contacts and links are established around key nodes such as the home, workplace and school with extra links developing to intermediate locations (adapted from Golledge 1978 p80).

This sort of social mapping provides opportunities for network analysis (Dalton *et al* 1973) using nodes and links within a weighting hierarchy and has similarities with quality of life and other comparative indicators. This shows the existence of the connections as distinct from the quality (associated attributes) of the connections and the 'lines and dots' methodology makes it potentially suitable for GIS applications.

“The study of social networks and associated analytical tools ... offer an inter-disciplinary approach which is potentially appropriate for studying connections relevant to quality of life.” (Seed and Lloyd 1997 p130)

Although this network is beginning to spatialise an individual's mental map, it is clearly not in the form of Cartesian co-ordinates. Over time, the distances represented by the links will become known better and will tend towards the Cartesian. That is, the conceptual distances between the points and the actual distance will become closer, making it easier to link the cognitive structure of the neighbourhood to the physical structures contained on a traditional map base. However, it is clear that there will still be distortions and problems in attempting to relate social networks to maps. One way Golledge overcame some of the problems was in generalising his conceptual framework to describe group understanding of urban areas. His research suggested that even a generalised cognitive structure will have distortions and will alter over time.



Distorted grid maps of Columbus, Ohio - showing how a true grid is distorted by mapping 'locational errors' based on group cognition of urban space. The grids represent the distortions for groups who have lived in Columbus for various lengths of time (increasing in time from left to right). It shows a certain bias and thus a greater familiarity to the western edge of the city for new residents, a bias that corrects itself over time as people discover more points within the city. (adapted from Golledge 1978 p97)

In order to develop this conceptual framework as the basis of an indicator of community or neighbourhood, it is important to both link the cognitive map to the physical environment and to reduce (as far as possible) distortions and/or variations between individuals and groups and between new and long-term residents, using shared views via area sampling (Herbert and Thomas 1982). Then the challenge is to get agreement on self-defined community boundaries. To date, there is a correlation but not a consensus over these boundaries.

“... conclusions drawn ... are twofold: both physical and social neighbourhoods do exist in the minds of respondents and can be identified as such; and despite the fact that the physical and social (*perceived*) neighborhoods can be distinctly identified, the degree of ownership is sufficient to warrant ... that the two are very closely linked in the mind of the urban dweller”. (Golledge and Zannaras 1973 p85)

Golledge accepted the need to accurately grasp cognitive spatial structures in order to adequately explain spatial behaviour, highlighting the requirement for a variety of new methods to be designed to record and analyse collective mental constructs. This need has yet to be fully addressed, although similar studies

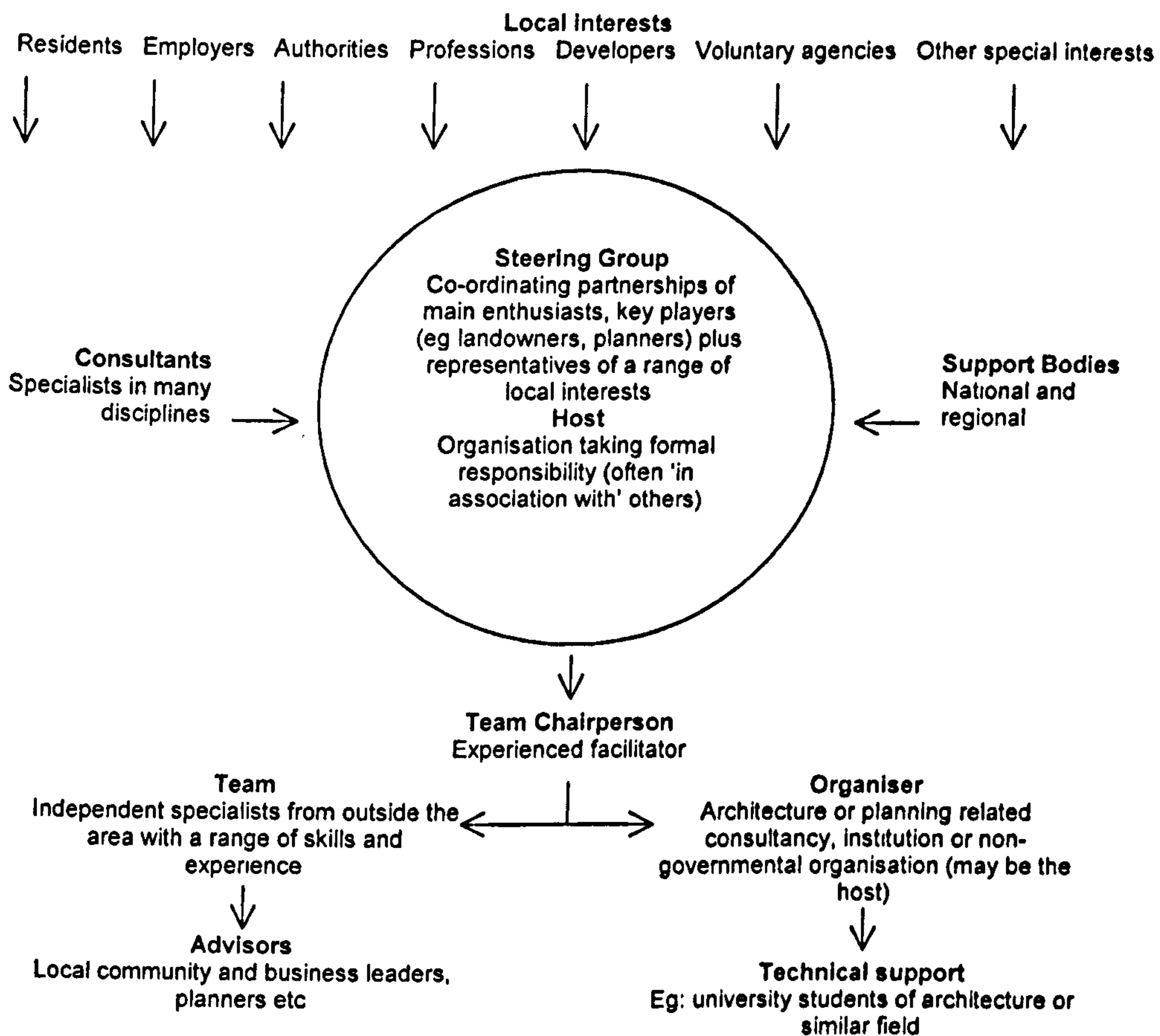
have established direct mapping and recall/ranking methods in an attempt to quantify the error between cognitive and Cartesian distances (Merrill and Baird 1979).

Community is a spatial, if not totally physical attribute, but the suggestions of 'belonging', 'interdependence' and 'self-sufficiency' also require us to look at interactions between and within spatial communities (Porterfield and Hall 1995). Physical and visual elements of a community can be recorded using a variety of traditional townscape techniques many based upon spatial recording techniques (after Lynch and Cullen). Most techniques begin with physical attributes such as the characteristics of space, enclosure, circulation etc and on their own can be overly simplistic and deterministic if seen in isolation from any theoretical underpinning of community. Meaning and activities can be linked to physical elements and behaviour associated with the presence or absence of certain design features. For example, possible linkages between threshold details and car ownership, physical barriers on sense of community, density and communal features (a designer's approach to representing interaction and community attributes to spatial/physical elements).

Meaning can be added practically, directly and theoretically pragmatically by the adoption of innovation action 'planning for real' techniques where design has a 'process' rather than 'product' focus (Cowan 1990). Action planning events can remove the need for the researcher to interpret and record community values, losing meaning in these steps. The direct inclusion of community representatives, working collaboratively and in an interdisciplinary manner (Wates 1996a), also removes the need to collate individual responses into a collective consensus for the community. Issues of conflict can be discussed and determined collectively within the participation process. Eventual outcomes are generally recorded on a spatial base, often with three-dimensional issues and design aspects included. The approach may not be suitable in every situation, but it does help overcome some of the methodological difficulties of spatial recording of collective values and aspirations. As an active form of citizen participation, it is a mechanism for externalising (and decentralising) the decision making process, where value judgements are required. The skill is to adapt a process that "...is fraught with inequity" (Comerio 1987 p27), often between activists and residents (Smith 1984), to enhance subsidiarity and decision-making rather than bypass local democracy. In addressing the tensions of subsidiarity, it has been recognised that certain homogenous interest groups are most likely to become involved in any consultation or participation process and that others are excluded by such processes (Barlow 1995, Healey 1990).

Substantial guidance is provided on a mixed theoretical (Towers 1996, Moudon 1992, Healey 1990) and practical basis from lessons learnt in a variety of design (Wates 1996b, Worthington 1996) or LA21 'community visioning' processes (Local Government Management Board 1997a 1997b 1996).

(flexible procedural and organisational framework for an *Action Planning* event – after Wates 1996a p29)



Social Interaction

Other geographers (Herbert and Thomas, 1982) have examined behavioural indicators and the potential for representing and spatialising social networks and the dynamic changes occurring within and between these networks. This included mapping the spatial patterns of interactions between friends and families. These relationships were characterised by spatial elements of points, lines and areas, showing the characteristics on a traditional map basis. Where this overlaying of social networks on a map base has occurred, it has provided an opportunity for developing descriptive models and making direct links between levels of social interactions and physical attributes at the neighbourhood level (Appleyard 1981).

Imagery and Information – cognitive maps as a tool for understanding geophysical communities

Psychologists have tended to view a city in a similar vein to an experimental maze (after Edward Tolman 1948) filled with human subjects.

When this 'maze' is constructed within the brain it becomes known as a cognitive map, the beginning of spatial understanding (Lee 1976). A cognitive map is the storage of information in a pictorial form and as such is an individual qualitative understanding of spatial relationships. There are difficulties in extracting and describing such relationships but they are necessary to gain a holistic understanding of urban structures and human interactions.

The work of Lynch (1961) was seminal because, although unscientific, it was the first popular attempt at making cognitive maps relevant to urban policy and practical planning, achieving this relevance by basing cognitive understanding on Cartesian maps. He investigated behavioural and perceptual indicators of community and established links between behavioural geography and psychology. Lynch overcame the problem of spatialising these indicators by relying on the subjects' ability to draw stylised maps of their local area. Work by Lee (1963) adopted a similar approach, asking subjects to draw their neighbourhood boundaries directly onto a standardised Ordnance Survey map base and later work by Golledge and Zannaras (1973) reinforced this knowledge between local knowledge and spatial behaviour.

Lynch describes people's perception of environments in a series of recurring elements – paths, edges, districts, nodes and landmarks. These prove to be useful categories for spatialising mental concepts and constructs of urban areas because in most cases they relate to physical elements. Although critiques have cautioned that "in some cases, the boundaries are purely cognitive constructs which have no direct tangible expression in the physical space itself." (Downs 1982 p255) Of the five elements mentioned above, *paths* are often the most dominant element of the city and are remembered and appear as streets, railways, canals etc. *Districts* reflect a poly-centric model of a city (Lynch 1954), where each district will have some identifiable common feature, a characteristic consistent with community perceptions. People perceive themselves to be within or outside of a district. *Edges* are real barriers or boundaries between different districts or communities. An edge can also be identified by the lack of spatial interaction between districts (Boal 1970). *Nodes* are points where human congregation and interaction takes place, these are often junctions, squares or public parks / community buildings. *Landmarks* are reference points for orientation and symbols of place, identity and belonging. Each of these elements is hierarchical in that the level of collective recognition varies and can be measured in the percentage of respondents who mention the element in interview. Lynch established the hierarchy and strength (recorded as intensity based on level of recognition with frequency as the linking factor, Burgess and Bryman 1994 p224) of each element by mapping the features and recording people's subjective and qualitative responses. Lee (1976 p166) appreciated the novelty in Lynch's method of display and communication as collective maps of mental constructs.

The focus of Lynch's work was identifying and meeting human needs through design. As such, his method of analysis is most useful when it is used as an urban design tool to adapt and strengthen city image and legibility. His techniques are based on group experimentation and participation, with a view to physical design. Lynch was less concerned with, although clearly aware of, the difficulties in gaining empirical evidence and establishing links between physical

and cognitive structures at the neighbourhood level. Within his understanding of the city as a 'polycentered net' (where the neighbourhood or district is understood as a system within a larger system), the focus of his later writings was on the structure and size (Lynch 1981) of the city as a whole, rather than the make-up of individual districts. He investigated the linkages between physical size (population thresholds and densities) and systems of public governance, involvement and control at the urban scale.

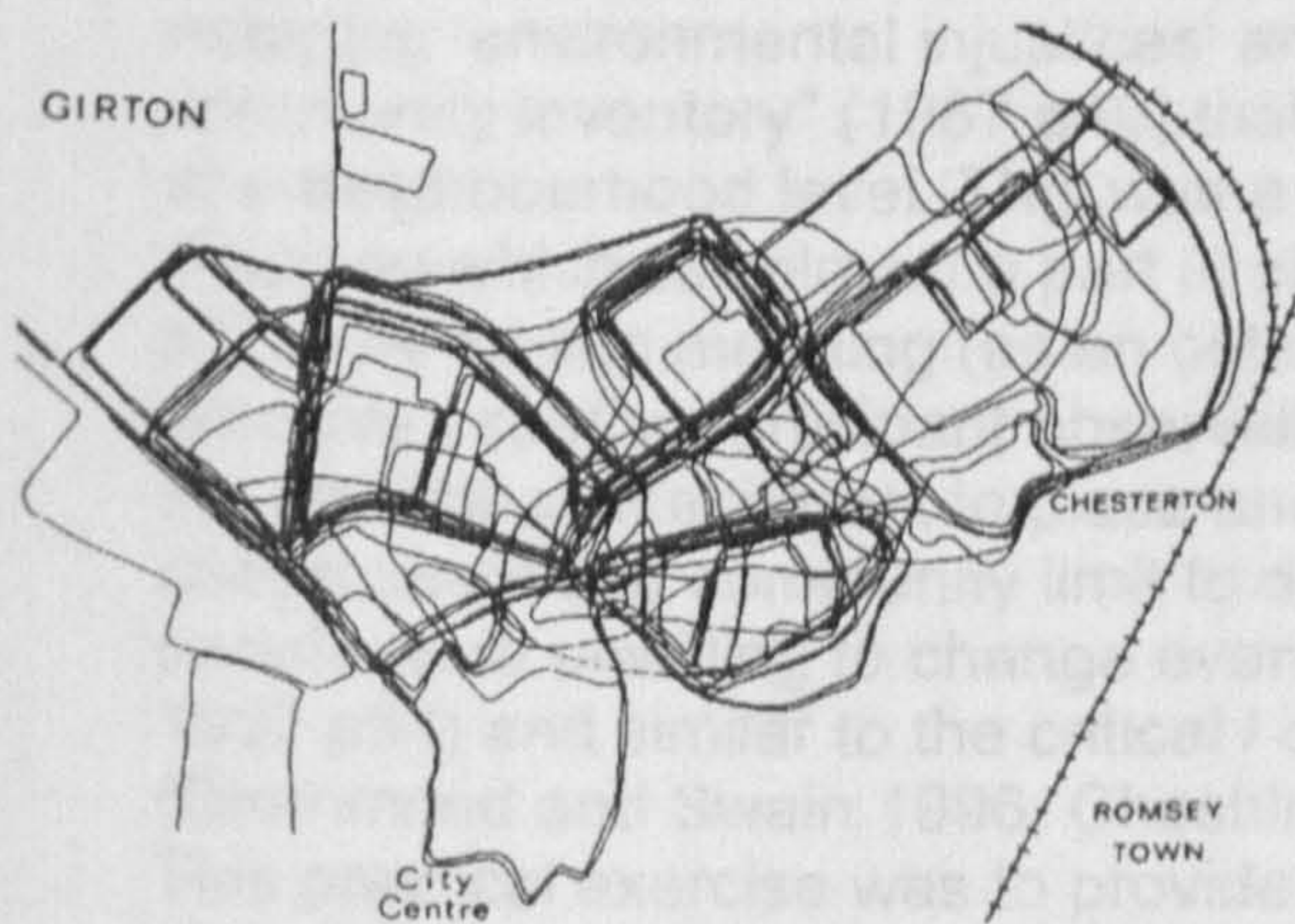
Lynch's ideas, although designed for the city scale, can be reproduced at a more local level. The methodology also overcomes some of the expected distortions between cognitive maps and Cartesian maps by generalising the elements and testing for collective recognition. This adds a level of intensity to the elements identified based on collective recognition. The outcomes also suggest that, while self-defined community boundaries are unlikely to match imposed administrative areas, they are the best basis for mapping environmental, sense of place and community perceptions.

Downs (1982), in his review and testing of boundary elements (edges and districts) on cognitive maps, discusses the problems associated with "the mistaken beliefs that the (cognitive) form of the representation is like a cartographic map" (1982 p250), rather than "... a certain topological structuring" (Downs and Stea 1973 p5). He argues that all anyone can achieve through generalisation and testing of what will essentially be egocentric and highly subjective cognitive structures is a best approximation for community boundaries. This question is separate from the assumption that if we establish community boundaries then, within the boundaries, there will be some degree of shared values and common attributes. Again, all we can expect is a generalisation of the attributes common to any self-defined area at the neighbourhood / district levels, leaving us with a blurred distinction between the system spatial elements (identification) and understanding the values, interactions and flows within such a system (analysis). The later *behaviour* is dependent upon the former *knowledge* and both aspects are dependent upon the level of abstraction or scale of the cognitive structures.

Lynch's method is ideologically limited and in its eagerness to understand the level of significance of physical urban elements it omits meanings and associations attached to these same elements. The importance of signifiers (physical signs linked to places or elements) may alter perceptions and understanding of places, as our perceptions are in part limited by what we know. Any confusion or lack of visual legibility is vital in understanding the reasons why certain urban elements are perceived as more significant than others. This understanding can only be gained by questioning 'subjects' about what they recognise/perceive and why that is so – a situation which could pose more problems for data collection and analysis.

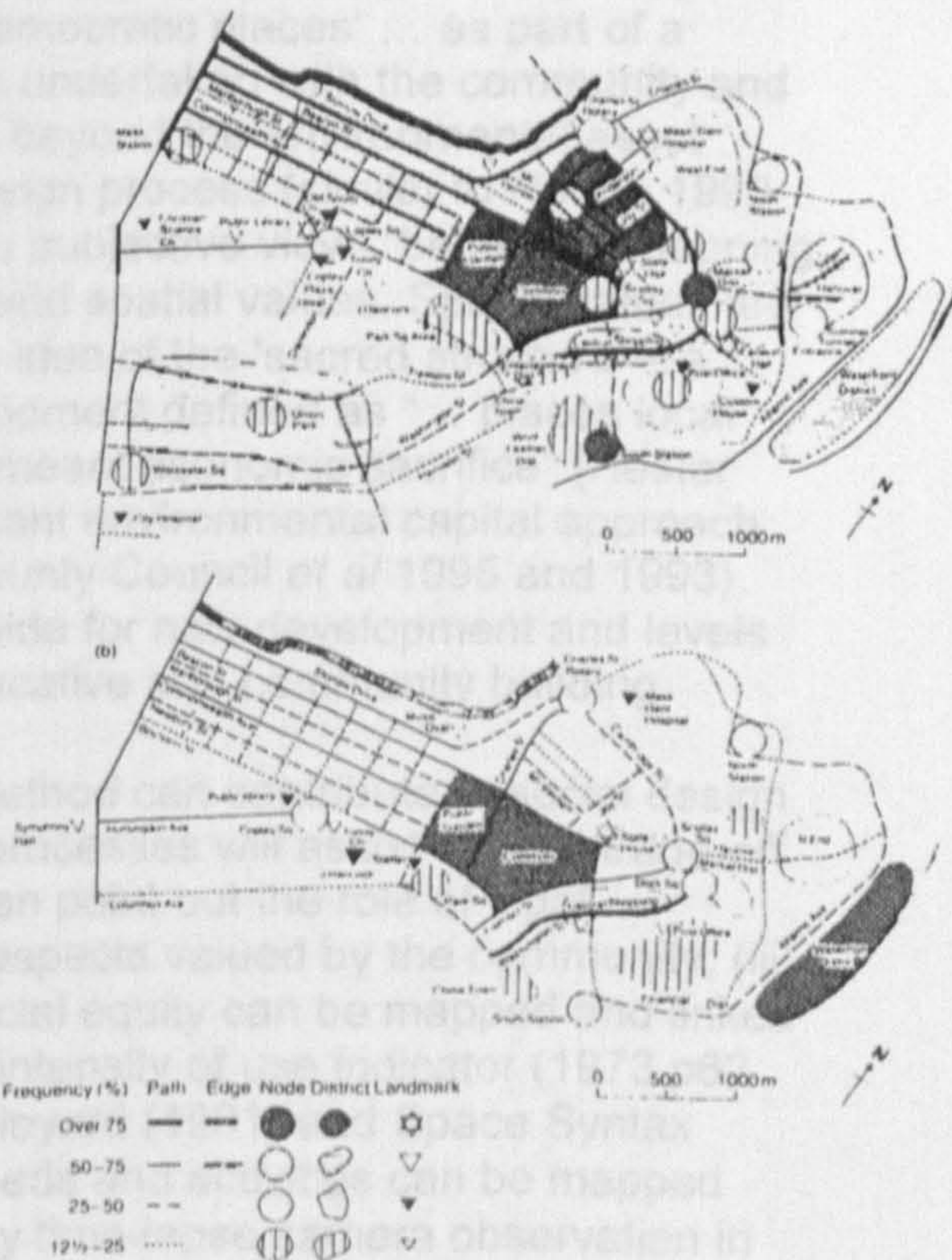
Early research by Lee (1968 and 1964) explored the prevalent planning concept of *neighbourhood*, and the linking of perceived territorial boundaries with social attitudes and behaviour. Lee was adamant that, despite the obvious existence of non-geographical communities (communities of interest), there still clearly remained a major spatial component to neighbourhoods, even if it was only one part of an overall pattern of social interaction. The aim of his work was to explain the spatial characteristics of social interaction and networks, including

any dependent variables of neighbourhood. His dual assessment of neighbourhood was based on the level of local service provision and on individuals' self-perception, in part respecting the duality regarding the understanding of the concept of community (of shared interest and place). His methodology was also influenced by the dual nature of spatial and special interest communities. Following a 40 minute open-ended questionnaire, housewives (his selected subject grouping in Cambridge) were presented with an A4 section from the local Ordnance Survey map centred upon their property and then asked to "Please draw a line round that part which you consider acts as your neighbourhood or district" (1968 p246). A 75% response rate suggested that there was a good general understanding of locality and that spatial/Cartesian representations of neighbourhood are possible for geophysical communities. An examination of the findings by size, density and service provision showed some interesting results. While population densities and service provision were dependent variables showing a linear relationship, they had no effect on the perceptions of neighbourhood. This was dependent upon length of residency (a factor also identified by Golledge and Zannaras 1973) and size – an almost constant area based on ½ mile distance from the subject's property. This recording of the subject's own perceived neighbourhood boundary allowed for subsequent analysis based on quantitative breakdown of the area's physical characteristics and a qualitative (discourse analysis of the interview) review of attitudes relating to this neighbourhood. Follow-up work by Lee (1976) highlighted some limitations of recording and analysing spatial / graphic material, such as changes in perceptions over time.



Above - Technique of self-defined and self-drawn neighbourhood boundaries in Cambridge (adapted from Lee, 1973, p92).

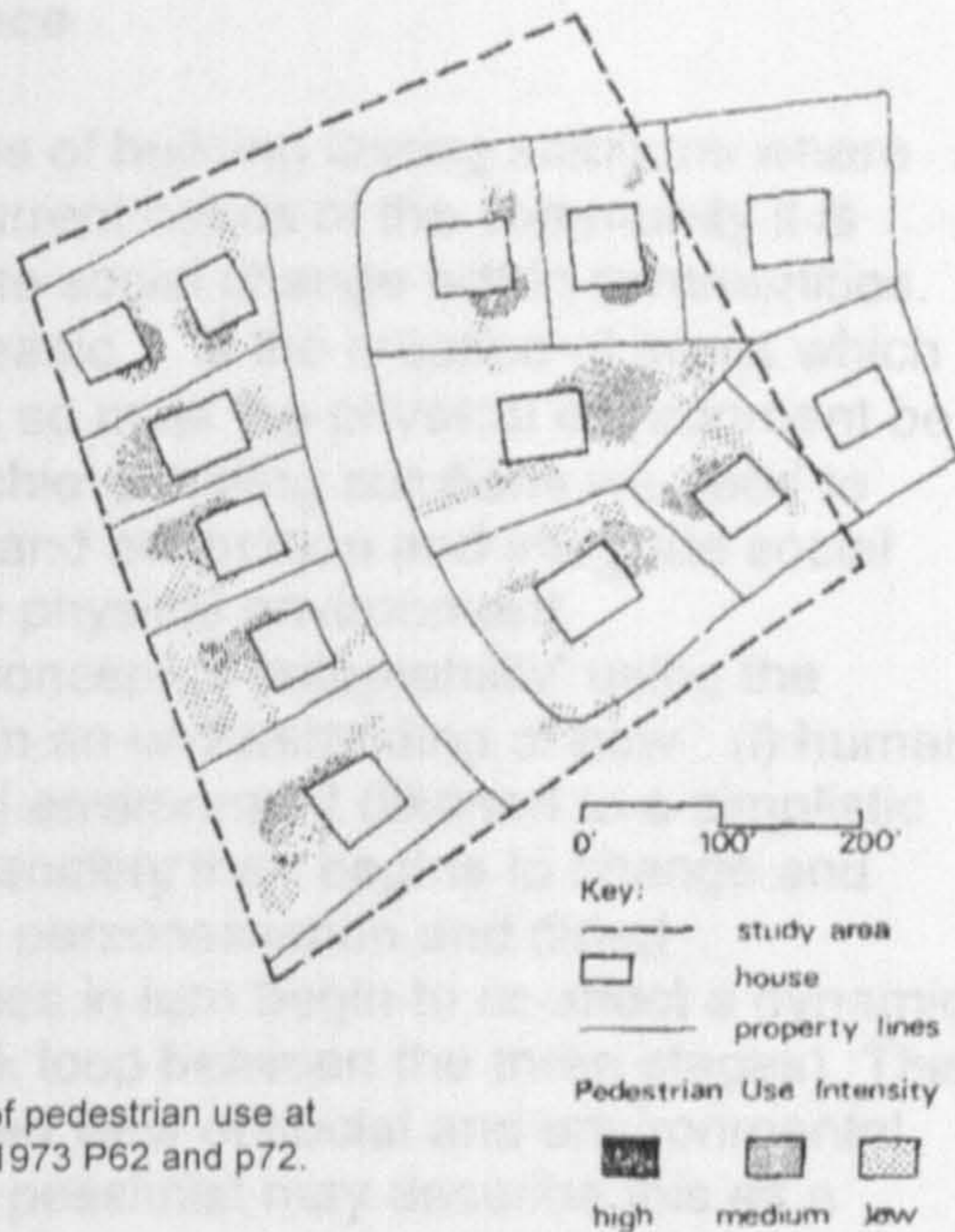
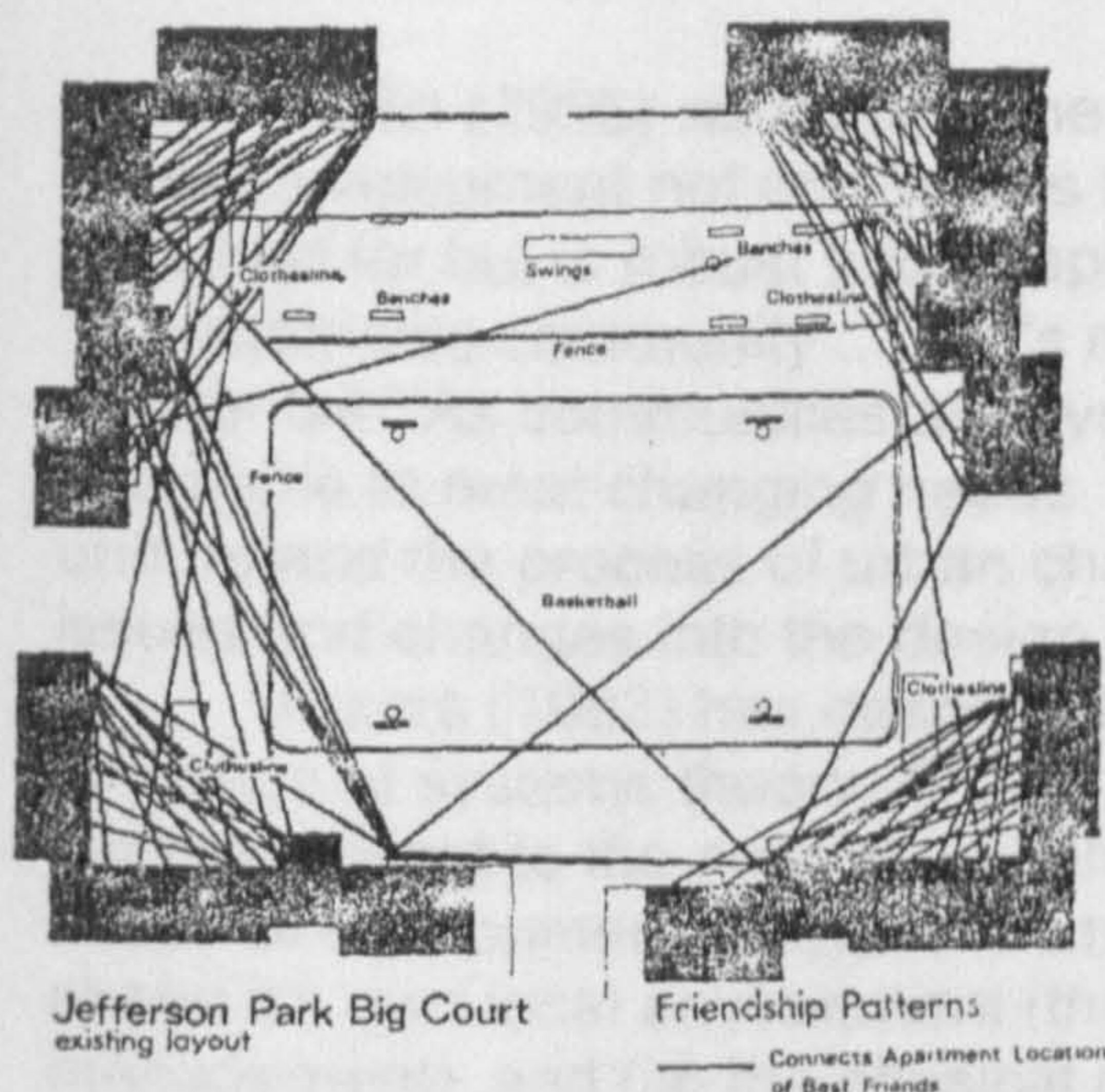
Right - Designative images of Boston as derived from (a) verbal interviewing used to weight cognitive elements (paths, edges, nodes, districts and landmarks) based on frequency of recognition and (b) aggregated and tested elements self-drawn sketch maps (from Lynch 1961 p146).



The weakness of this approach is an inability to show collective aspects of neighbourhood. Perceived boundaries were highly personal, “egocentric” (Madanipour 1996 p65) and showed many overlaps characteristic of ‘visual spaghetti’ (Lee 1976 p173). In part this suggests that the spatial expression of neighbourhood remains easiest at the individual level and cannot accurately portray a poly-centric model of an urban area suitable for policy-makers to utilise, even when residents’ perceptions of neighbourhood differed significantly with municipal views (Hester 1975 p18). It showed how local knowledge (based on length of tenancy), attitudes and perceptions influenced individual behaviour without suggesting how a generalised expression of collective spatial perceptions could be expressed. This made it difficult to link the research directly to design and planning policy. Lee suggested that to make this area of cognitive research policy relevant, requires major reflection on the display and communication of spatial data, particularly in linking it to more quantifiable results.

Hirtle and Jonides (1985) developed these linked spatial and hierarchical methods in their systematic collection (for example, establishing a landmark – spatially referenced points, hierarchy from a recall protocol) and analysis (using variables of proximity or time) into an ordered tree algorithm, albeit from a limited and researcher collected set of points. This linked “... both spatial and nonspatial information” (Hirtle and Jonides 1985 p217) in a very different way than Hester (1987, 1985 and 1975). Hester integrated behaviour and meaning on a sketched spatial basis for a specific policy / design purpose, explicitly “... mapping ‘environmental injustices’ and ‘democratic places’ ... as part of a community inventory” (1987 p49) that was undertaken with the community and at a neighbourhood level. This was a step beyond the environmental asset mapping which still played a part in his design process (similar to Hough 1990 p172) by adding meaning (as an outsider’s subjective view), behaviour mapping (intuitive / spatial participant observation) and spatial values. Spatial values are the emotional attachment to place and the idea of the ‘sacred structure’ – a critical asset and community limit to development defined as “... places local people were unwilling to change even if it meant economic sacrifice” (Hester 1987 p54) and similar to the critical / constant environmental capital approach (Drummond and Swain 1996, Cheshire County Council *et al* 1995 and 1993). This practical exercise was to provide a guide for new development and levels of protection while the process was an educative and community building process in itself.

Hester’s summation is: (i) Design method can contribute to social design as a greater understanding of values and processes will assist difficult trade-off decisions; (ii) Meaning attached to place can point out the role of legal protection and how this differs from those aspects valued by the community; (iii) Social patterns, democratic spaces and social equity can be mapped and linked to the recording of specific features, as an intensity of use indicator (1973 p62 and p72) a technique later adopted by Appleyard (1981) and Space Syntax (Hillier and Hanson 1984); and (iv) User needs and activities can be mapped from direct observation, recorded directly by time-lapse camera observation in the form of a network of acquaintances and social interaction.



'Cartesian' based mapping of social networks and intensity of pedestrian use at microscale, both from direct participant observation, Hester 1973 P62 and p72.

The recognition of visual images (photographs of landmarks/places)

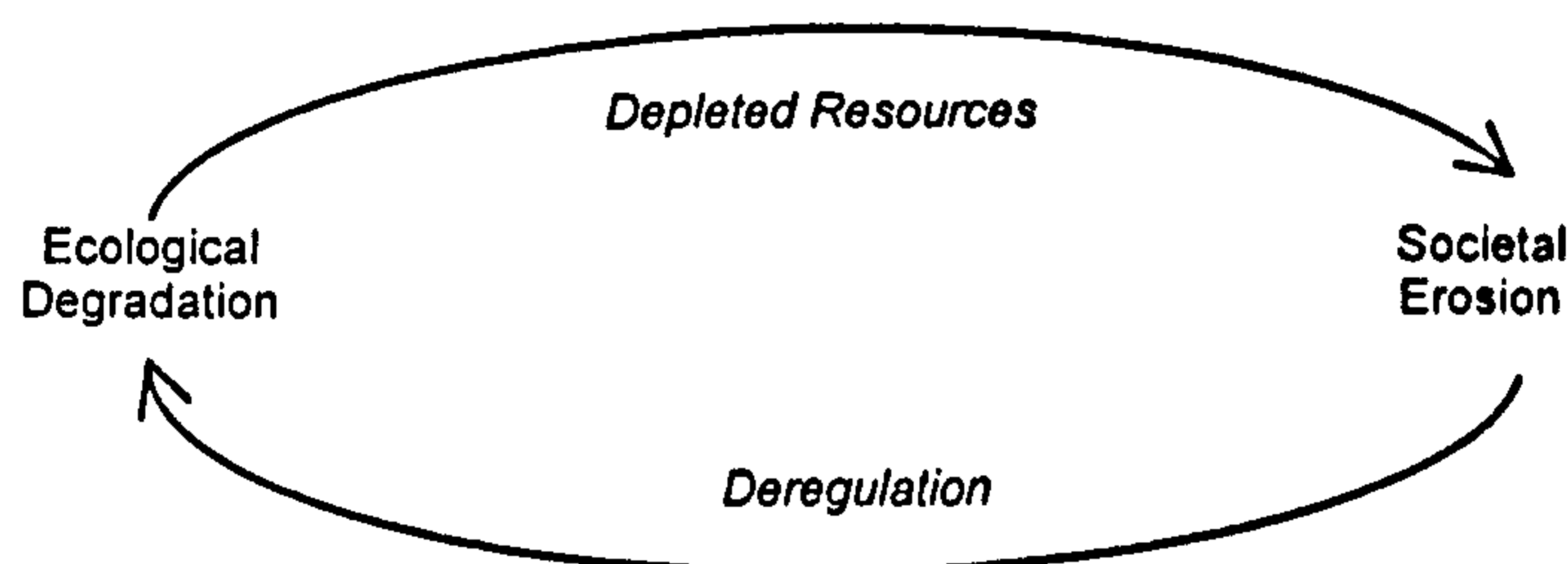
The successful use of pictorial/map based methods of primary data collection: eliciting a subjective response to photographs; the drawing of maps (both cognitive/Cartesian based); and ordered photographic survey (Lynch undated), is a consistent theme in assessing perceptions of the physical environment. It relates directly to the pictorial form in which much qualitative/subjective view-point information is stored as "inner representations of the external environment" (Lee 1976 p182) and so reduces the need to reconfigure it onto a statistical basis. It is a flexible method of classification of the physical environment that has implications for other 'soft' attributes.

Burgess (*et al* 1988) examined the links between community values and perceptions of public open space by the use of a qualitative and pictorial questionnaire as a supplement to observation techniques. The design of the questionnaire was based on group discussions and free associations of the role and use of various green spaces in the case study area (Greenwich). Thus the questions were holistic and open-ended, reflecting the way groups experienced greenspace, asking for responses to various images of open space (an intrinsically qualitative means of placing shared values and perceptions on physical elements). While the responses were personal, based on memories and associations etc, there was a level of community consensus as to what constituted a successful open space, based not on preferences (ranking of images) but on phenomenological questioning of *why* these were the preferences (attributes of images).

Indicators of Adaptability and Resilience

Rudlin (1996) addressed the issues of building lasting solutions where urban development not only meets the current needs of the community it is designed for but is robust and adaptable to social change within communities. "A sustainable community ... at it's most basic ... is the creation of areas which will not fail." As communities are dynamic so must the physical environment be adaptable to meet changing needs. To achieve lasting solutions we need to understand the process of urban change and adaptation and integrate social issues and changes into the design of the physical environment.

Vickers (1983) has described the concept of 'adaptability' using the language of systems theory. This is to gain an understanding of how: (i) human societies adapt to the natural and physical environment (likened to a simplistic notion of environmental determinism); (ii) society then begins to change and shape it's own local environment (through personalisation and direct management); and (iii) the physical changes in turn begin to re-affect a dynamic community (effectively creating a feedback loop between the three stages). This three-stage process describes an integrated view of social and environmental change where each affects the other. The pessimist may describe this as a vicious circle of undetermined cause and effect where human behaviour is partly a reaction to environmental change and will have a feedback into the future shaping of the environment through direct or indirect actions.



Finger and Kilcoyne (1995) have described this systems scenario as a process of 'sociocultural erosion' where 'adaptation' is required to break this vicious circle of decline. "The challenge of learning our way out [of sociocultural erosion] means, therefore, building sustainable sociocultural learning units - units such as communities, organisations, and societies" (Finger and Kilcoyne, 1995, p.247). They suggest three types of indicators of 'social environmental learning' (their term), indicators of: (i) involvement; (ii) transformation; and (iii) community building. Together these should combine to give a qualitative and quantitative picture of social change relating to the numbers and range of actors involved and how attitudes and perceptions of community involvement have developed over time.

(i) Indicators of involvement

- *Amount and diversity of involvement*
- *Readiness to change*

These are both qualitative and quantitative measures which identify all the actors involved, the diversity of the groups/stakeholders and those, if any, who are marginalised through the process of change. It is expected that indicators of involvement will apply collectively to community groups and organisations rather than individuals.

(ii) Indicators of community building

- *Degree of collaboration among critical actors*
- *Degree of emerging sustainable units*

These require a set of measures of the level and nature of collaboration. Investigating meaningful involvement rather than individuals pursuing their own agenda for change. Thus, flexibility of approach and sincerity are relevant. It would also involve the emergence of new community and/or local interest groups. These indicators would be applied to the social unit and focus on community perceptions of participation processes.

(iii) Indicators of transformation

- *Indicators of individual transformation (skills and knowledge acquisition, awareness of sustainability issues, cognitive style, leadership, professional orientation, institutional dimension, collaboration, impact upon others and other institutions)*
- *Indicators of organizational transformation (leadership/management, organizational structure and culture)*
- *Indicators of societal transformation (policy environment, policy making and practice)*

This set of indicators looks at the relationship of the individual with the wider community. Again, the focus would be on people's perceptions of change and how it has affected their sense of place, sense of community and thus feelings of ownership and responsibility. I also considered the public's satisfaction with their physical environment to be relevant to transformation and the success of any participation exercise.

Overall, any set of societal indicators will be only a partial measure of sustainable communities. The specific value in this particular set of measures is meaningful feedback for the wider range of sustainability indicators.

We need to ascribe this notion of 'adaptability' or 'resilience' to both the hard physical systems and the soft social systems that develop and interact within our urban areas. Any evaluation of how sustainable urban communities are over time will need to look at the adaptability of both physical and social systems. This is essential to understand how urban areas work and to avoid deterministic and prescriptive approaches to design. Sustainable development is a process where the goal-setting or the identification of 'needs' is seen as a fundamental part of the overall design process, as distinct from other big design ideas which started with certain assumptions about society and have a given set of goals and objectives. The procedural and goal-setting (or analytical) steps are already inexorably linked in most peoples' minds where the desire to meet specific

end-user needs, demands a dialogue with these end-users. As both social need and community changes over time, management must be considered in the initial design stages, ie: the physical management and maintenance and social management or participation and partnerships.

Indicators of change and management

The policy / practice focus of the research requires a matching of the information provided via the toolbox of indicators, with the data requirements and needs of the various end users. This is where the characteristics of indicators differs from simple data. A basic prerequisite for an indicator of sustainable development is its utility in practical change. This change can be of attitudes, behaviour, policies, or physical adaptation of these dynamics over a time series (Short 1984) in both strength and boundary definitions. Developing this sort of 'dynamic' linked space-time model (Knox 1995 p219, Parkes and Thrift 1980) would necessitate a series of snap-shot overlays charting movement by cell (raster based) around an urban system. The requirement for change also implies feedback from the end user on the utility of the indicators collected and presented.

The challenge and the innovative aspects of this research is to spatialise the subjective 'soft' systems to allow comparison with physical systems, a matter which has increasingly become the focus of the research. The additional requirement for end-user feedback does help to resolve some of the dynamic aspects of such systems and provides a basis for on-going environmental monitoring.

Reflecting upon qualitative indicators

There is a distinction between *hard* (empirical) and *soft* (qualitative) forms of research as distinct paradigms (Henwood 1996) and different weight is given to each within decision support frameworks. The focus of *soft* qualitative research is on meaning and understanding. From a review of approaches adopted, it is clear that an additional split can be made between *collection* and *analysis* of qualitative data (Okely 1994, Downs and Stea 1973 p6). *Collection* methods are characterised by informality and open-endedness in the scope of data sources used and in the manner of interviewing, participant observation and/or content analysis. Methods of *analysis* are more intuitive, descriptive, creative and ultimately personal, in spite of approaches at objectivity. Possibly this lack of recognised analytical procedures explains its lesser weight within decision support frameworks (Bryman and Burgess 1994). Other, apparently positivist approaches to analysis as characterised by empirical indicators are still derived from the analysis of the measurable attributes of qualitative field work and as such do not surpass subjectivity, thus, the data remains unstructured and complex.

In practice it must be recognised that qualitative inquiry is subjective and, while total objectivity is desirable, it is unachievable. Ultimately a range of data collection methods (formal and informal) and analytical approaches (empirical and descriptive) should provide a clearer understanding of the social process

under investigation. Adopted research methods should be mixed and appropriate. Epistemological concerns surrounding objectivity and attribute weighting are typical of much qualitative social research and should not on their own suggest any priority be placed on empirical data or the translation of qualitative sources into empirical results. There is the danger of losing meaning when you attempt to quantify qualitative data. The preferred alternative is to acknowledge any subjectivity and improve methods of qualitative data collection; including spatial and visual techniques, and communication to aid understanding.

“There are times when all researchers are going to be interpretive, holistic ... and uninterested in cause, and then, by definition, they will be qualitative inquirers”. (Stake 1995 p46)

The development of a comprehensive holistic model for understanding urban systems poses an additional question concerning the integration of the social and psychological dimensions with the geophysical on a basis that allows for comparison and analysis. This is best achieved on a constant spatial basis, where Cartesian maps of geophysical attributes are integrated with maps of social processes and cognitive constructs with attached geo-referenced attributes relating to these soft systems. This conceptual model of overlaying spatial attributes comes with the significant proviso, that issues of individual/collective data, map errors and dynamic factors are adequately addressed through methodology selection and design.

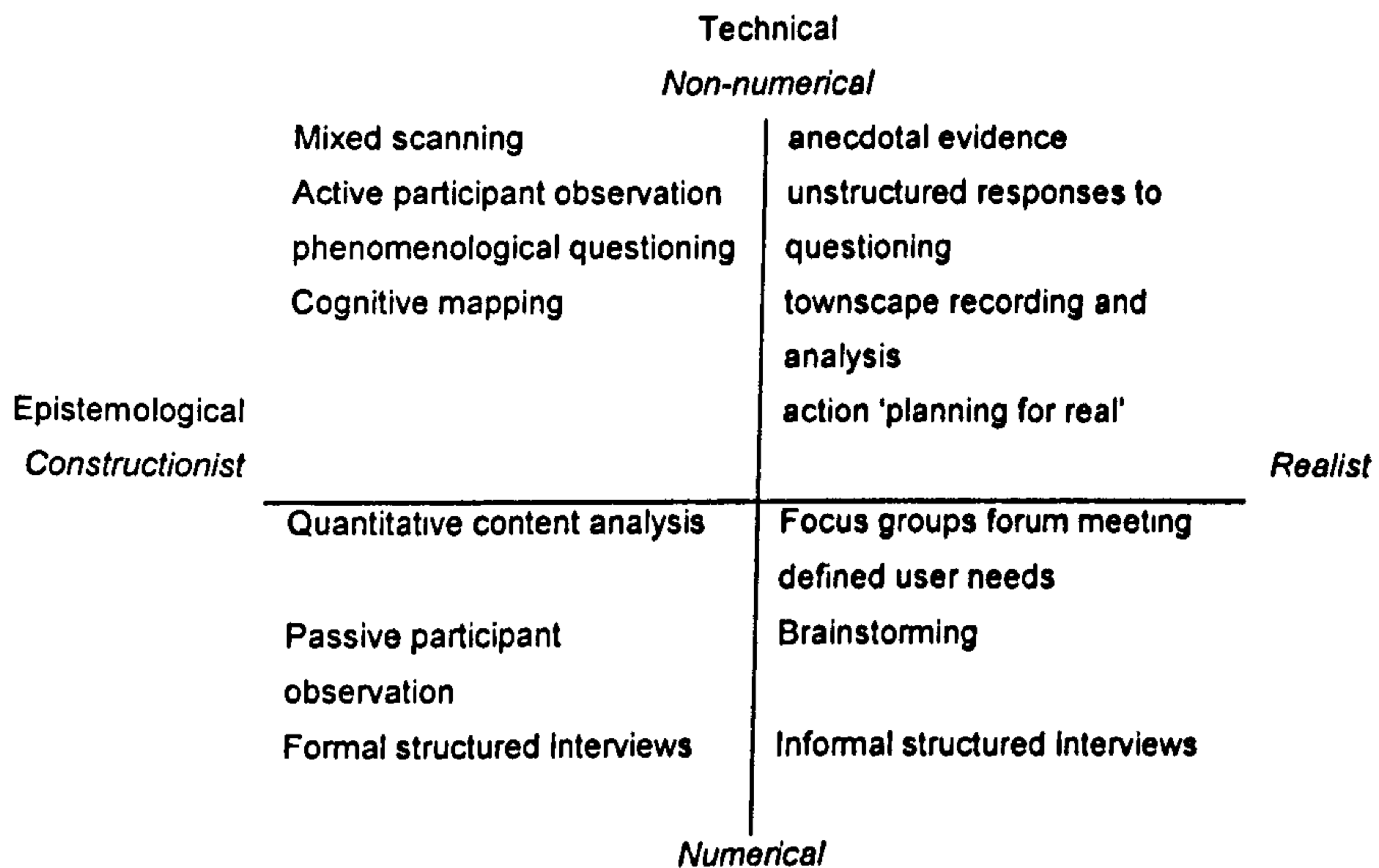
“It means that our map of the city has to have overlapping layers to show its physical, social and psychological geometry at the same time. This is consistent with socio-spatial approaches in social philosophy, urban geography, urban sociology and architecture which addresses these dimensions simultaneously and focus on the dynamic interrelationship of these aspects”. (Madanipour 1996 p87)

The complexity of developing a spatially based model characterised by multifaceted linkages underlines the fact that policy relevant applications are more concerned with understanding the totality of relationships within urban systems than identifying causality and predicting behaviour between two isolated attributes. The focus should be on rigorous ways of *describing* and *communicating* spatial attributes as a precursor to any sub-system applications. The model should be descriptive “... without expectation of casual explanation” (Stake 1995 p38) and be constructed used mixed methods.

Multiple methods for investigating the same or similar qualitative attributes may also provide some element of self-reinforcement and testing of data sets, accepting the limitations of and errors within any single method or data set. The flexibility of the framework needs to allow for a tailored assessment and some element of self-supporting data sets, what is referred to as 'triangulation', ie: the use of multi-methods to enrich and validate the findings. There is also a need for *metadata* (data about data) considerations to be included, where the quality of the data and collection methods are

communicated together with the data analysis (directly addressing the problems of quantifying the subjective). "Quality and quantity have to converge." (Seed and Lloyd 1997 p211)

Presentation, functionality and applications - Connecting attributes to case study data collection in a methodological 'toolkit'



Methodological and epistemological relationships concerning quantitative and qualitative research (extensively adapted after Bryman 1988) with a range of spatial survey techniques falling within the relative dimensions.

There is a relationship between the theoretical basis of the research and the adopted methodology. In this instance, the holistic and complex nature of urban systems demands a mixed and multi-method approach, both numerical and non-numerical. Within that framework, the exact choice of methods and primacy of results is purely pragmatic and will relate to local circumstances, constraints and choices. This is a pluralist approach that recognises that choice has to be exercised in data collection, as not all techniques will be appropriate or possible within any local context. This is particularly true when working within real-world constraints of time and money. As the nature and scale of urban communities are unique, the theoretical basis is influenced by *grounded theory* (Glaser and Strauss 1967, Henwood 1996) which argues for contextualism as a means for integrating a variety of methodologies and linking meaning to complex situations/events on a case-study basis. Essentially this means the choice of what to collect, where and how to sample, are factors grounded in the researcher's (individual's or local authorities) understanding of the locality. The actual methodological approaches adopted will be varied and may only emerge during the course of the research. The selection of the appropriate methodology should be seen as a dynamic process where the applicability of the results and the needs of the end-users are the prime concerns.

"... freeing up epistemological space frees up methodological space, creating room for combined-methods research." (Philip 1998 p263)

It seems that most practitioners and applied researchers have followed a necessarily pragmatic path that is not confined by epistemology and which is at essence a revision of Etzioni's (1967) *mixed scanning* approach to methodology, its central concerns being: (i) a contextualisation of the community; (ii) generating an understanding of diversity within the community; and (iii) issues of decision-making and management (Kaufman and Jacobs 1987). What is new in this revision is an application starting at a community level, thus allowing for the inclusion and integration of many subjective and behavioural elements which can only be obtained from individuals.

Toolkit to case-study

This chapter has been making an argument for locality and study specific adaptations to a range of data collection and research methods, particularly linking the artificial split between qualitative and quantitative methods, and addressing the over emphasis on scientific methods (Berg 1989) to provide an enhanced understanding of the social situation (Plummer 1983). These methodological / data collection tools are designed themselves to form the basis for a range of linked spatial indicators, a higher level tool for simplifying urban complexity to its scope and essence of what is important in understanding rather than simply measuring urban sustainability. Throughout is the understanding that epistemology and methodology are linked, providing an intuitive understanding based on a combination of best knowledge and research experience.

The table below is within the given epistemological position and concerns the nature of urban systems and the needs of policy relevant applications. The methods were developed to suit the unique situations and the classifications are overlapping and to a certain extent based on hindsight and with a clear and deliberate bias towards qualitative methods. In every case study there is a mixed approach to data collection and formal/informal qualitative approaches are reinforced and complemented by additional evidence.

The aim is to relate *real urbanism* complexity by providing a flexible structure for indicator data collection, organisation analysis and ultimate practical use within a decision support framework, this structure to be achieved without losing context or meaning in the information. The variety of methods work as connected tools (a toolkit) within a simple classification system that is both complementary in filling data 'gaps' and consistent in the spatial aspects of the output. The adaptation and evolution of the system under investigation will also apply to the means of examining this system (Berkes and Folke 1992). Thus, the 'toolkit' will be subject to local adaptations resulting in a diversity of appropriate techniques consistent with the theoretical basis. Similar to that of Levett (1997b,) in his review of tools used for Local Agenda 21, it is placed firmly within a policy context, thus requiring feedback and review with the decision-makers concerning the appropriateness of the methods and making it biased to those *Decision Support System* levels and spatial scales – the 'grassroots' level of operation for the urban designer.

Case Study	Concept and research focus into specific areas of assessment	Techniques and Methodologies	Key references for methodology and examples of similar applications
Hulme, Manchester	Holism - the integration of socio-economic factors into the physical regeneration of a 1960's housing estate and the anticipated benefits and other effects this will have on the wider urban area - especially the City Centre	Action Planning (secondary sources) Unstructured interviews	Wates Oakley
Hampstead Garden Suburb, North London	Self-sufficiency – how factors which affect the viability and functioning of a semi-autonomous community within a wider urban metropolis can be assessed and how diversity can be maintained in the face of homogenizing commercial forces	Narrative analysis Content Analysis (including the use of texts as secondary sources) Life documents Mixed scanning	Plummer Etizoni
Cairnshill Estate, Belfast	Carrying Capacity - addressing the physical and political limits to development in a context of efficiency of the land resource and a range of constraints - local community evaluation of scarce built and natural resources	Discourse analysis (unstructured qualitative data from interview text and other verbal accounts) Cognitive mapping Community values and perceptions Pictorial phenomenological questioning (reasons for qualitative preferences) Active participant observation Action Planning Structured interviews (formal)	Burgess, Harrison & Limb Lynch Perkins Foot-Whyte, Davidoff Wates
Crown Street, Glasgow	Social Justice & Quality of Life - how high density urban living following the form of an 'Urban Village' can achieve and measure environmental quality together with spatial justice - avoiding the charge of gentrification	Structured interviews (informal) Passive participant Observation Cognitive mapping (behaviour) Photographic Survey (Physical)	Oakley Burgess, Schutz Hester, Lynch Lynch
Byker, Newcastle upon Tyne	Participation - how effective participation in the creation of a mixed housing area can engender a sense of community, ownership and responsibility - the success of enduser feedback into the initial design process	Phenomenological questioning (open-ended questioning focusing upon meanings) Cognitive mapping (neighbourhood) Photographic Essay (historical/cultural) Procedural indicators	Rowland Downs & Stea; Lee Konttinen Finger & Kilcoyne

Chapter 6

Case Studies and System Design

Hulme City Challenge Area, Central Manchester

- The view of the social historian (qualitative secondary sources)
- The subjective empirical view (quantitative secondary sources)
- The view from officialdom
- The view of the concerned outsider (secondary sources of passive participant observation)
- The view from the insider (secondary sources of active participant observation)
- The individual's view of the community
- The collective view of the community
- Sustainable development in the city region – strategic links and holistic thinking in Hulme and Manchester

Hampstead Garden Suburb

- Style over function – secondary architectural sources

Cairnshill Estate, Belfast urban area

- The context – sustainable community design in the edge-city
- Qualitative visual survey
- Primary data collection
- Qualitative primary data collection
- Action 'planning for real' event
- Spatial limits and community values
- A 'new urbanist' urban village approach to BUAP 'whiteland'

Crown Street Regeneration, Gorbals Glasgow

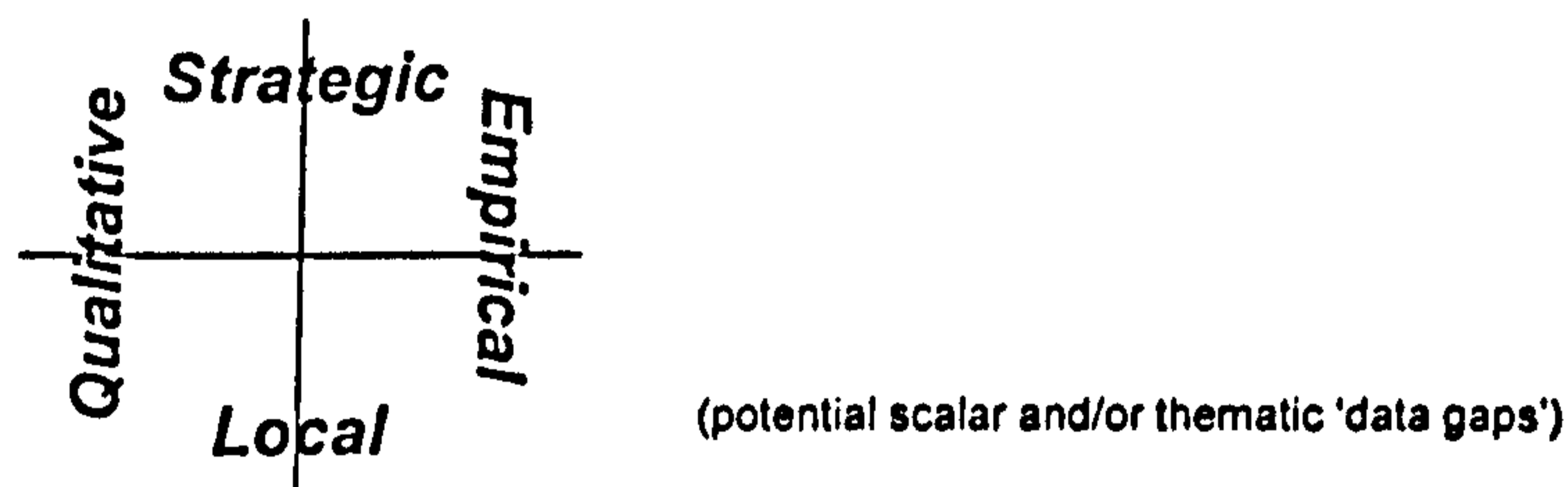
- Recording spatial behaviour (informed participant observation)
- Masterplan attributes
- Visual record (photographic sources)

Byker Redevelopment, Newcastle upon Tyne

- Indicators of involvement
- Indicators of adaptation and change
- Indicators of community
- Indicators of management

The conceptual basis for the linked attributes and choice of spatial indicators is a combination of: (i) an understanding of complexity within our urban systems; and (ii) a bringing together of analytical and procedural concepts implicit and explicit in the chronology of institutional, governmental and academic ideas on sustainable urbanism. This is developed in a semi-hierarchical structure of broad concepts, attributes and measurable spatial indicators. There are many overlapping indicators with shared attributes within this framework where the significance is the breadth and range of indicators (including goal setting and procedural / management indicators) and their presentation and integration on a spatial basis.

The transference of this adaptive framework for spatial indicators into an operational context poses a series of questions relating to system design. Significant elements are dependent upon the nature and availability of data being used. Ideally, a hierarchical data structure would be adopted where the level of detail increases as scale reduces - effectively, using 'information subsidiarity' where there is match between the level of abstraction, form of spatial data and the user needs at their appropriate scale of decision-making. However, data availability, in terms of thematic extent and spatial abstraction, constrain the basic starting point to applying this conceptual framework. It is crucial that data availability does not define the scope of the framework. Thematic data gaps have to be identified at a broad level and then linked to simple, low-cost methods for filling these gaps.



This chapter records and evaluates the range of low-cost and localised data collection methods; spatial and qualitative; examined earlier as part of a 'toolkit' of techniques suitable for indicators within the established adaptive framework. Each individual case study area had a particular emphasis, but in the course of the work specific opportunities arose to examine some of these areas in more depth with a view to filling data gaps. While there are conclusions to be drawn from each locality, the focus of this chapter remains the testing of low-cost, non-expert and spatially based data collection and adaptation techniques.

The practicality of this framework are the links to a range of appropriate low-cost data collection methodologies. If the framework is to be useful then it must be possible to gain the breadth of indicator data within acceptable cost, time and technical constraints. This means a pragmatic approach to the adaptation of existing data collection methods to suit the area under investigation. So, in the application and testing of the framework of indicators, these pilot projects are set within a range of urban typologies, and specifically undertaken to test the range of data collection methods appropriate for the 'toolkit'.

Hulme City Challenge Area, Central Manchester

But to you I was faceless/I was fawning, I was boring/just a child from
those ugly new houses/who could never begin to know/who could never
really know

"Paint a Vulgar Picture" The Smiths (1987) *Strangeways, Here We Come* (Warner Music UK Ltd)

Oh Manchester, so much to answer for/Oh Manchester, so much to
answer for

"Suffer Little Children" The Smiths (1983) *The Smiths* (Warner Music UK Ltd)

Hulme was selected for the investigation of the concepts surrounding the idea and application of *holism*, focusing on (i) the *integration* between socio-economic factors into the physical regeneration of a 1960's housing estate and (ii) the *integration* between spatial concepts at the scale of the neighbourhood / individual urban block and that of the wider city region.

This aimed at identifying linkages between spatial scales such as; impacts on surrounding urban communities and city centre, via transportation and movement links, economy and employment links, community integration and/or segregation, historical development and socio-economic trends, strategy and policy links. It then examined the design guide and urban design code within the Hulme regeneration for indicators of localised integration and consistency (within approaches to the physical attributes to household/population densities, enclosure ratio, building lines, heights and carriageway widths, permeability and movement hierarchy, and flexibility and longevity within construction standards).

Many of these attributes were through the gathering of official and personal documents, other secondary sources and then testing these sources for authenticity, distortion and the motives behind the documents. It included a consideration of subjectivity and editing of the collected material comprising; oral history, photo-journalism and other media sources; biography and local history. These documents are not just a central source of low-cost qualitative information, they are a way to build up a bottom-up model of understanding from the individual's perspective (Plummer 1983). These secondary sources fell into a number of distinct groupings that to a certain extent reflected the number, thematic interest, and level / scale of operation of decision-making agents.

The view of the social historian (qualitative secondary sources)

Recorded social history is a discipline presenting, through a number of records, a factual account of physical development with a mix of empirical data and anecdotal evidence linked through suggestion. It provides an historical account of the Hulme township (from the Danish meaning low-lying land) as largely agricultural until the completion of the canal in the late 18th century, when it became the terminus for the Bridgewater Canal. It became the largest town-land surrounding Manchester and was incorporated into the borough in 1838.

Superficial analysis of physical development and perceived (external) qualitative problems resulting from rapid urban growth interestingly lack any

locality specific implications. The issues under investigation in Hulme considered generic to many industrialised cities - where high density is explicitly linked to the notion of slum living and reform/progress is linked to the provision of communal and private social spaces, as well as the development of concentrated and complicated social structures, initially based around the large number of churches in the area. Describing it typically as "... row upon row of terraced housing, much of it poorly constructed, without adequate sanitary facilities and running water and the streets lacking proper drainage" (Makepeace 1995 p44). Descriptive accounts of the area are not linked to quantitative data or spatially referenced in detail within the Hulme area.

The subjective empirical view (quantitative secondary sources)

Ward level comparative data is available from the national census to confirm the historical accounts and provide an up to date profile on population diversity and dynamics. This shows that compared to other areas within the city, Hulme has relatively young population (27.9% under 25), a lower average household size, a higher ethnic mix (approximately 30% born outside the UK, 5% Irish, 8.5% Caribbean), higher unemployment of all types, high levels of council housing (over 87.5%) and very low levels of car ownership. This data can be represented on a spatial basis, most usefully at a city-wide level. It is limited in its usage as some skills are necessary to interpret meaning and understand metadata considerations (for example, the validity of a 10% sample for some questions or the variations in the number of returns – concerns by some public documents making use of census data, Hulme Project 1987, Manchester City Planning Department 1982).

The view from officialdom

"In many respects the Manchester citizen of 1650 was in a better position to enjoy a healthy life than the present day inhabitant of ... Hulme"
(Nicholas 1945 p3).

The first landuse plan for Manchester sets the scene for post-war redevelopment to tackle the problems of old and unfit dwellings at high density. The plan was to grow dwellings into neighbourhood units each containing the facilities and services for about 10,000 people – the focus of this community would be a neighbourhood centre. It was an exercise in land use zoning at the neighbourhood level that included prototypes for new system built housing, the size of neighbourhoods defined by population and physical boundaries and a suggested layout for Moss Side and Hulme as the worst examples of unfit housing in Manchester.

This post-war plan was the imposition of externally constructed generic models of community life, fashionable within social theory at that time. The product of this post-war redevelopment "... originally hailed as a fully planned environment ... has become an area of physical dereliction and economic and

social distress” (Department of the Environment 1990b p1). The stated aims of a new governmental initiative, the Hulme Study, were to address the perceived weaknesses and failures of the area (poor maintenance, long-term unemployment, poverty) by adopting a *wider* approach that while focusing upon the redevelopment of housing, also embraced social and economic issues, procedural and management with a local perspective. This approach was based on analysis of institutional empirical data with some problems prompting more in-depth study (primary data collection) and thus improved (albeit still with a qualitative bias) information on which to base decisions.

New data highlighted the complex mix of fixed and transient population in the area, skills levels and correlation with unemployment and poverty. It also highlighted the importance of the underlying social and community structures, the basis for a participative approach to regeneration building on the strengths of the area. The principle failures in maintenance, repairs, management led to substantial change in the adopted principles for redevelopment, that did more than build the community into the process, it effectively gave Tenants Associations a veto over decisions previously the sole remit of local authority and housing decision-makers. Success in redevelopment became dependent upon participation and partnership in management and the new structures and information flows put in place to effect this change.

The 'Action Plan' that emerged from this policy framework (part of a City Challenge bid) accepted many of the previous failures of governmental intervention. It also recognised that vision for the area will need to “... have strategic significance for the City as a whole” ... “The area will be integrated within the City both physically, through the road and transport infrastructure, and psychologically for those who live or work in the area.” (Hulme Regeneration 1992 pii) The balance that the regeneration partnership was seeking was primarily physical and design-led, albeit via a more participative and inclusive means, where the management of the process is more sensitive to the local context, both people and place. However, psychological links were explored by looking at ways of dealing with the external image of the area and overcoming “... negative stereotyping of the area – strongly and widely held both locally and nationally: atmosphere of insecurity, mistrust, suspicion; isolation from the rest of the City ... all combine to depress or deny opportunity for local people” (Hulme Regeneration 1992 p15).

While the majority of the aims of the Action Plan easily translated into measurable output indicators of achievement, an auditing requirement of City Challenge Projects, (for example; number of net permanent jobs created, hectares of land reclaimed/improved for redevelopment and open space, floorspace of buildings acquired, number of housing starts etc – Hulme Regeneration 1994b and 1995), the aims of holism and city-wide integration and strategic impacts were not recorded empirically or assumed to be implicit in each of the indicators used.

The view of the concerned outsider (secondary sources of passive participant observation)

A consensual view from a review of these anthropological sources is the issue of 'externally imposed' grouping within the heterogeneous social setting of Hulme, and the limiting view of census statistics when they attempt to use 'so-called objective' criteria. This is true of both social groupings and of social (geographical) boundaries. Empirical work has missing elements of micro scale community (Hulme Project 1987), especially the underground social settings of pubs and clubs. Thus social groups cannot be clearly defined by patterns of activity or by patterns of consumption, due to the complex overlaps within the ethnic groupings.

Thus, an imposed social group or class-based (Marxist) analysis is difficult because it essentially relies on the ability of consumption (of council housing, health services, education) to explain power relations within society or a microcosm of society. The multiplicity of social groups within Hulme has made it difficult for collective representation and/or expression. For example, the Hulme Tenants' Alliance has been successful in achieving change, through consensus, in physical regeneration (high level of common concern and values) but has failed in tackling social issues such as drugs or immigration (low level of common concern and mixed values), often the issues having the longest term impact. So questions arise over whether consensus or contradiction within society is the main driving force for change? Is action organised on the basis of shared attitudes, beliefs and morals?

The area is repeatedly described as a place for social theatre, where people act out their culture. People share a common physical environment and allied to this a commonality over how this is shaped and managed. Community organisation has been grouped around these common physical issues. Action has then been targeted against "... local council, central government, and the architects and bureaucrats who helped design and construct the physical environment" (Walsh 1993 p212) – all outsiders. Action that helps to reinforce distinction between local insiders and faceless outsiders. But the failure of consensus over social and economic issues is linked to "... the possibility of their sharing a common social experience has decreased" (Walsh 1993 p212). Thus grassroots involvement is displaced from holistic and strategic policy decisions.

The outcome of this observational dimension; at a time when the initial plans were to demolish and rebuild the Hulme estate; was a fear that without solving the social problems of the community, there is a real danger in relying on geophysical regeneration of simply moving the problems to another place or creating another 'English slum' (Walsh 1993 p214). All external research based analysis on local inadequacies and not on power-structures because the complexity of the self-enforcing and fulfilling stereotypes demanded more detailed analysis.

The view from the insider (secondary sources of active participant observation)

Internal sources also suggest Hulme is an area of contradiction. It has a complex history where the reality begins to be effected by 'reputation and mystification' (Horn 1995 p439). It's selection for redevelopment pushed it into a stereotype of the urban slum. Reputations assisted by the mass media and local government were negatively affected and a cycle of decline commenced or speeded up. There emerged a feeling of localised guilt and city-wide envy and resentment over the undeserving poor of Hulme. "Hulme became the source of public disgrace and anxiety in Manchester" (Horn 1995 p440).

Within the recorded views of the community, there is a feeling that the area should be able to help itself and overcome imbalances within the city region – that the area had developed methods for survival but not success. 'Concerned insiders' identified a cultural shift in the mid 1970's when a change in communal thinking reflected a pride in the area and the diversity within it. Action-orientated groups began to do more than just survive and 'make-do'. Community development skills from national and international campaigns were brought into play in tenants' associations and residents' groups within Hulme. Strategies were developed by locals to counter the negative images and to readdress some of the false assumptions made by external bodies, organisations and individuals, on the problems of the area (a problem that continues within the mass media – for example, Bradley 1996). Persistent failure to tackle problems have created "... a cycle of apathy/anger and anti-council feeling that in turn made the area harder to live in" (p445). Attempts to improve participation were dismissed as cosmetic waste of time and effort – simply raising the levels of apathy.

In this context, physical redevelopment had to do more than just solve environmental problems, it had to address the problems of the negative image (a generic problem of the anti-urbanism of British culture) of the poor esteem locally and overcome poor municipal management to maintain any improvements into the longer term. These views and sources advocate changing the homogenous and paternal culture of local authorities that controlled the estate to one where new community development skills, and local pride are given an opportunity to make a difference

The individual's view of the community

Unique qualitative sources exist, as expressed by the individual as archetypal resident (for example; Driver 1996, Jordan 1989) and with some universal experiences of growing up within the area. The tracing of personal development in a specific location includes many questions concerning shared memories and memoirs.

One set of personal documents includes the passionate expressions by local people of the state of Hulme as existing and their own aspirations and expectations for the future, collected in the form of writing and photographs by Hulme people (Hulme Study 1990, a record of a 15 month project run by

residents to record people's experiences and feeling about living in Hulme prior to the redevelopment). Identified positive attributes were the diversity of people and culture, the business and activities of living within the inner city. The documents chart a developing youth culture growing out of the negative associations of the area and the resultant cheap (or 'free' aka squatting) rents. "The authorities had written it off as a problem area. That has allowed it to grow into a vibrant community". The existing community network is the strength of the area and there is a sense that if physical and infrastructure concerns were addressed the area could become an "... inner city utopia" (Hulme Study 1990).

These individual views are expressed as hopes. Firstly that the new redevelopment will listen to the community and secondly that it puts their own needs as the top priority. The anonymous editorial view is that "... Hulme people have at least as much expertise, qualifications and knowledge to make decisions about their area as do the inner city academics, consultants and other experts whose views we see and hear so much about". There is a suggestion in this record, of animosity and antipathy towards environmental professionals who have largely been responsible for the current situation.

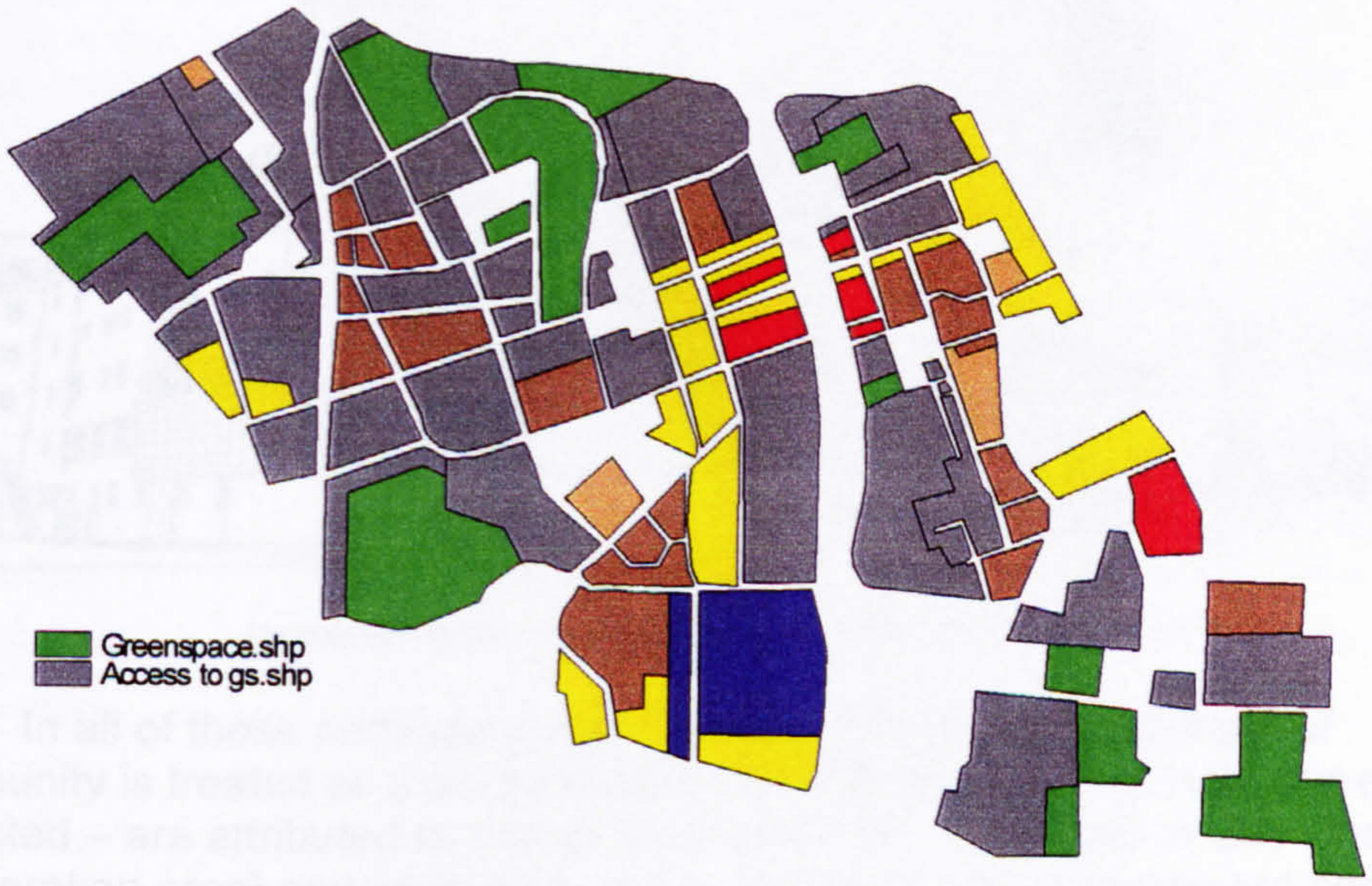
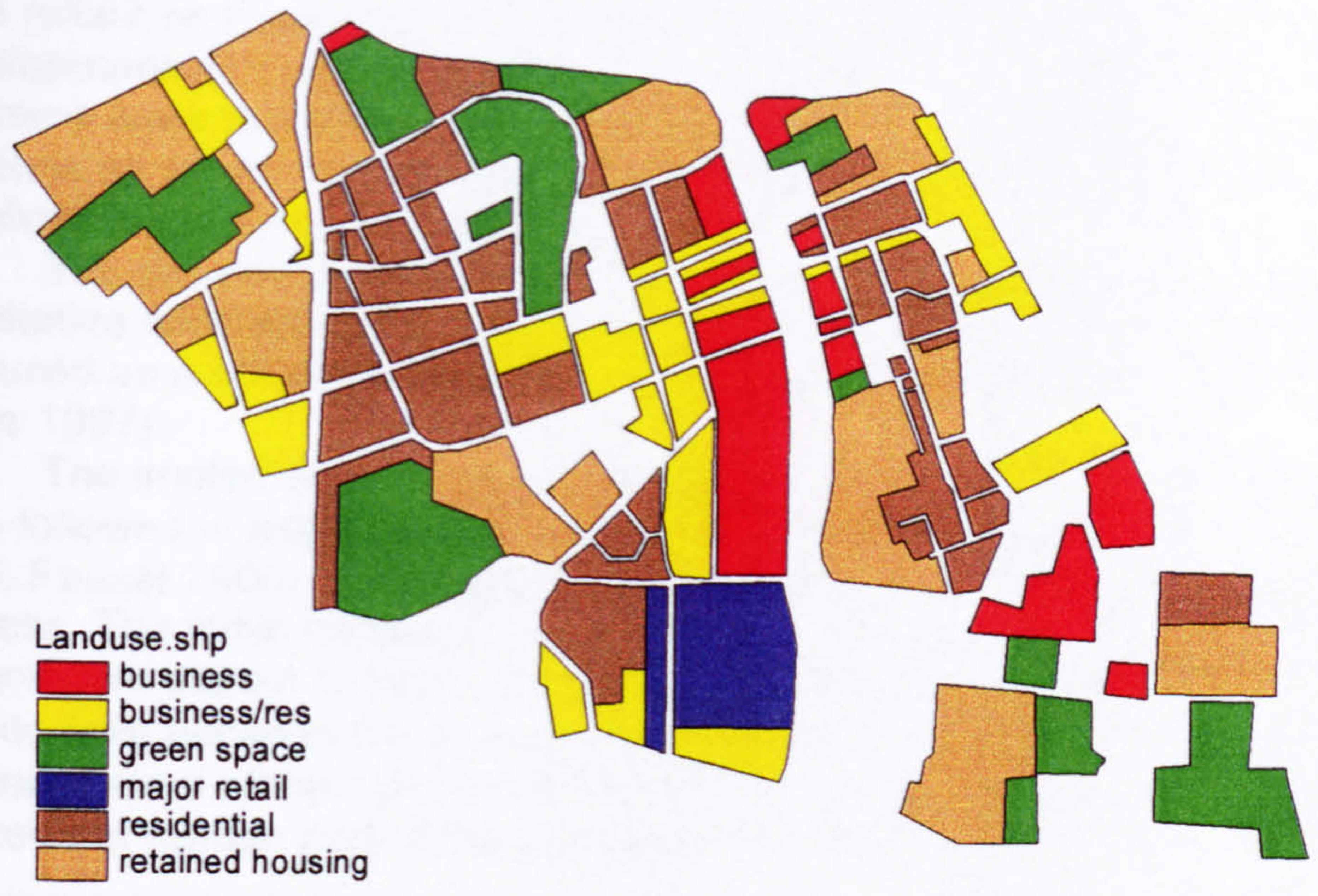
The collective view of the community

To compliment individual sources, there is a unique shared perspective on the regeneration process through a weekend planning for real event organised by an external facilitator (Whitehouse 1996). The event aimed to get agreement over the strategic options for the physical regeneration of the Hulme area "... not only in physical terms but also taking account of economic and social factors" (Hunt Thompson Associates 1992 p15) holistically via a short but intensive period of creative working. The results were gained through a 'critical mass' of activity where everyone has an opportunity to be involved in each issue under discussion.

The record of the process involved separate working groups analysing problems, developing a vision for change and beginning to look at key elements of the vision. Elements such as principal public spaces for congregation set against some of the existing community buildings, reinstatement of routes to reconnect the area with neighbouring communities and the city centre. The record of the event also defined landmarks, developed strategic links and explored socio-economic issues whenever they had spatial considerations or impinged upon physical design factors. The vision contained some elements of training and education to assist the development and growth of local enterprises but, once beyond the statement of principles, concentrated on aspects with a clear spatial and geophysical component, such as poor shopping facilities, the incidence of crime and ecology considerations.

Procedural and phasing concerns did include consideration of the wider context, particularly the creation of a positive image for Hulme, as much as to retain existing businesses as attracting new investment but it also examined ways of retaining community links and coping with the prospects of "living on a building site" (Hunt Thompson Associates 1992 p53). The image was seen as

crucial as the success of any regeneration proposals are dependent on confidence in the locality for investors to develop interest and for residents' to remain. This confidence and positive image is principally through cultural activities, with Hulme making a specific contribution to city wide proposals such as Olympic bids, Arts Council projects, Metrolink, university campuses - all aimed at being part of a new Manchester.



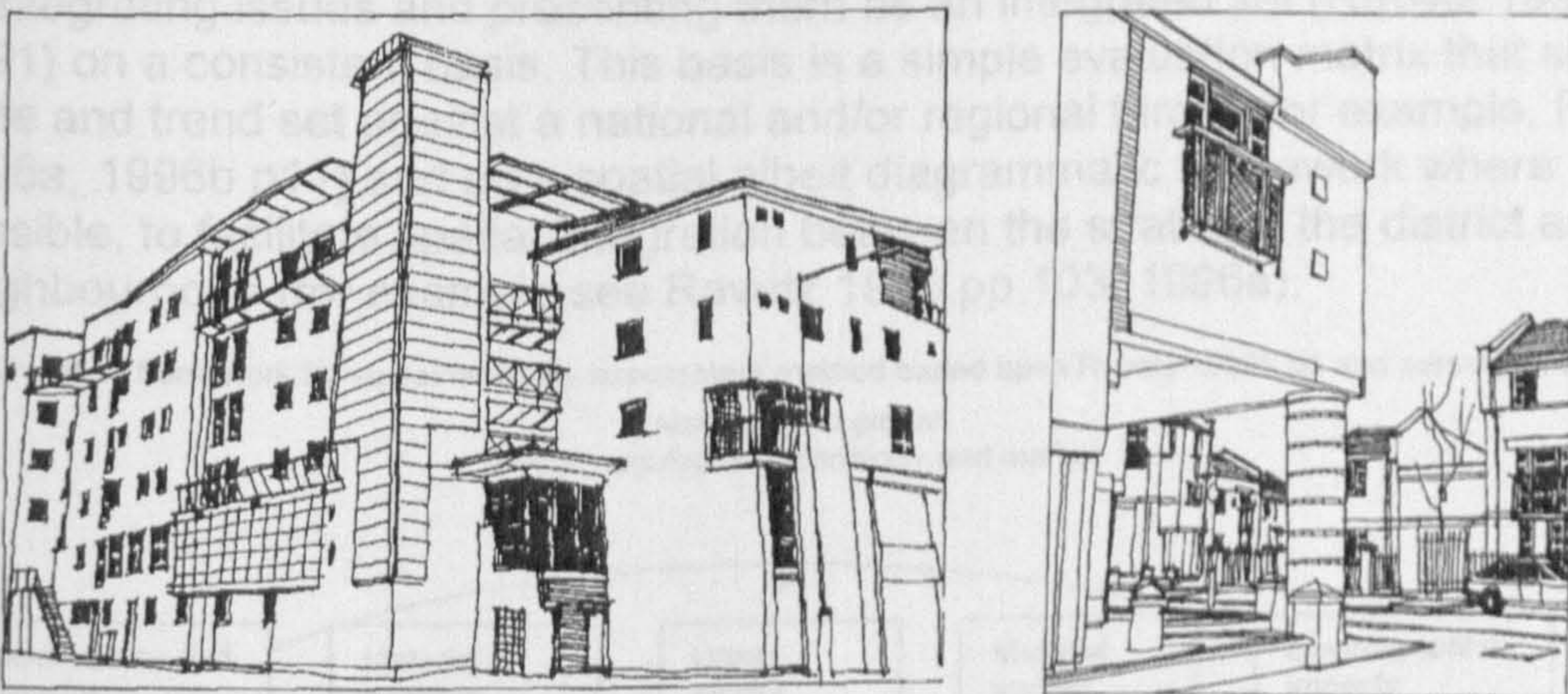
(Spatial land-use masterplan adapted from Hulme Regeneration Limited 1996 and digitised on a GIS framework and suitable for linking to levels of funding and investment, interpretation and meaning, simple location, proximity and linkage analysis. For example, access to open space demonstrable as a spatial indicator linked to qualitative data on open space attributes, Greenhaugh and Warpole 1996 pp72-75)

The intensive weekend event raised expectations of over 600 locals and gave momentum to the process. It considered cultural events linked to new phases of the regeneration, for example the opening of the 'Hulme arch' landmark road bridge.

Delivery mechanisms include guidance on urban design (produced by George Mills, Mills Beaumont Leavey, p63), stressing principles of urbanism, environmental quality and sustainability. The masterplan and the design guide were reliant on traditional housing forms becoming integrated into a mixed-use development with more emphasis on people and less on traffic. Although concerns were raised by locals over how flexible the code was and the possibility of abuse by private developers or when on-going management issues become devolved to housing associations.

Yet, the design code remains a useful basis for setting out shared values (qualitative attributes and indicators) for the redevelopment of Hulme as it was produced as a collaborative guide by professionals and public in partnership (Ross 1997).

The implementation of the design guide principles into 'live' projects has been followed in depth for the 'Homes for Change' project (Rudlin 1996, Carter 1996, Fauset 2000) – highlighting the integration between physical design and process. The initial design and the on-going management of the scheme, became a significant aspect of local community participation and development, helping to build links between the Hulme communities and the growing areas of the city. The initial aims of the scheme are not achieved after physical construction is finished but remain part of the rationale for resident and business involvement.



('homes for change' demonstration project and the immediate vicinity)

In all of these secondary data sources, Hulme, as a geophysical community is treated as a single location. All the values – historical, current and projected – are attributed to a large area (generally ward level or City Challenge regeneration area) and while there are a host of indicators suggested and utilised these tend to be for comparative purposes at this higher scale. Any measures suitable for local indicators are those abstracted and analysed from maps within these secondary sources (see digital example).

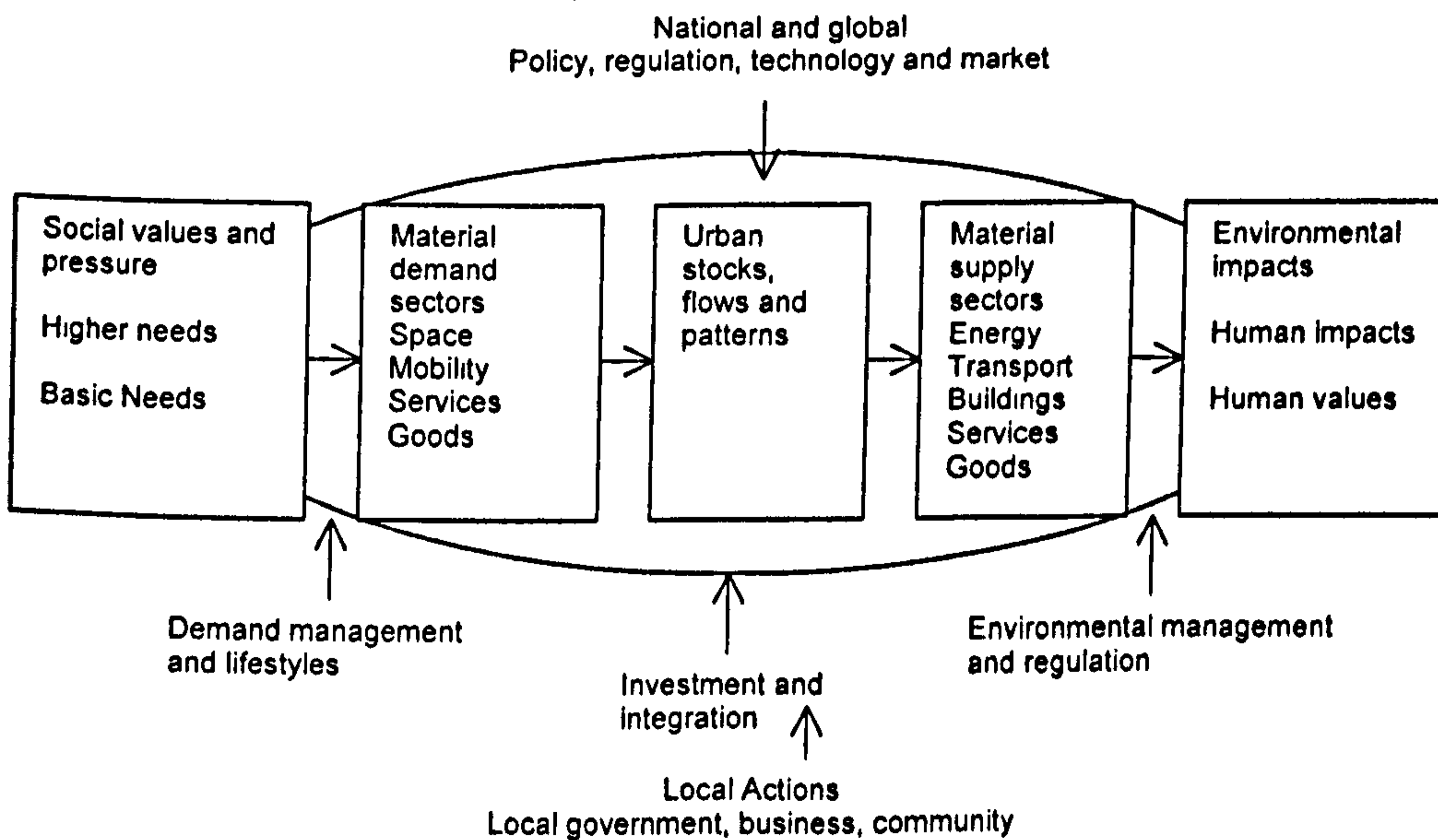
Sustainable development in the city region - Strategic links and holistic thinking in Hulme and Manchester

“They must not see their work in isolation but as part of a composite whole, assessing how and what their project contributes to its environment” (Cockshaw 1996 p278)

The need to consider the regeneration of Hulme as a ‘composite whole’ and as part of the wider city-region are consistent themes of the redevelopment. This is evident in the process and the eventual physical environment. The initiation of the project (City Challenge) was on principles of a long-term partnership and the strategic view that good individual elements are as important as a sustainable masterplan – leading to a design emphasis at a strategic level (Cockshaw 1996).

The holistic thinking surrounding the links between the city-region and the Hulme area is most demonstrable in an examination of the Manchester 2020 demonstration project. This strategic study uses a simple accounting framework focussing upon ‘core indicators and targets’ to assess the environmental and social metabolism and sustainability of the greater Manchester city-region – paralleling the input /output urban flows described by Girardet (1997) (Ravetz 1994). The project has and is producing public accessible reports and technical reports, both aimed at informing through better knowledge, suggesting links and thus questions for municipal and neighbourhood management decision-makers. The strength of this approach is not any in-depth sectorial analysis but a prospect of integrating issues and presenting them as an integrated set (Ravetz 1997 p291) on a consistent basis. This basis is a simple evaluation matrix that shows state and trend set against a national and/or regional target (for example, Ravetz 1996a, 1996b p11) and on a spatial albeit diagrammatic framework where possible, to facilitate spatial integration between the strategic, the district and the neighbourhood (for example see Ravetz 1995 pp 103, 1996a).

(Simplified framework for sustainable city assessment method based upon Ravetz 1996b p3 and personal interview)



Relevant outputs and recommendations from this study are based on subsidiarity principles – and it suggests the level of action and intervention most appropriate for sustainable planning within Manchester – particular issues most appropriate for considering at the neighbourhood scale, such as use of open space, food production, waste management and minimisation, traffic calming and car pooling, LETS and democracy (Ravetz 1995 p108).

This well publicised and received study does have a particular bias, perhaps due to a definition of *environmental* sustainability, to physical systems and the built environment – this at the cost of qualitative information being considered within the same policy informing framework. However, it has considerable strength in avoiding prescriptive solutions and utopian visions (Ravetz, 1996c) by evaluation against limits and targets which are themselves dynamic and subject to political and public debate. This is partly due to the uncertainty of the scientific approaches and the patchy data available.

Ravetz consistently stresses the need for political integration (1996c, 1996a), through real partnerships at city and neighbourhood levels, because the main challenge to the sustainable city remains social limits and the capacity for individuals to make informed changes to their own lifestyles. The tools provided and used within the study help to suggest means of systemic thinking – to conceptualise the city, assess sustainability issues and begin to monitor and manage change within this system (Ravetz 1996b and 2000).

This analysis does lend itself to spatial representation at a city scale and is included in diagrammatic form (Sustainable City Region Working Group 1995 p7) to show connections between different indicators in spatial patternations.

Hampstead Garden Suburb

If it's true that a rich man leads a sad life/-n'that's what they – from day to day,/Then what do all the poor do with their lives?/Have nothing to say - on judgement day? ... Like skyscrapers rising up/floor by floor – I'm not giving up/So you rock around and think that/you're the terfest/in the world. The whole wide world/But you're streets away from where/it gets the roughest/You ain't been there

"I'm Not Down" The Clash (1979) *London Calling* (Sony Music Entertainment (UK) Ltd)

Hampstead Garden Suburb in North London was originally designed as a mixed use, socially self-sustaining community based on Howard's (1898) vision of "... towns designed for healthy living and industry; of a size that makes possible a full measure of social life, but not larger, surrounded by a rural belt; the whole of the land being in public ownership or held in trust for the community". Implicit within this shared vision (Parker and Unwin 1901) was the links between settlement size and self-sufficiency – with the development designed as an entity, as a community in an idealised view of the English village as the ultimate form of community and built development with common values, shared facilities and where the physical form meets the requirements of the community. Due to the age of the development, the dynamic nature of self-sufficiency has become observable and measurable. Factors which affect this viability and functioning of a semi-autonomous community within a wider urban metropolis can be assessed on a number of different approaches. (i) Physical self-sufficiency, assessed in the collection and collation of indicators of spatial structure, variety (design and layout), transportation provision and open space / ecological networks; (ii) Social self-sufficiency, assessed using a variety of indicators of community provision and population diversity and demographics; (iii) Economic self-sufficiency, assessed by indicators such as house prices and low cost accommodation, mixed uses and tenure choice, employment density and access to jobs.

The 'suburb' is typified by its neo-Georgian heart, with the Institute and St Jude's Anglican Church designed by Lutyens in 1907 providing a civic feel to the centre, in contrast to the vernacular and domestic forms for the surrounding terraces and buildings. The importance of the architectural history of the suburb has been recorded in a series of publications, each with a particular emphasis on an individual architect involved in the design of the 'suburb' (for example; Miller 1992, Gradidge 1981, Kornwolf 1972, Creese 1967, Hussey 1953) or with the location itself as the central concern (Miller 1995, Miller and Gray 1992). The latter clearly provides a better research resource for understanding the context to the development, particularly the links between its social history and its physical development.

Principle data collection methods were the examination of a range of secondary sources and personal documents, requiring an adaptation of document sampling and content analysis (Berg 1989 p110). Sources included

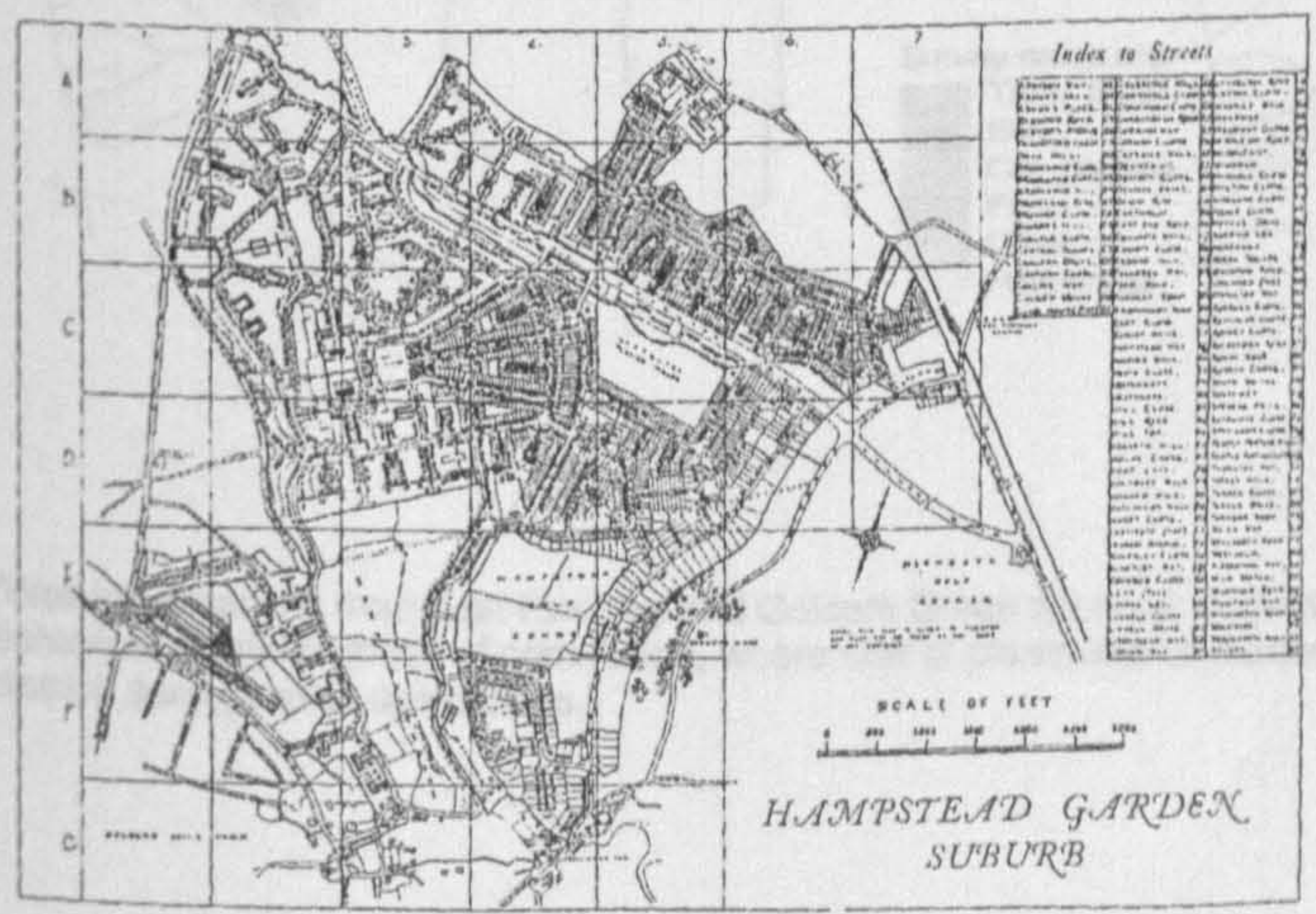
visual documents, photographs plans maps and reports – highlighting those elements of the area that are already recorded on a spatial basis. In each case, the historical accounts need to be contextualised with a number of distinctions being noted between solicited and non-solicited material and the overlap between public and private documents.

Style over function – secondary architectural sources

Secondary data sources are dominated by architectural accounts of the suburb and a variety of subjective assessments of the quality of the design. On this basis, it has even been described as “... chilling ... a flawed model for suburbia” (Meades 1997 p7) on aesthetic grounds. It is a residential monoculture with no shops or pubs, in contrast to the other Garden Cities. In addition, the aim of mixing social type by providing workers cottages has failed – due to the initial ‘tokenism’ or to the draw of higher earners – as it is now exclusively for the rich. The original social housing in the artisans’ quarter, designed to accommodate 500+ workers from London’s crowded East End has changed due to qualitative success of the ‘suburb. Thus it has failed to achieve mixed use or retain a variety of housing tenure and social mixing (Baber 1997, Gale 1948).

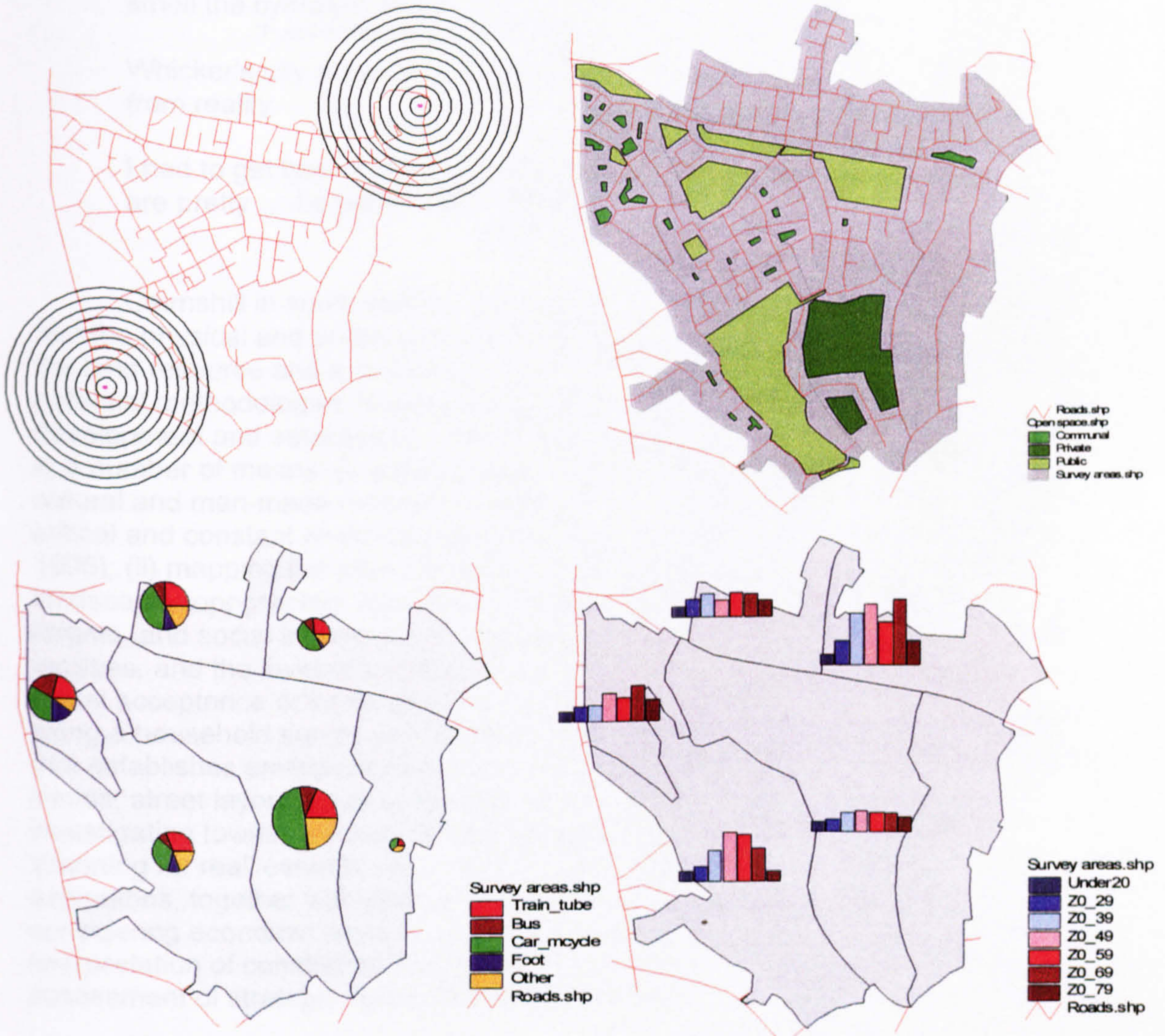
Despite the initial design promoting space for the individual, parts of the ‘suburb’ are still at densities considerably higher than today’s suburban developments and are theoretically well connected to employment locations by public transport. Unfortunately, the level of car ownership and the affluence of the area does not help in the actual use of these facilities.

There is an overabundance of style over functional attributes. The emphasis within urban management is control of new interventions and aesthetic conservation (Miller 1998). It gained conservation area status in 1968 leading to a well developed management plan (Shankland Cox 1971) where physical assets were mapped, threats to the physical were recorded and the socio-economic causes of these threats (for example, rising car ownership levels and associated parking requirements) addressed in response to locally defined values and preferences (for example, traffic management measures, adaptation of open space). 100+ significant buildings were listed prior to 1996 when the entirety of the area 500+ additional properties was considered necessary of protection to retain design integrity and prevent any irreversible changes, internal and external.



(Cartesian base map of Hampstead for use, after scanning, scaling and geo-referencing, as digital base for the display of individual indicator attributes – see digital example)

Many of the architectural accounts lead themselves to spatial representation due to their inherent physical emphasis and some of the supposition set out in the narrative historical accounts of the suburb can be checked by referral to basic national census information on social attitudes (car ownership, demographics, travel behaviour) and publicly available or primary survey data on land use. All of which is suitable for digitization and spatially recording – the level of abstraction relating to the survey and/or study area – at a level below the generic comments about the suburb as a single entity.



(Walking distances from East Finchley and Golders Green Stations; ownership and location of open space; travel behaviour – regular mode of commuting, where size of pie relates to numbers of commuters within each enumeration district; demographic age profiles.)

Cairnshill Estate, Belfast Urban Area

I'm leaning on a bus stop/listening to the Lavery's din/Bradbury Place
spring'93/old sensations rushing in/and I'm talking to a lad/from
Craigavad/about nothing in particular/wondering what makes me me/and
him him/and us individular ... but right now what I prefer is/street scenes
from my heart

"Street scenes from my heart" Andy White (1994) *Destination Beautiful* (Warner Music UK Ltd)

Back home Belfast gets bombed/and the elections roll on and on/you can
smell the cynicism/all the way

"Punks outside the secret police" Andy White (1994) *Destination Beautiful* (Warner Music UK Ltd)

Whicker's city of car blasts/there's violence in the air ... semi-detached
from reality

"The walking wounded" Andy White (1987) *Rave on Andy White* (Warner Music UK Ltd)

I had to get back to Belfast City/where the jeeps are green/and the girls
are pretty ... I'd rather have roses than guns

"Birds of Passage" Andy White (1990) *Himself* (Warner Music UK Ltd)

Cairnshill in south Belfast was chosen to investigate carrying capacity and test the physical and political limits to development in a context of efficiency of the land resource and a range of localised constraints. Specifically, the testing of potential methodologies for identifying and collecting indicators of physical development and establishing limits, standards and targets. This was anticipated in a number of means: (i) establishing a hierarchical view of protection for both natural and man-made resources – 'sacred structures' based upon the ideas of critical and constant environmental capital and assets (Countryside Commission 1996); (ii) mapping the physical limits, as set by local site constraints (ecology, landscape, topography), externally imposed environmental standards and targets, and social infrastructure provision (educational, recreational, community facilities, and the level of satisfaction with these amenities); (iii) investigating social acceptance or limits based on an understanding of community benefit using a household survey and questionnaire design (based upon Burgess 1988) that establishes environmental perceptions and preferences on scale and density issues, street layout, open space/recreation; (iv) visual impacts survey investigating townscape and design considerations; (v) using a pro-active 'planning for real' event to record community attitudes, shared values and aspirations, together with proposals for change, redefining development; and (vi) considering economic limits by a comparison of public sector / private sector interpretation of constraints and development proposals within the evaluation and assessment of strategic options for Cairnshill development site.

The Context - Sustainable Community Design in the Edge-City

Cairnshill is an edge of city location and so of interest was the adoption and development of the hierarchy of urban design principles of scale within 'new urbanism' as they apply to the suburbs. It is suggested that these principles can

be developed from community priorities, becoming quasi-social limits to growth and development. "Too often we think of these aesthetic, spatial and programmatic principles in terms of density and the inner-city context. ... Applying these principles in the unlikely areas of the modern suburb, while coping with its economic and social imperatives, is one important contribution of the New Urbanism" (Calthorpe 1994 pxi). Calthorpe's view is that the redesigning and remodelling of the suburban environment is the most important challenge for architects and designers. In spite of the attractiveness of working with traditional forms of urbanism in our town and city centres, the extent of the existing low-density suburban sprawl demands that some consideration is given to a model of suburban development which is both sustainable and realistic - a form of sustainable development which is appropriate to the context of the edge-city and which can act as a demonstration of 'best practice'.

"Suburban infill represents a different set of problems and constraints (from down-town urban infill) ... much needs to change. Foremost, local citizens must understand that there are options beyond no-growth or sprawl." (Calthorpe 1994 pxiv).

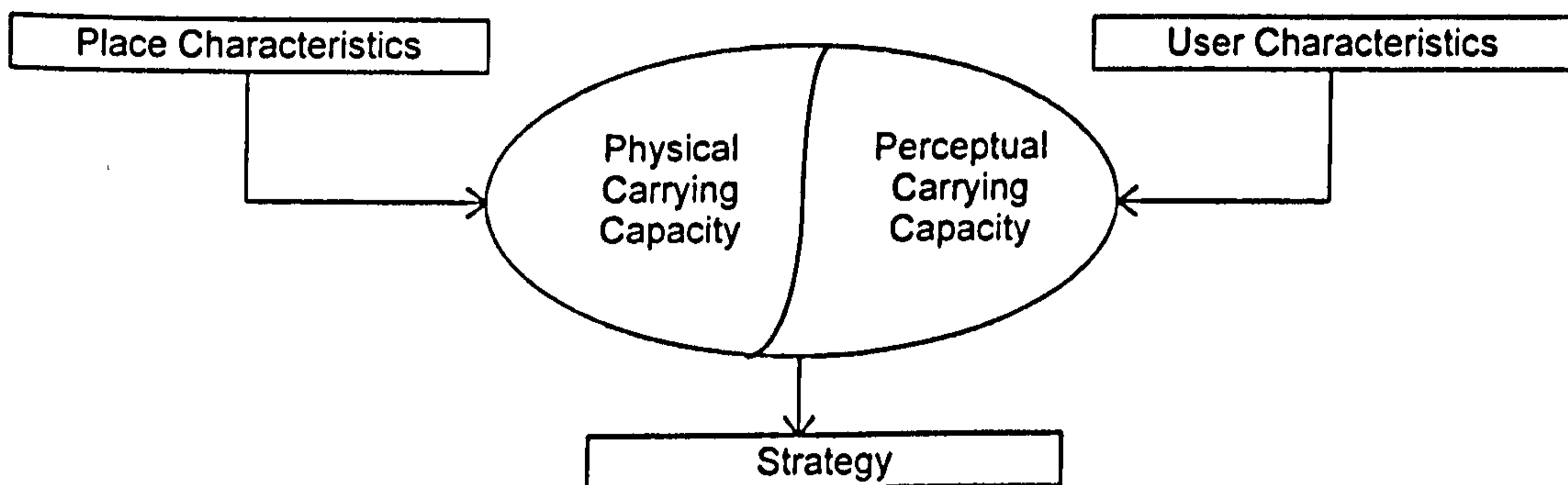
An alternative suburban development; his notion of the '*pedestrian pocket*' (Calthorpe 1992), is a mixed use, human scale community based around major public transport nodes - tested in several master-planning exercises, based mostly in the south-east United States. The aim of development clusters is to extend choice to local residents - in how they choose to travel, where they choose to work and shop and how they spend their leisure time. Homogeneity and lack of choice has been a dominant feature of suburban developments. They are built at a low, automobile-dependent densities and are unable to adapt to changing lifestyles (For example, 'back offices' and home-working), changing family/household sizes and types, and the growing concerns for environmental sustainability. The pedestrian pocket is designed to provide residents alternative choices through the application of sustainable design criteria. Distances within the pedestrian pocket are based on a typical 10 minute walk (a quarter of a mile) and a typical neighbourhood at this scale would cover 50 -120 acres, contain up to 2000 residential units with a corresponding level of employment provision. At a more detailed level, the form and mix of development and land use within the pedestrian pocket needs to be radically different to traditional forms of development. Pedestrian circulation is primary and should be considered before vehicle movement; a range of housing types should provide a balanced social mix and allow for human diversity and choice; the treatment of the public realm, parks and spaces, needs to provide a spatial focus for the community.

The potential for such development is in providing an example of what could be adopted and followed at a city-wide scale - clusters of new development at the neighbourhood scale being connected to the existing urban structure via a strategic public transport network (Calthorpe 1995 p 27). The physical and economic practicalities of this approach are quantitative and convincing. However there are implications for individuals, their behaviour and lifestyle being

determined in part by the choices presented (or removed) by the shaping of the physical environment.

“... Pedestrian Pockets are utopian - they involve the conscious choice of an ideal rather than laissez-faire planning, and they make certain assumptions about social well-being” (Calthorpe 1992 p 35)

This approach contains many value-judgments and professional aspirations which may or may not fully reflect community needs, desires and aspirations. To ensure the success of a neighbourhood based on social values, we need to test any assumptions made in the development process against shared community values. This suggests that a design code develops from local community perceptions, values and priorities. These could be considered the social limits to urban growth and environmental change, being derived from changes in community values as well as social organisations. Social limits are similar to physical/technological limits in that there can be altered - in this case, changing through an educative design process. Calthorpe contends that suburban sites can be suitable for mixed-use neighbourhoods, even within a context of social limits and political constraints. Urbanism on the edge is possible once we recognise both the physical and social limits to suburban growth.



(adapted from Clark and Stankey 1979)

It is a combination of understanding the characteristics or both 'place' and 'user' – social limits to physical change and cultures at the 'edge city'. These are not necessarily absolute positions but dynamic, responding to local site specific issues. More importantly, they can change through an educative design process, a process that is responsive to community.

Thus, the methods used are designed to assess both aspects of carrying capacity, from the basis of place and user characteristics.

Qualitative visual survey

The 'place' characteristics were established by a visual survey. An approach to understanding the built fabric of Cairnshill is to break it down into its different urban components such as public spaces, street layout & routes, edges/boundaries, landmarks and the interfaces between the public and private environment (Lynch 1981 and 1961, Cullen 1971).

Ulster vernacular building forms like this property along the Ballymaconaghy Road are interspersed throughout the Cairnshill area - generally situated along established routes, they are outward looking, facing onto the highway and forming part of the edge to the area. They are in sheltered positions and use landscaping as additional protection from harsh weather. A mature landscape setting is a characteristic of many of the older dwellings in the area. The building form is typically a large two-storey dwelling based on a simple rectangular plan. The front presents a clean straight line and well-proportioned facade to the public road. It is of traditional construction and local natural materials, helping to establish a 'sense of identity'. Extensions often exist, but only at the side or rear of the properties.



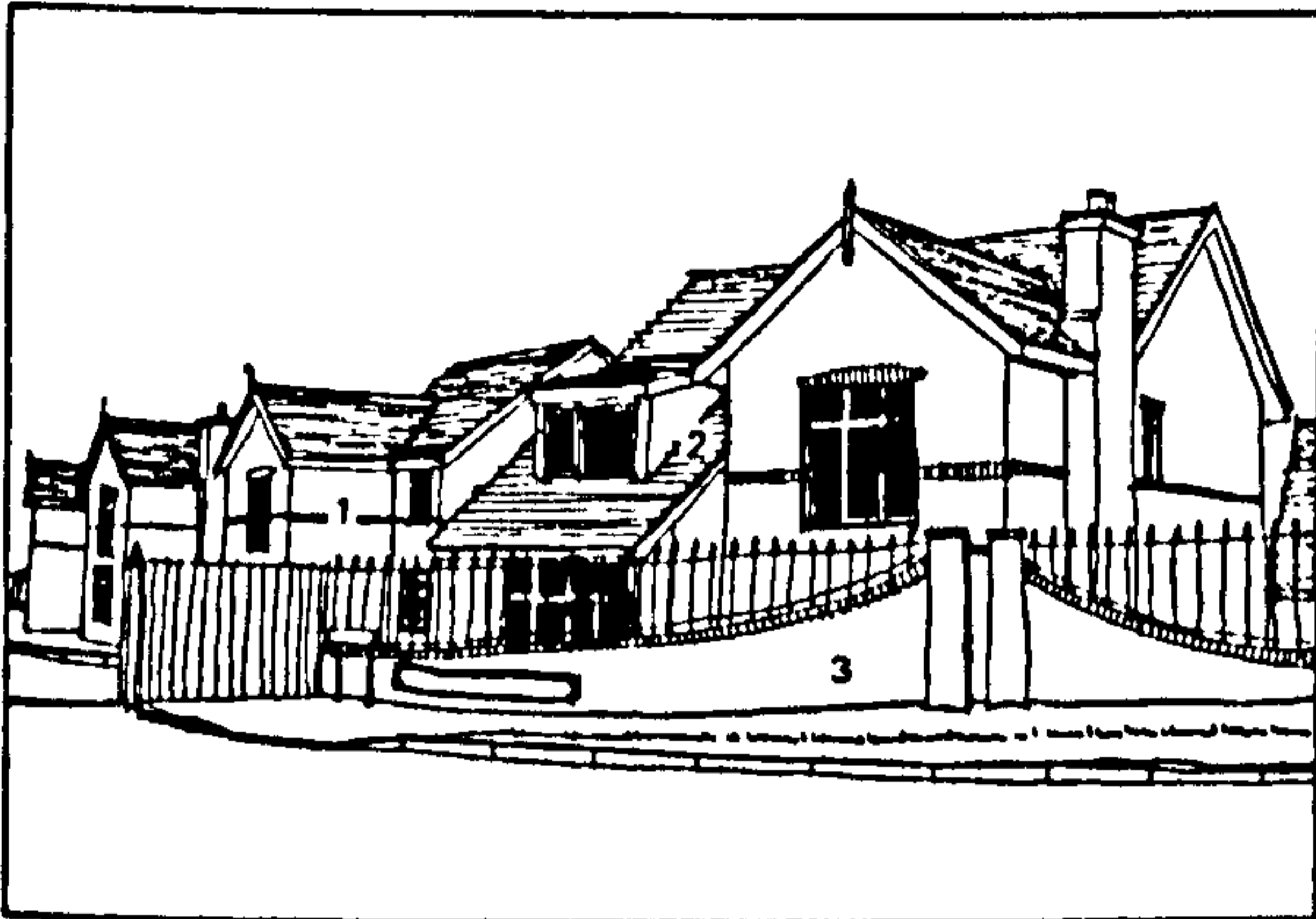
1. typical slate roof, between 32-38 degrees
2. linear plan and arrangement of gable walls
3. windows and doors stressed as vertical elements
4. simple symmetry in the proportions of windows/doors and chimneys (placed on ridges)
5. mature landscape setting - broadleaf planting surrounding property
6. typical rendered walls in single colour

More recent housing in the area has ignored many of the design principles of what is essentially a characteristically rural building form. Large volume house building in the area has generated a homogenous form - repeated with small variations in details such as window fenestration and plan orientation. The oldest post-war housing is set back from the road line and is further separated from neighbouring properties by mature planting. However, much of this is ornamental suburban planting, giving a quasi-arcadian image rather than that of a rural dwelling surrounded by land and planting. The most recent speculative housing developments are at a higher density still, with less land devoted to landscaping to help the estates visually integrate into the surrounding countryside. The adjacent houses give an impression of over-crowding due to the inefficient use of space for access and private gardens.



Typical post-war housing at low suburban density.

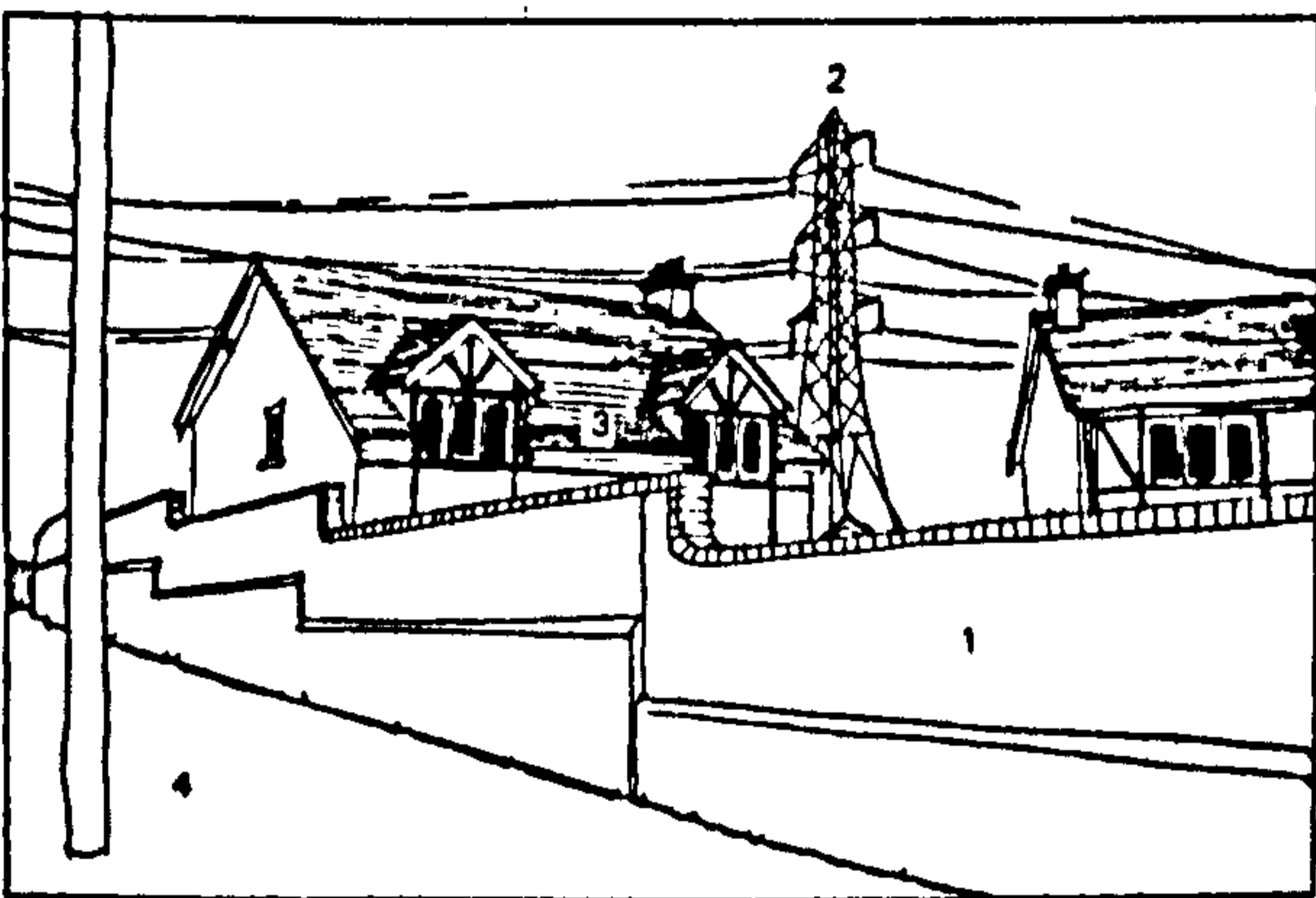
1. set back from road line
2. high level of personalization in garden and facade
3. suburban plan with stepped facade and chimney off-set
4. large areas of glazing and lack of subdivision presented as horizontal elements
5. intrusive car parking



Recent speculative house building at higher density.

1. commonality of building type
2. architecturally cluttered facades
3. perimeter wall and gates to suggest exclusivity

The estate houses are inward looking, and have few spectacular views of the countryside despite the proximity



Speculative housing estate providing urban edge along Ballymaconagh Road

1. wall provides boundary to Cairnshill & hard rural/urban contrast
2. impact of urban infrastructure
3. inward looking housing layout
4. Ballymaconagh Road



Development of two storey townhouses along Saintfield Road

1. Saintfield Road provides a major boundary to Cairnshill
2. private access road to housing
3. first floor access to apartments

Primary data collection

The 'user' characteristics were initially established by direct contact with the Cairnshill Residents' Association (CRA), a group involved in a major public inquiry in the Belfast Urban Area, objecting to new housing development proposals in the area. The CRA was one of a number of third party groups making representations at a preliminary meeting for a proposed public inquiry into alterations to the Belfast Urban Area Plan (BUAP). The focus of the alterations was the release of unzoned 'whiteland' for housing development (DoE(NI) 1996a 1996c and 1996d). Due to planning procedural errors on the part of the planning authority (Department of the Environment for Northern Ireland Planning Service) the inquiry was delayed. This provided an opportunity for the groups to combine efforts for a shared strategic objection and I was invited to join the widened group, initially as an observer and then as a fellow objector and chartered planner providing support for the groups.

This provided a unique opportunity to ground the research in policy by testing not only data collection methods, but also their effectiveness as a tool for influencing decision-making within a local planning policy context, as informal material for direct negotiations with the local authority, the planning authority and with a number of competing housing developers with their architects and agents and also as material for a planning inquiry proof of evidence. Although outside the remit of this research, some of the combined output is recorded in the appendix to this study. This shows how effectively empirical work on demographics and physical attributes (collected and collated by public sector agencies, DoE(NI) 1996b) can be combined and linked to local qualitative material for a specific policy and practical purpose. The eventual outcome of the public inquiry; held in February-May 1997; bears out the advantage of this approach and the role of participation as a learning and capacity building process (Morrow 1997) and is a significant development on the influence of and weight given to community groups and other third parties in earlier comparative planning inquiries (Milton 1993). This is particularly true in reviewing the final form of the planning applications for the Cairnshill area that were explicit about the 'urban villages' design approach from both the planning authorities position (DoE(NI) 1996) and more impressively from individual developers who had entered negotiations with the CRA (For example; applications from Premier Design 1997, Robinson Patterson Partnership 1997 and Ostick and Williams 1997 and qualified by the CRA representations included within the appendix to this chapter).

Qualitative primary data collection

The initial step in setting out 'user' limits was through a household questionnaire in the Cairnshill estate, undertaken in collaboration with members of the CRA (Full details are contained within the appendices).

The purpose of the questionnaire was to assess current residents' views of their area, what places they value and how they use local facilities. It then pragmatically addressed the question of attitudes to new development, the form / design that this might take and the range of facilities provided.

The open-ended questionnaire (based upon approaches by Eyles 1985) was designed to count broad themes which are post-interview coded, much of which addressed qualitative issues of area and housing perceptions and preferences. It borrowed from similar approaches to determine local housing preferences (Bender *et al* 1997) and aimed to attach local meaning to urban quality by allowing residents to set their own criteria (ie: not using pre selected criteria for ranking) for quality and then establish weightings between them. This would compliment descriptive and subjective views from a physical townscape analysis.

The qualitative responses were to photographic images representing a variety of qualitative approaches to design, of open space, road layout and residential buildings. These were all local images, presented in a format that included figure ground sketches and short descriptions on use, density etc. It is accepted that residents' responses to this sort of questionnaire may have been due to a more in-depth knowledge of some of the locations used as photographic sources and so they were asked to explain their particular preferences. The reasons given are possibly more useful and meaningful as urban design attributes, acting as a design primer or brief for matching physical development with user needs or aspirations. The background to the questionnaire and supporting qualitative material is contained in the appendices and some of the initial results are shown below.

How satisfied are you with local services and amenities? (%)		What changes would you most like to see to amenities in the local area? (%)	
Very satisfied	11	Accessible parkland / green areas	47
Fairly satisfied	75	More recreational facilities	24
Fairly unsatisfied	9	Play facilities	18
Very unsatisfied	4	Less traffic and road safety measures	9
		Better local shops	9

What aspects of the local area should be preserved? (%)		Preference for new development? (%)	
Green areas	65	Public park	58
Rural surroundings	16	Recreational facilities	44
Recreational resources (playing fields, golf course, ski slope)	7	Infants' play area	15
		Mixed use development	13
		No change	9

← Increasing age of residential property

↑ Increasing density of residential property



Scale and density of development preference? (%)		Reasons for preference (%)	
Modern 2 storey semi	45	Good character or green space	29
Inter-war semi	15	Character	24
Victorian terrace	13	Lower density	11
Georgian terrace	7		
3-4 storey modern terrace	2		
modern townhouse	0		
Scale and density of development dislikes? (%)		Reasons for dislike (%)	
Modern townhouse	69	Lack of character / too brutal	33
Georgian terrace	11	Too densely populated	25
Victorian terrace	6	Too urban	9
Modern 2 storey semi	2		
Inter-war semi	2		
3-4 storey modern terrace	2		

While a high level of commonality was found between different responses...

Open space preferences? (%)		Reasons for preference (%)	
Ormeau park	38	Semi-natural with wildlife value	29
Malone House Grounds	31	Good variety for all ages	15
Lagan Valley Towpath	16	Best suits local needs	15
Lower Crescent	11	Ideal for country walks	13
Open space dislikes? (%)		Reasons for dislike (%)	
Lower Crescent	55	Too urban or too formal	36
Ormeau Park	11	Lack of security	13
Malone House Grounds	9	Too small	9
Lagan Valley Towpath	7		



Lower Crescent, University Street – small formal park, properties overlooking space, footpaths seating and lights



Lagan Valley Towpath – small semi-natural linear park, intimate and secluded character



Ormeau Park – large formal park, urban character



Malone House Grounds – large semi-natural parkland, rural character, important wildlife habitat

Street layout and Design preference? (%)		Reasons for preference (%)	
Tree-lined avenue	64	Attractive trees	31
Typical estate layout	15	Personality and character	27
Traffic calming	13	Road safety considerations	16
Shared surface	4	Privacy and security	13
Street layout and Design dislikes? (%)		Reasons for dislike (%)	
Shared surface	42	Lack of privacy	22
Typical estate layout	25	No gardens or trees	15
Traffic calming	22	Road safety considerations	13
Tree-lined avenue	9		



While a high level of commonality was found between different responses, it is difficult to apply an objective analysis to the results. For example; the most popular form of development was the 2 storey modern detached property. Yet this simply recorded a preference for a property type that people were currently living in. It is perhaps more interesting to note that 50% of respondents preferred an alternative form and density of development to those within their current Cairnshill neighbourhood.

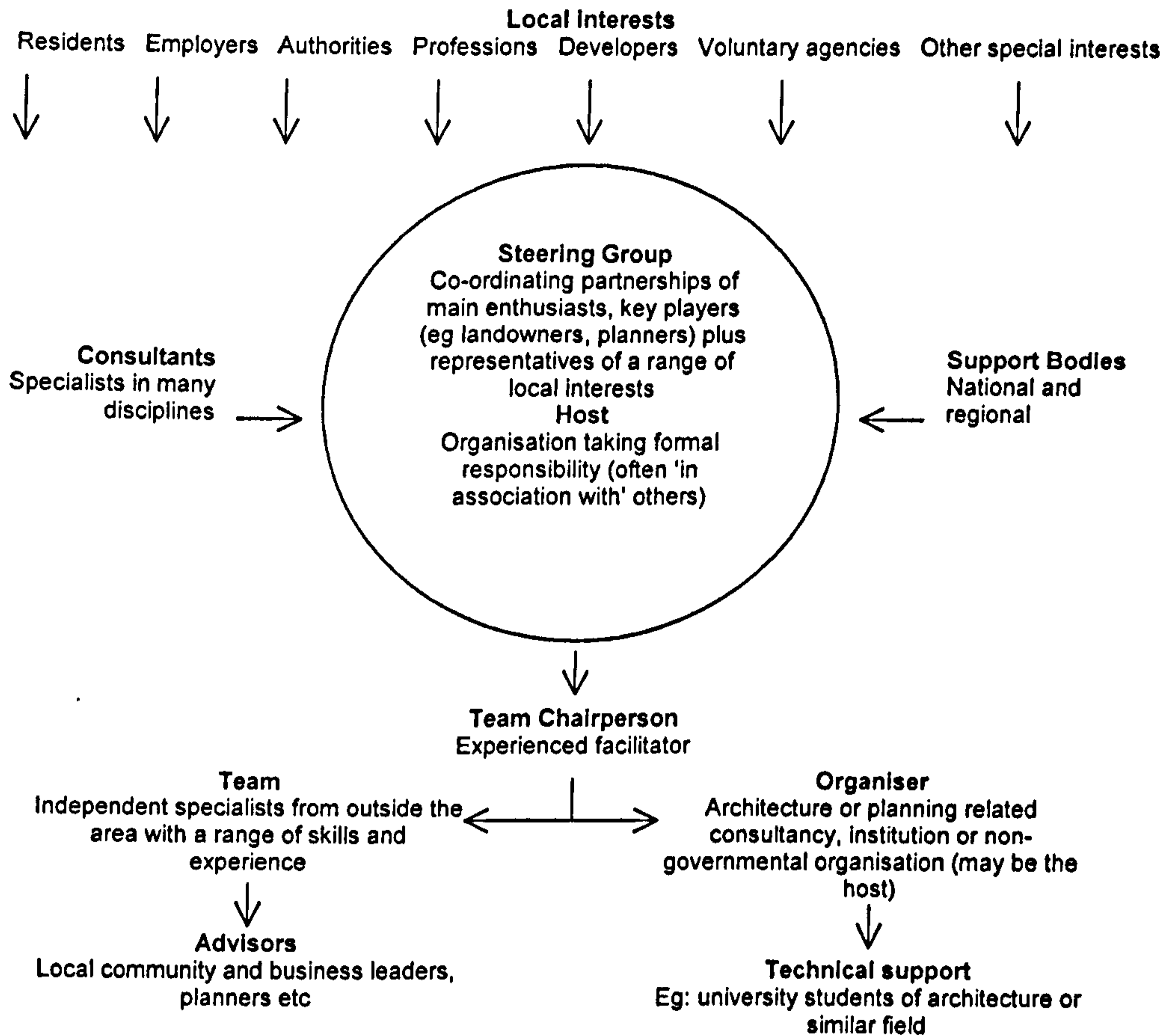
A crucial part of the process was the establishment of the interviewer relationship and the development of trust (Burgess 1984). Thus, interviewees were informed from the outset by the interviewer (representatives of the residents' association) of the anticipated function of the questionnaire's findings. It was seen as a strength of this trust-building requirement that the residents' association members; individuals already well known in the area; were amongst those responsible for undertaking the survey, in addition to the low-cost and non-expert requirements for primary data collection techniques.

There was an attempt to spatially reference these returns based upon 4 distinct survey zones within the sampled area. However, this proved a crude measure beyond the attribution of the views to the Cairnshill area overall (full sample size) as there was little variation in views between areas. Upon reflection, it was considered more beneficial to maintain the sample size and begin to spatialise the results by using them as an input limit (or social constraint) into a 'planning for real' event. As I was involved in a collaborative approach, that aimed to be influential to a major planning decision, this followed a process of advocacy planning (Davidoff 1965) and active role in participant observation (Burgess 1984, Schutz 1954) within the developing process.

Action 'planning for real' event

The organisation of an action planning event, most suitable where shared community values are to be incorporated into urban design processes, followed the guidelines suggested by Wates (1996a illustrated), utilising a variety of locally specific background material to the Northern Irish planning system (Mellon 1997, Dodd and Pritchard 1993), and in close partnership with community representatives and tailored to the requirements of a real-life problem and practical resource implications.

A clear aim for the event was agreed with CRA –the production for a community plan to take to both developers and the planning authority as a shared vision for the area with a view to persuading and influencing. It was to be complementary to the questionnaire, focusing upon solutions rather than problems. Guidance material, including some adapted from the Hulme case study (Hunt Thompson 1995), was used for the event to ensure clarity of meaning and give an idea of the visual and qualitative output required from those attending the event (copies of poster and worksheet contained in the appendix).

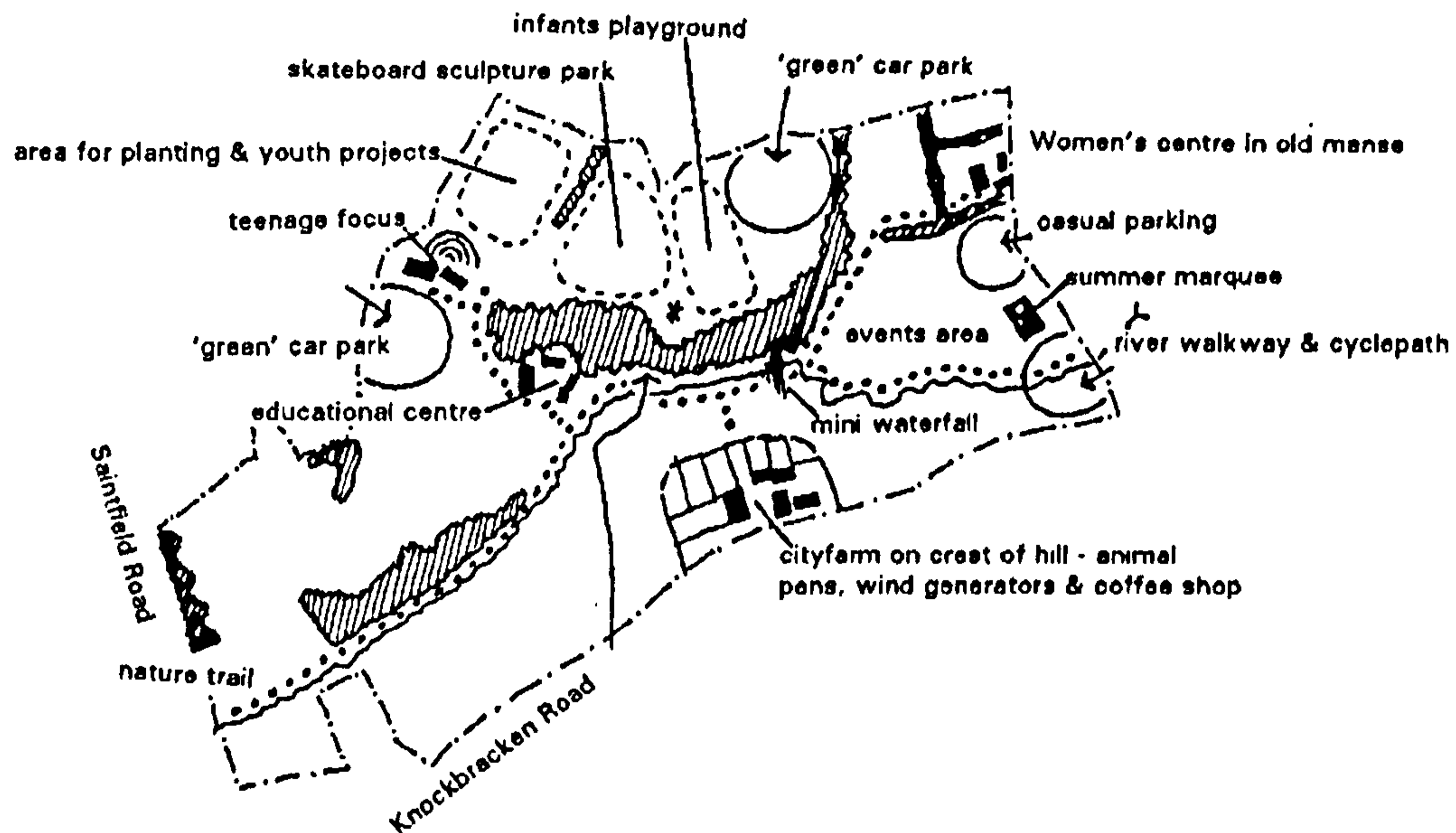


The questionnaire results were the basis for a presentation that set the context for the event and provided an effective design brief for groups to explore spatial layouts and options for the proposed housing area. Following the presentation, individuals were organised into a series of four smaller and manageable groups. Resources were provided for the workshops (OS base scale map of site and surrounding urban area showing specific details on a series of overlays relating to; planning designations, built form, pedestrian/cycle routes, park & ride site, structure planting and formal open space, hedgerows and tree groups, topography, watercourses and sunlight) and a professional facilitator was present in each small group. In each case, the facilitator was not previously involved in the planning appeal but had a professional interest (architectural and local agenda 21) in the operation of an action planning event or in sustainable design. A summary of the spatial output from this exercise (suitable for digitisation on an OS base) are shown below.

Spatial limits and community values

Group One - This group contained a mix of local residents, CRA committee members, local councillors and environmental activists. People felt it appropriate

at the start of the design session to make the strategic decision to aim for an ideal rather than a compromise solution. They went on to sketch their 'showcase' scheme for the requirements of the entire area with a range of new community and recreational facilities serving the existing Cairnshill population. The main elements of the scheme are set out below;



community facilities

- multi-purpose community centre with a range of services for local people - crèche, drop-in area, coffee shop, educational centre (focus on local and environmental studies)
- women's centre based in the old manse (rehabilitation) along Ballymaconaghy Road providing advice, small business support and on-site crèche facilities
- city farm creating a family attraction in the area - promoting environmental best practice through the use of wind turbine generators
- flexible events space with vehicle access along Ballymaconaghy Road - space allowing for the erection of a summer marquee or other temporary uses with casual 'green' parking on a maintained grassed area or grass covered concrete area

landscaping

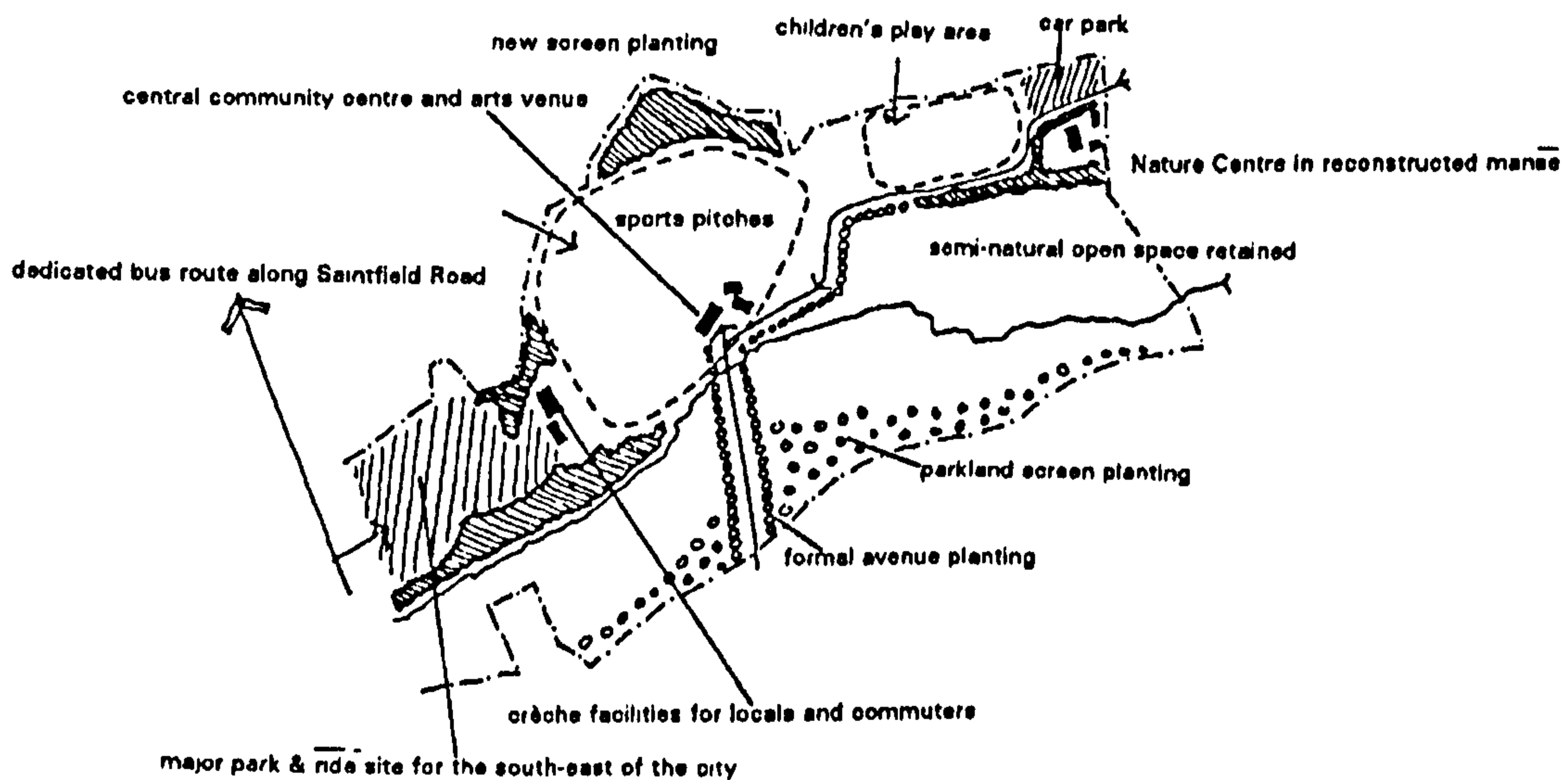
- retention of most of the existing trees and hedgerows
- development of a network of walks and cyclepaths linking into the surrounding countryside/Greenbelt
- a feature riverside walkway following the course of the on-site stream and including adaptations to create a mini waterfall
- the creation of a nature trail through the existing woodland area and a feature woodland picnic area at the end of the trail

- major new area of woodland planting to help screen formal recreational areas and the existing hard edge to the city
- provision of casual 'green'; parking areas where existing road access from the estate already exists - no through routes are included

formal recreational facilities

- community centre as focus for the area, incorporating a high level of youth facilities such as a drop-in centre and organised youth club
- skate & skateboarding park set out around a sculpture trail - youth groups would be encouraged to design and construct their own sculptures or murals (on the existing retaining walls in the area)
- play area for younger children

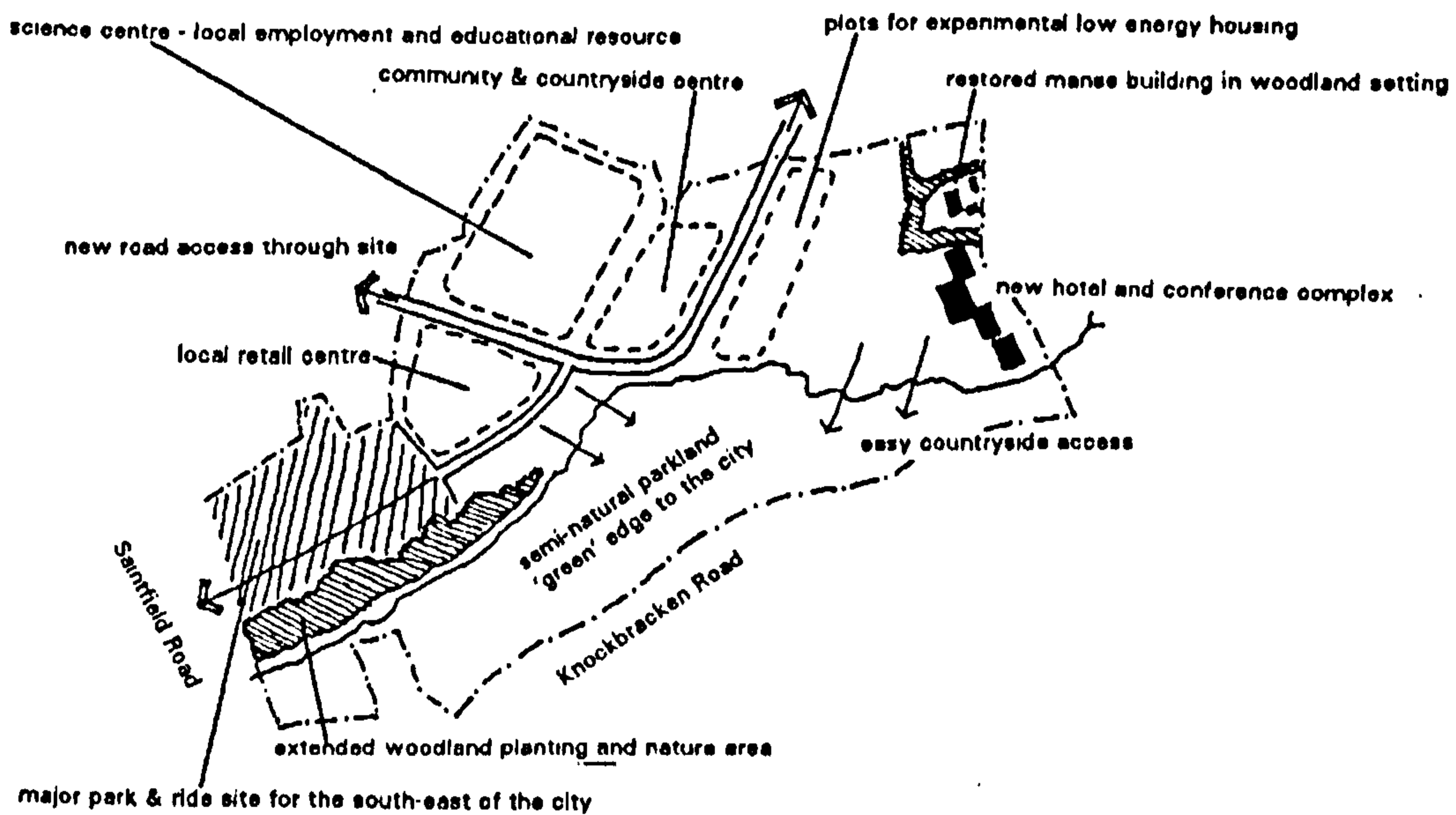
Group Two - This group contained a mix of local residents, CRA committee members and members of outside interests. The priorities for the group were (i) stop more housing and (ii) incorporate a parkland into the design. The park is to follow the course of the stream and include a nature reserve/centre and formal and informal recreational areas. The main elements of the community parkland scheme were;



- purpose built and multi-use community centre in central area (the site of Martin's farm) - with formal avenue approach from the Knockbracken Road
- provide a natural vegetation edge to the length of Knockbracken Road - no boundary fences, just trees, to provide a multitude of easy access points into the community parkland
- retain mature woodland around old manse
- highlight the river and make it into a landscape feature

- pedestrians walks and cycle routes throughout the area but separate from car routes
- speed restrictions of 10mph would operate within the perimeter of the site
- screen planting to hide many of the concrete retaining walls along the edge of the existing built-up area
- new children's play area adjacent to existing residential population
- park & ride area is considered as a possible source for funding the on-going maintenance of the community parkland
- crèche adjacent to the park & ride would be ideally located and provide some local employment

Group Three - This group contained a mix of local residents and local councillors. A range of revenue raising ideas were discussed with a view to finding a range of complementary uses for the local area which may be able to subsidise the creation and management of a major new park at the edge of the city. Many of the ideas were not spatially fixed but seen as possibilities for a variety of locations within the development area. The main elements of the scheme are set out below;



development opportunities

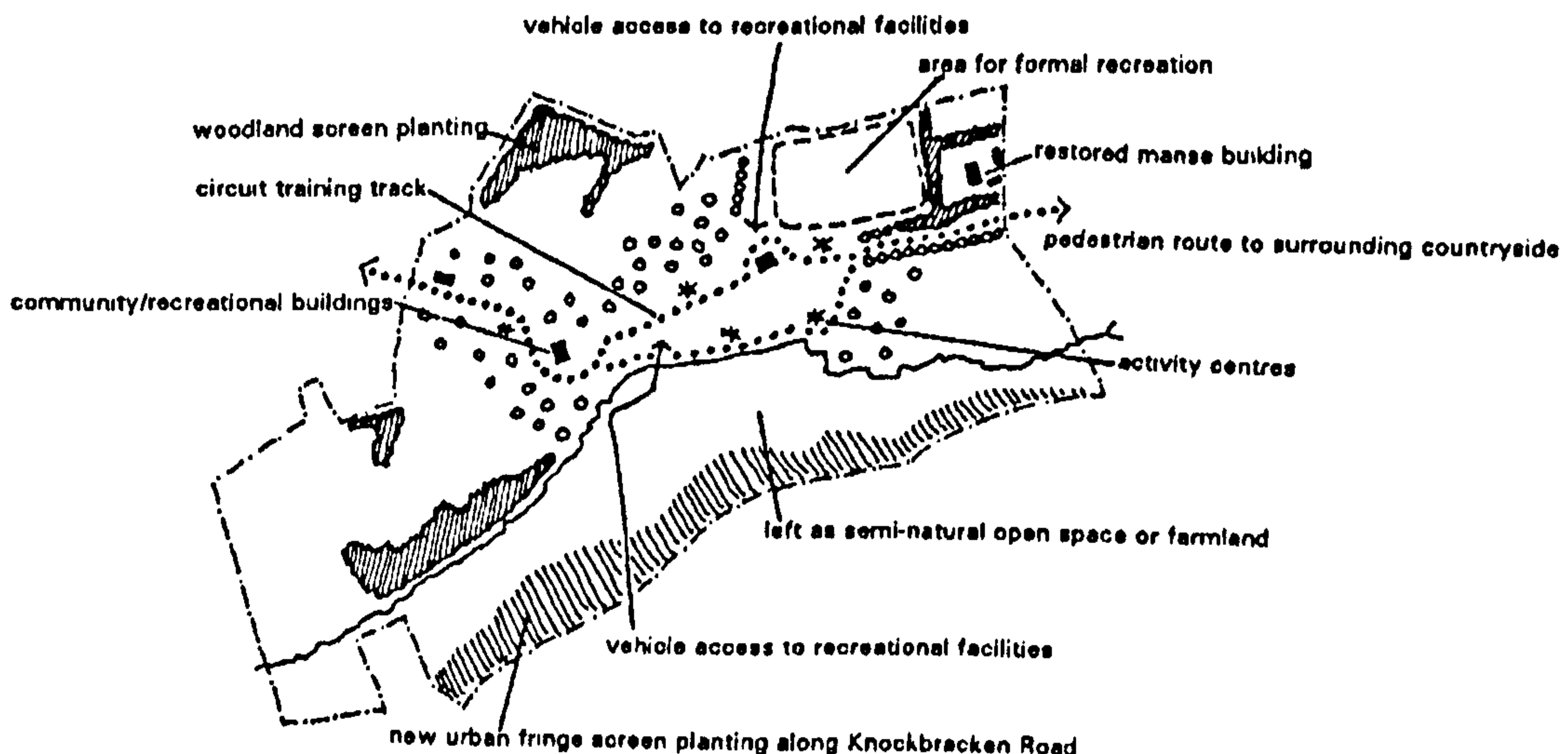
- restore the old manse and wooded grounds to status of local landmark with a possible function as a museum for the Castlereagh area - design preference for a setting similar to that of Malone House
- new hotel complex situated along the Ballymaconaghy Road incorporating a possible conference centre or facility, a swimming pool and other recreational uses - all set within a parkland landscape setting

- science centre as business/employment and educational resource to serve the entire council area - demonstration projects such as wind turbines could provide the on-site energy requirements
- major park & ride facility for the southern approach to the city - area to double as off-peak parking for access to new community resources
- new retailing units to serve local area and commuter traffic - helping to subsidise the non-commercial elements of the scheme
- plots for sale for experimental low energy housing

community facilities

- central community centre with drop-in facilities
- countryside centre as major access point into surrounding parkland and wider countryside walks
- community 'green' for range of local uses throughout the year
- semi-natural parkland to incorporate nature area, formal recreational areas and playing fields

Group Four - This group contained a mix of local residents, CRA committee members and local councillors. The main priority for the group was to alleviate the current under-provision of public open space and recreational facilities in the wider existing Cairnshill area. There was also a distrust of house builders who were seen as the cause of this historic under-provision, and this prevented the group from suggesting any additional housing in the area. The main elements of the scheme are set out below;



recreational facilities

- formal sports pitches adjacent to existing vehicle access on site
- conversion of exiting farm buildings to provide changing facilities and pavilion

- informal walking and cycle routes linking into the surrounding countryside
- informal circuit training in a closed route on-site
- activity centres along pedestrian routes to create a fitness course
- restored manse building as a community resource and major built landmark for the area

landscaping

- 'soft' transition between town and country - additional fringe planting in indigenous species along the Knockbracken Road
- major area of land to be left for informal countryside access - to be managed as a semi-natural farmland and/or wildlife corridor
- new woodland screening for existing housing areas and their concrete retaining walls
- parkland planting of tree groups around existing/retained trees and hedgerows

Collective vision

These layouts were combined after the event into a collective vision for the area. This was drawn in conjunction with the CRA and each element included within the scheme was verified and validated by several of the CRA committee members. Ideally, this validation of the proposals would have benefited from more comprehensive feedback from those who attended the action planning event and the general Cairnshill public.

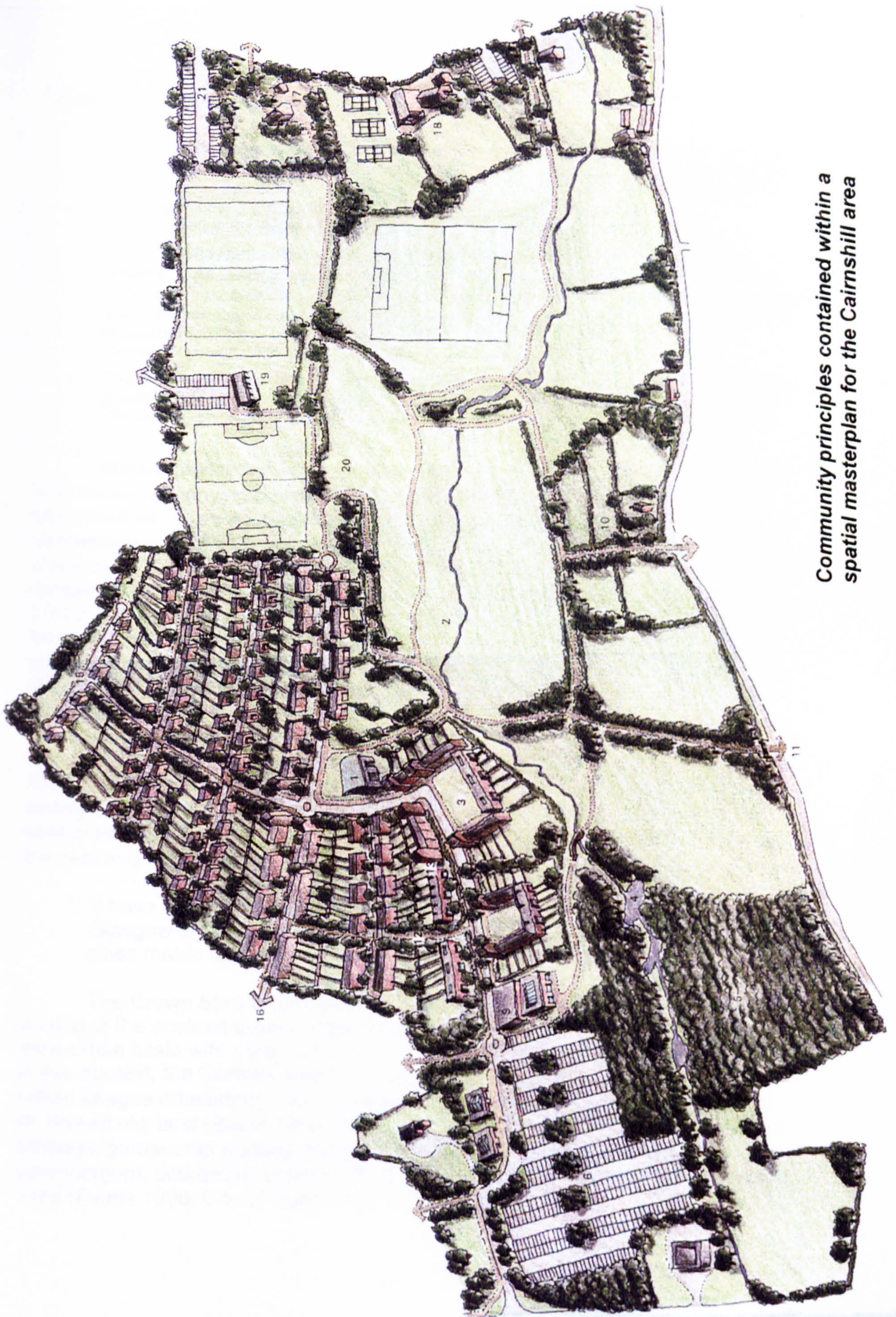
A 'new urbanist' urban village approach to BUAP 'whiteland' proposed by the Cairnshill Residents' Association and designed with assistance from the *Sustainable New Housing in Ireland* initiative.

1. Community centre in the core of the development with adjacent 'village green' for temporary uses and public/ community activities.
2. Central park adjoining the central 'village green' and linked to other public areas through a network of dedicated pedestrian and cycle routes. Informal semi-natural layout is based on retained and reinforced field boundaries and hedgerows.
3. Blocks of experimental low-impact, energy efficient housing. Providing a range of public, semi-public and private exterior spaces at the edge of the city that create a transition between urban and rural.
4. Series of reed-bed sewage treatment pools for local wastewater prior to filtering back into the stream. The creation of a wetland has value as a wildlife habitat and as a local amenity.
5. Community woodland as an extension of existing woodland. Local amenity and extended wildlife value, visual screening of park & ride and other urban elements and a pollution sink to make the urban village CO2 neutral.

6. Major park & ride site for the southern approaches to the city centre. Spaces for 350-400 cars with scope for future expansion. Car park used at weekend and evenings by visitors to countryside centre and countryside park.
7. Park & ride terminal building. Waiting facilities combined with shop, cafe and recycling facilities.
8. Countryside centre. Educational resource and training centre linked into pedestrian and cycleway network.
9. Crèche facility for park & ride commuters and local residents. Combines with neighbourhood retailing made more viable with passing trade.
10. City farm linked by pedestrian network to countryside centre. Hill-top position is enhanced by ridgeline planting following the contours. Tree-lined avenue creates a 'green lane' access to the public open space.
11. Existing road becomes gated and is used as a 'green lane' with only occasional servicing access.
12. Extension of pedestrian and cycleway network through the residential development.

Range of housing types and tenures comprising;

13. terraced townhouses,
 14. semi-detached homes,
 15. limited number of detached units
-
16. Main public transport route through the development - passing all the major public buildings and linking with the park & ride site.
 17. Existing manse building is reused as a visual focus at the high point of the site and provides accommodation for arts centre, drop-in centre or alternative leisure use.
 18. Hotel and conference centre with access from Ballymaconaghy Road.
 19. New sports pavilion and shared formal recreation areas.
 20. Possible site for new primary school.
 21. Car parking is kept to minimum and restricted to the edge of the site. More efficient use of limited space and improved safety.



Community principles contained within a spatial masterplan for the Cairnshill area

Crown Street Regeneration, Gorbals Glasgow

When I came here/I was innocent/Soon found out what/Trouble meant/Now I regret/the times I've spent/in your/Towerblocks and Tenements ... Watch your step/Don't open your door ... Some say this is/a dangerous place/searchlight circles/watch this space/men disappear/without a trace/anonymous faces/lost in the maze/In this town
"Bulletproof Heart" The Silencers (1991) *Dance to the Holy Man* (BMG Records (UK) Ltd)

I was in love/with the thought/of perfection/Yes my World was just a/skyscraper of dreams ... As I walk down Jamica Street/with rain in my eyes/call across the coal dark water/waiting to see the sunrise. Oh you know/There's just no way of knowing/I'm walking down the street/and I just don't know/where I'm going/Out to the river/washing away/the blues/mirror/mystery river/There's no reason for me/to go home
"One inch of Heaven" The Silencers (1991) *Dance to the Holy Man* (BMG Records (UK) Ltd)

Friday night in those mean old streets again/Glasgow's a go go/Hey now all the graffiti is gone/Oh but sometime Jim you'd see a Cistene Chapel/Splattered on tenement stone
"The real McCoy" The Silencers (1988) *A Blues for Buddha* (BMG Records (UK) Ltd)

Martin Pawley writes about a re-emergence of functionalism in urbanism, with an accompanying machine (computer) aesthetic and operating system - described as "... an abstract tartan grid made up of overlaid networks whose connecting points, or 'terminals', are marked by simple coloured circles, like stations on a map of the London Underground ... (and where) ... the meaning is contained in the mass of intersecting lines and the networks they represent." (1998, p. 8). In Glasgow, this abstract language and these culture overlays have been recorded spatially as zones or quarters for the city centre and the surrounding inner area (Tucker 1999 and 1996) and as archetypical images (Scott 1997) that include those of Rab C Nesbitt and the Gorbals as negative characteristics.

Burgess (1998) is one author who has highlighted the suitability of Glasgow as a case study to examine the dynamic interaction between place and people, illustrated through her own content analysis of Glaswegian fiction (other examples include Fyfe 1996). Specifically she refers to the development of a spatial imagination where we can begin to understand the relationship between the real and the imagined.

"I have elsewhere toyed with the idea of drawing a map of fictional Glasgow to be laid over the real map, so that we can see where the two cities match and where they diverge." (Burgess 1998 p14)

The Crown Street Regeneration Project, Gorbals Glasgow was chosen for testing of the abstract quality of life measures and indicators at the urban and intra-urban scale with particular reference to the applied urban village approach. In this context, the Gorbals area has been presented as a good practice study for urban villages (Macartney 1999, Cowan *et al* 1996, Varady 1996), for the reuse of 'brownfield' land (Baker 1996), for the level of community involvement, level of strategic partnership working and the level of quality in the urban scale development, addressing aspects of density, affordability, accessibility and mixed uses (Evans 1996, City of Glasgow *et al* 1995 pp 24-27).

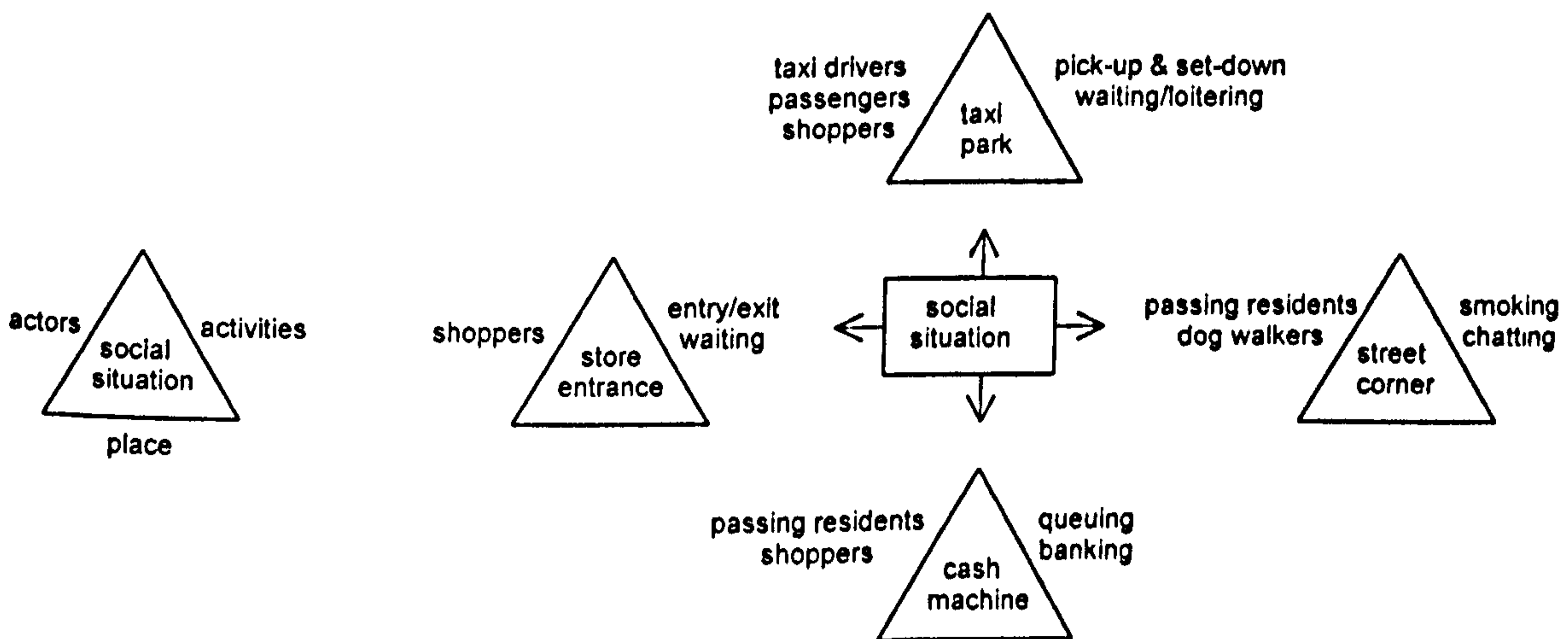
The study area is particularly suitable for assessing a variety of quality of life indicators such as; National comparative indicators of Quality of life and the use of relative indices (showing the limitations of comparative and consistent quantitative data sources); City wide assessment within Glasgow; directional and dynamic measures.

There are measurable, observable and recordable urban attributes within the area Masterplan proposals. This acts as a basis for the use of indicators of physical quality (assessed against prescribed design criteria derived from 'urban village principles' and project specific attributes); indicators of process (such as the creation of partnerships and community) and, particularly, the application of observational techniques within the street, block and the grid layout. Observation and assessment against masterplan attributes allows: (i) an assessment of housing types and architectural quality; (ii) an overview of local area management techniques; and (iii) a record of incidental comments – literary and residents' comments on tenement living and satisfaction.

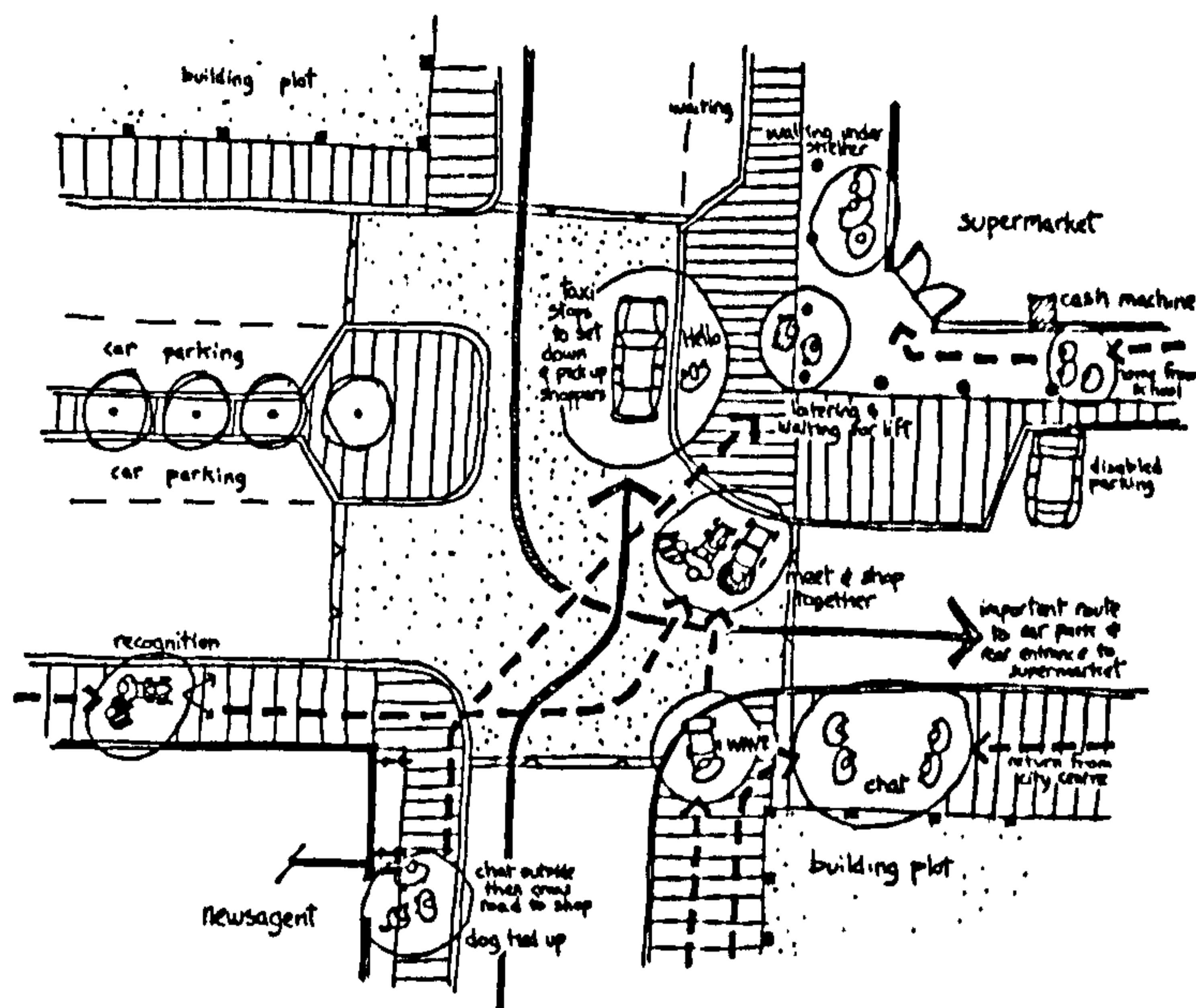
Recording spatial behaviour (informed participant observation)

Local actor interviews (contained in the appendix) and literature scoping exercises were used as a prelude and introduction to the process of participant observation, helping to identify subjects, locations and ensuring the correct description of the process set within the local context and culture.

The Gorbals fits into the "... diversity of research sites ..." (Spradley 1980 p39) suited to the technique of passive participant observation (Burgess 1984). Spradley's triangular model is developed into a cluster of places based on observations of activities surrounding a social situation at a major pedestrian node on Crown Street. I adopted a low degree of involvement as a passive participant with a level of detachment from the events and social interactions being observed and recorded – a role Spradley compares to the 'bystander' or 'loiterer' who has a good vantage-point.



Gorbals Interaction at the supermarket (after Spradley)



Gorbals interaction at the supermarket (after Hester)

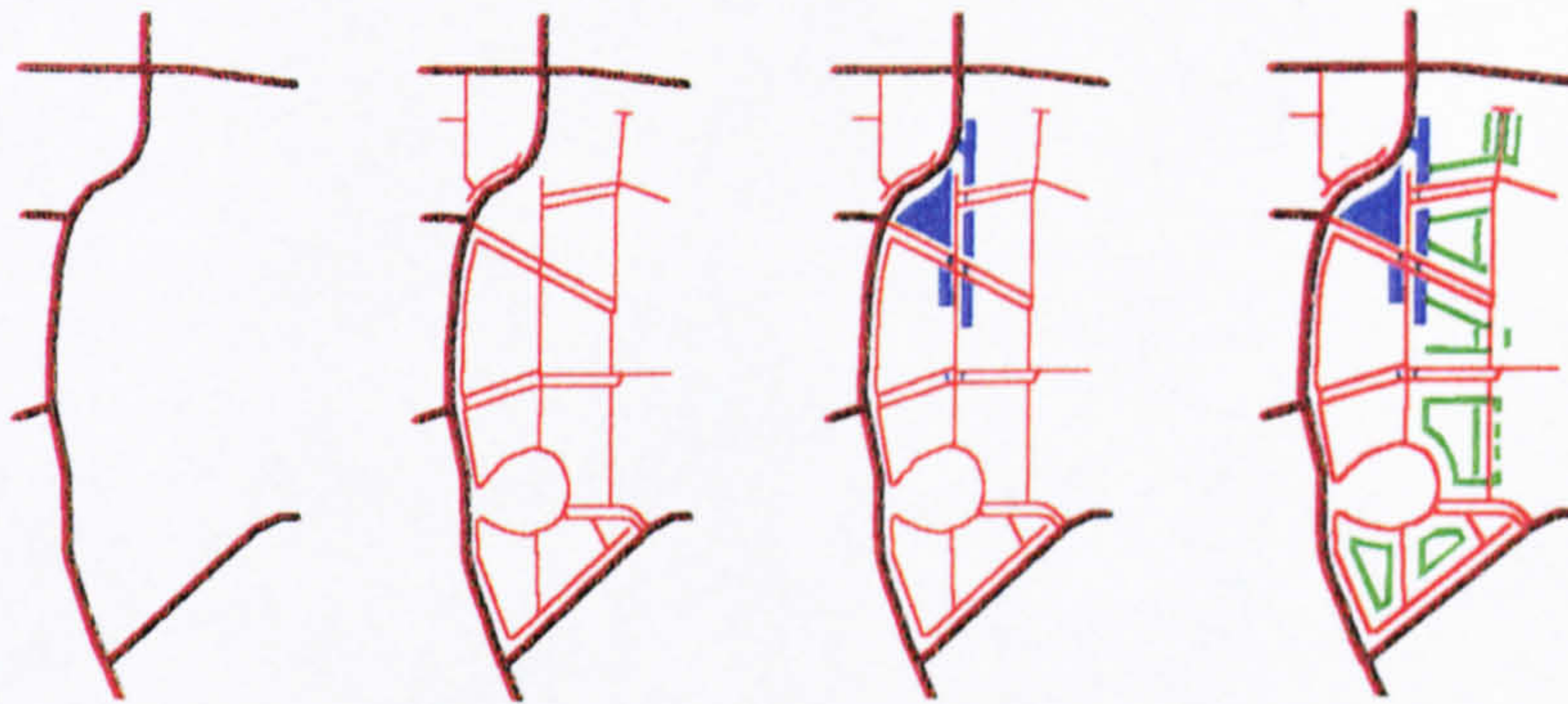
This approach to visually recording patterns of behaviour on a spatial basis is suitable for additional digitisation and analysis. It is one means of assessing behaviour and significant elements within the public realm. It proved to be a useful 'passive' approach suitable to an area of redevelopment that has attracted a lot of academic interest and consequently has already been subject to a wealth of more intrusive research methods.

This view led me to focus on the qualitative attributes evident within the area masterplan and means of recording and assessing these using passive techniques and secondary sources.

Masterplan attributes

Galloway (1997) has recorded the inception of the CZWG architects' masterplan (Wills *et al* 1992) through an initial design competition, the approval and then towards implementation as a new mixed use community that rebuilds over 40 acres of the Gorbals area and raises confidence in the community. The physical form proposed and constructed is specific to the locality, as an adaptation of the traditional Scottish urban blocks and grid and a heavily inspired adoption of the 'continental' urban block forms of Rob Krier (Economakis 1993, Nicolin 1985, Krier 1979).

The framework stresses qualitative but vague attributes such as 'livability', robustness and permeability and shows how these are developed by physical intervention – specifically the grid, the block, the street and the tenement (Wills *et al* 1992, Gilbert and Flint 1992, Horsey 1990). The framework relied heavily on the attraction of "... the tenement (as) Scotland's and especially Glasgow's, archetypal building form. It is synonymous with its strong urban form ... " (Galloway 1997 p29) to build a sense of place and Gorbals identity.

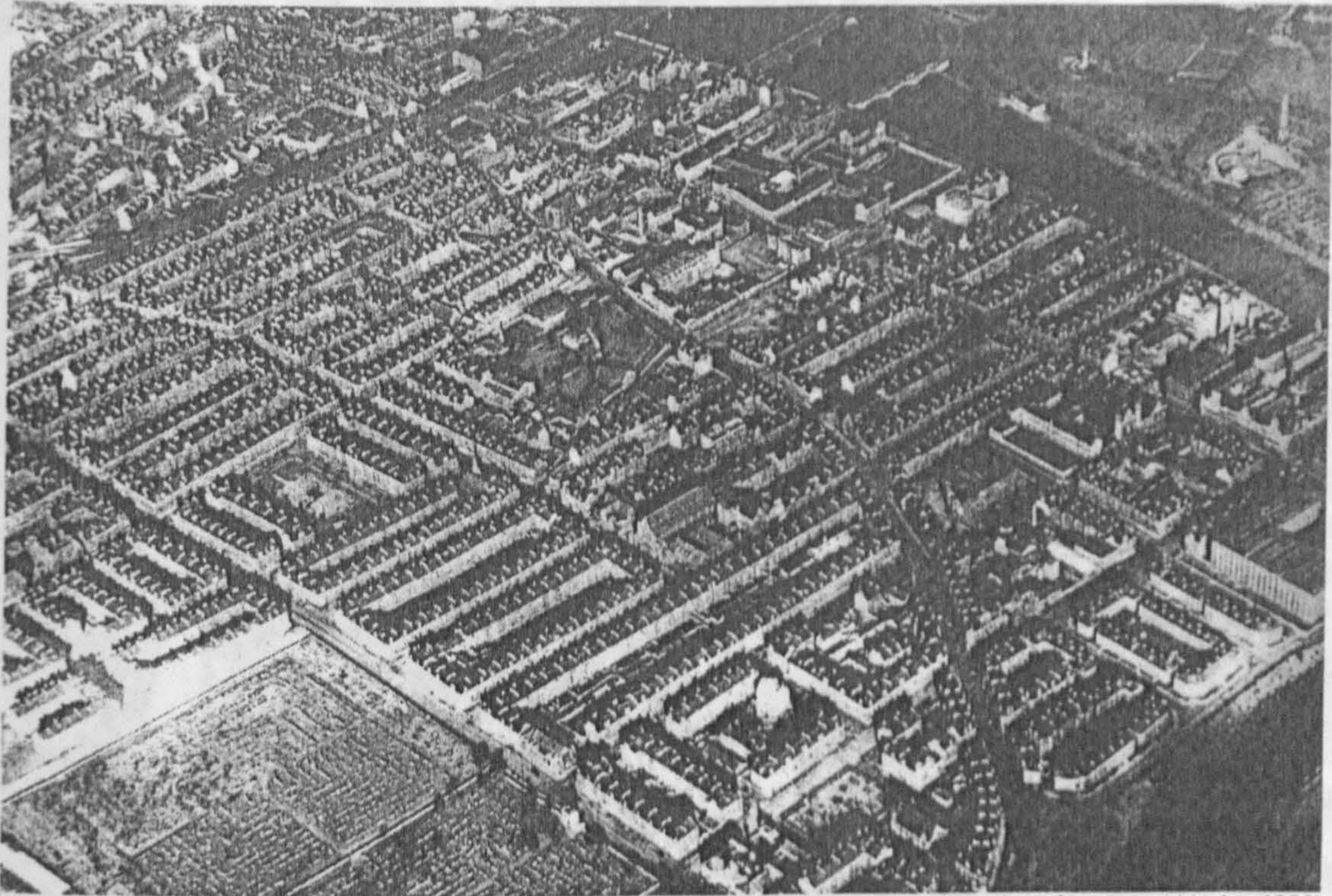


(The CZWG masterplan is conceived as a series of overlays reflecting the traditional urban block and tenement patterns of Glasgow. These design layers of main roads, local roads, shopping, open space and development blocks, as suitable for mapping as elements with attributable qualities taken from the published masterplan (Wills *et al* 1992).)

The tenement form exhibits a fairly regular rectangular street block and is made up of a variety of apartments, this block being traditionally filled with industrial uses. However, this form was removed in a period of 1950's and 1960's construction and reconstruction as a physical manifestation of unfit and overcrowded slums. The Hutchesontown area of the Gorbals was the first to be cleared of tenements, to be replaced by 4 storey deck access and multi-storey towers, forms that in turn became 'modernist slums' (Glendinning 1997). A reverse reaction to that of the 1950's is now occurring, where housing improvements (often labelled as 'gentrification') on a small scale, built to the tenement form is helping the survival of the City's tradition of "... monumental domestic architecture, a vital part of its urban culture" (Horsey 1990 p80) and a recognition of the resilience of the form to new lifestyles and new uses. Yet, it is proving to be a form of development that is popular (Forbes 1996), meeting the most important objective / criteria of the project that people will choose to live there (Wills *et al* 1992). Thus, possibly one of the best measures of quality, in conjunction with an assessment against the masterplan principles, is the commercial success and popularity of the area as its image is reinvented.

Visual record (photographic sources)

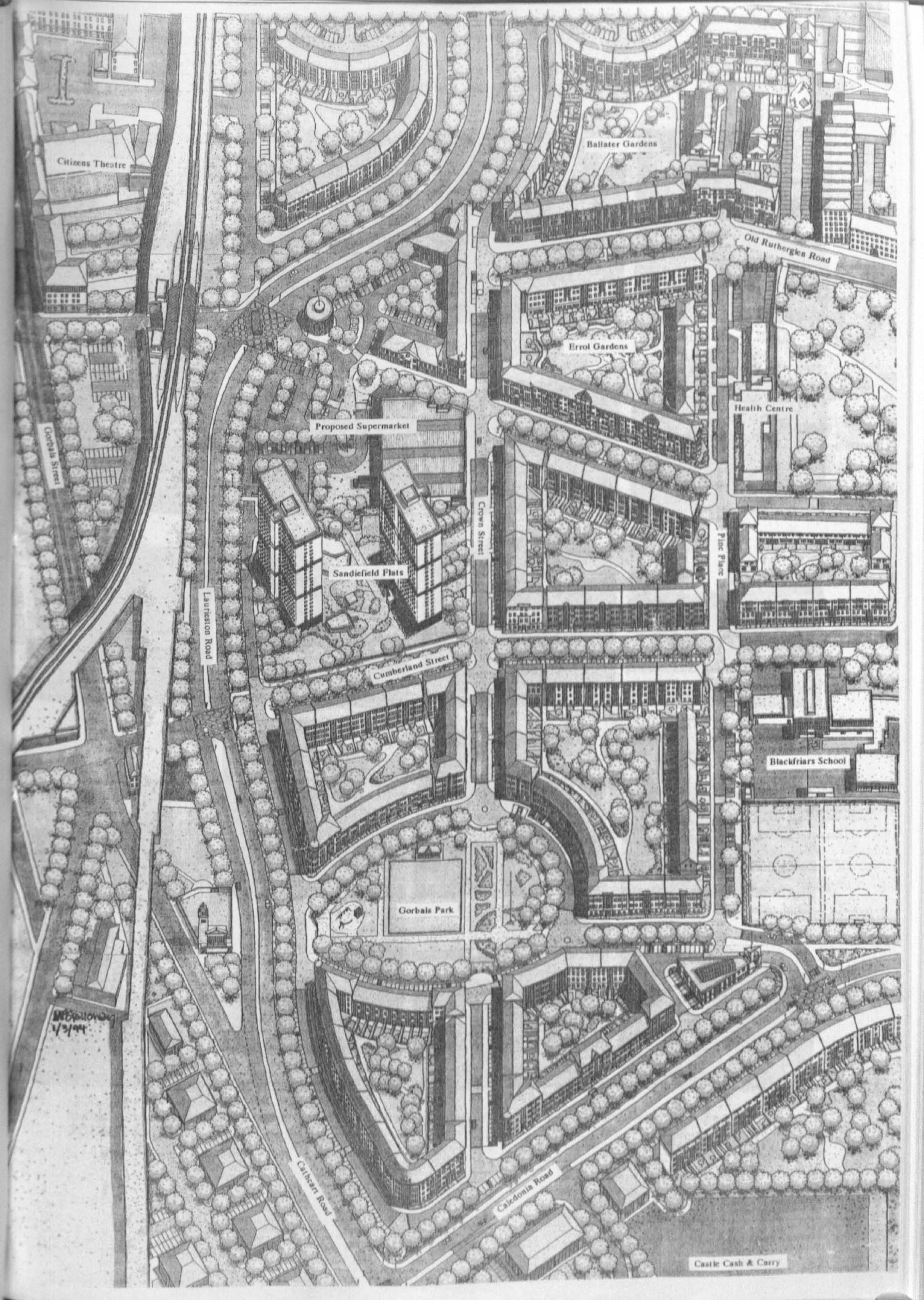
These urban design principles and the rationale behind them, have been expressed within publicity material for existing and prospective residents (Crown Street Regeneration Project undated) with a number of frequently asked questions. It is hoped that these regular newsletters will develop into a community resource and assist in the engendering of community. It is recognised by the project team and the local authority that real participation involves some devolution of power and is consistent with an exit strategy that stresses the importance of local residents to continue to manage and maintain their neighbourhood (Galloway 1992, Johnson 1996). The most appropriate manner in which these combined attributes can be assessed is by visual techniques – qualitative and passive. With a combination of aerial / site photography (photo grid), and axonometric drawings as visual indicators shown below.



(aerial view of the Gorbals showing proliferation of tenement blocks, 1956)



(aerial view of Gorbals, 1965)



Citizens Theatre

Ballater Gardens

Old Rutherglen Road

Errol Gardens

Health Centre

Proposed Supermarket

Sandiefield Plats

Place Place

Cumberland Street

Blackfriars School

Gorbals Park

Lauriston Road

Gorbals Street

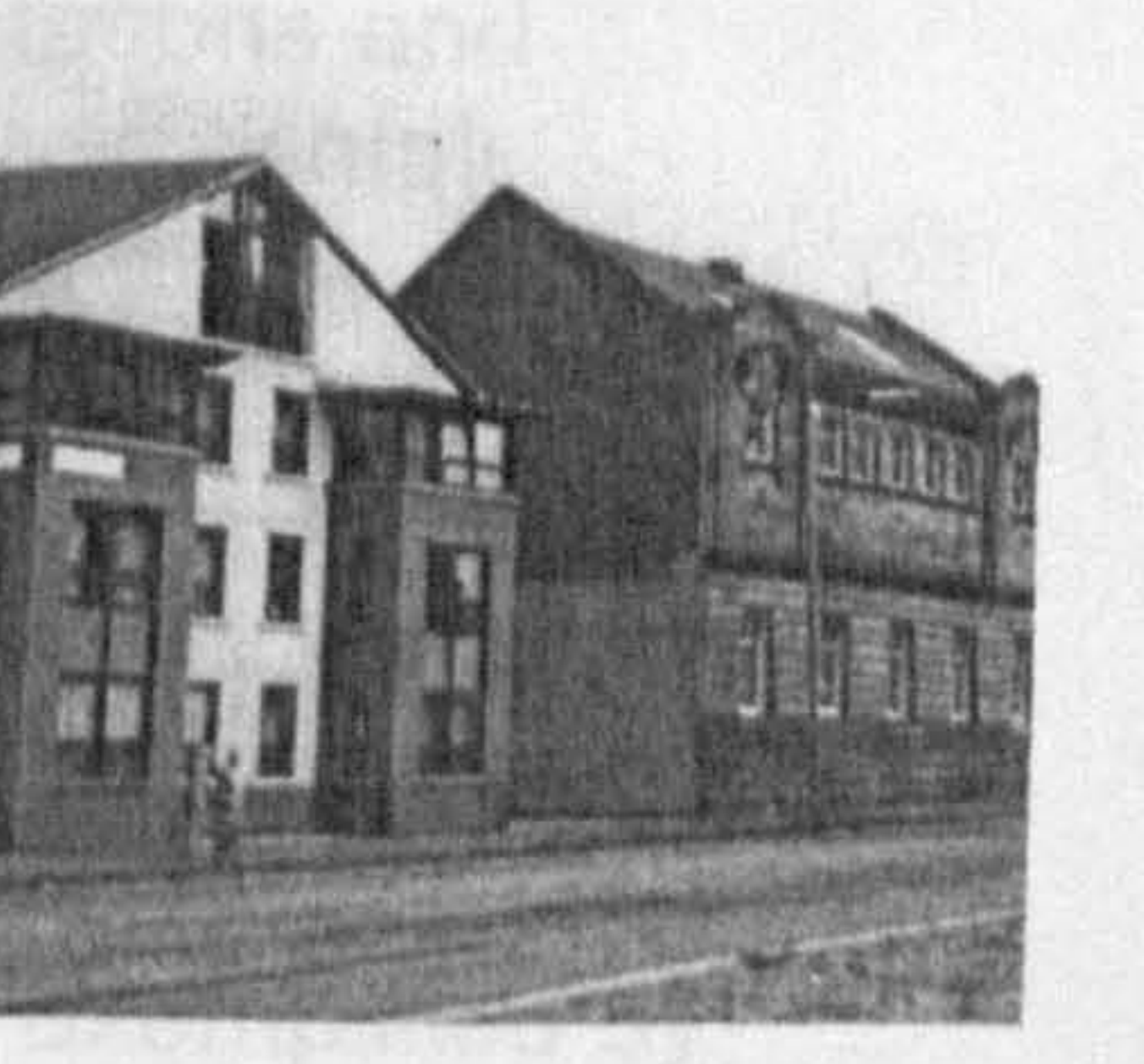
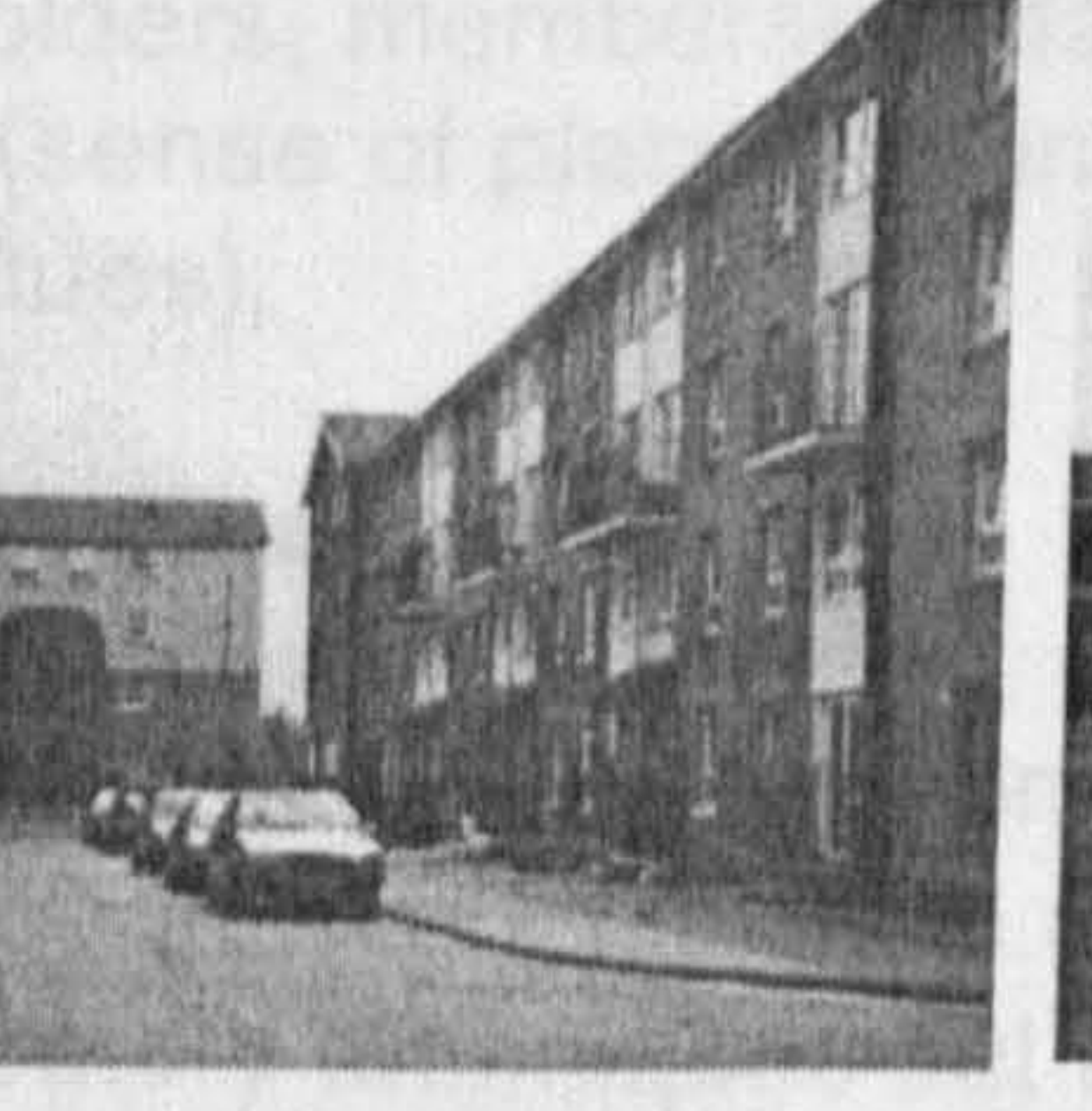
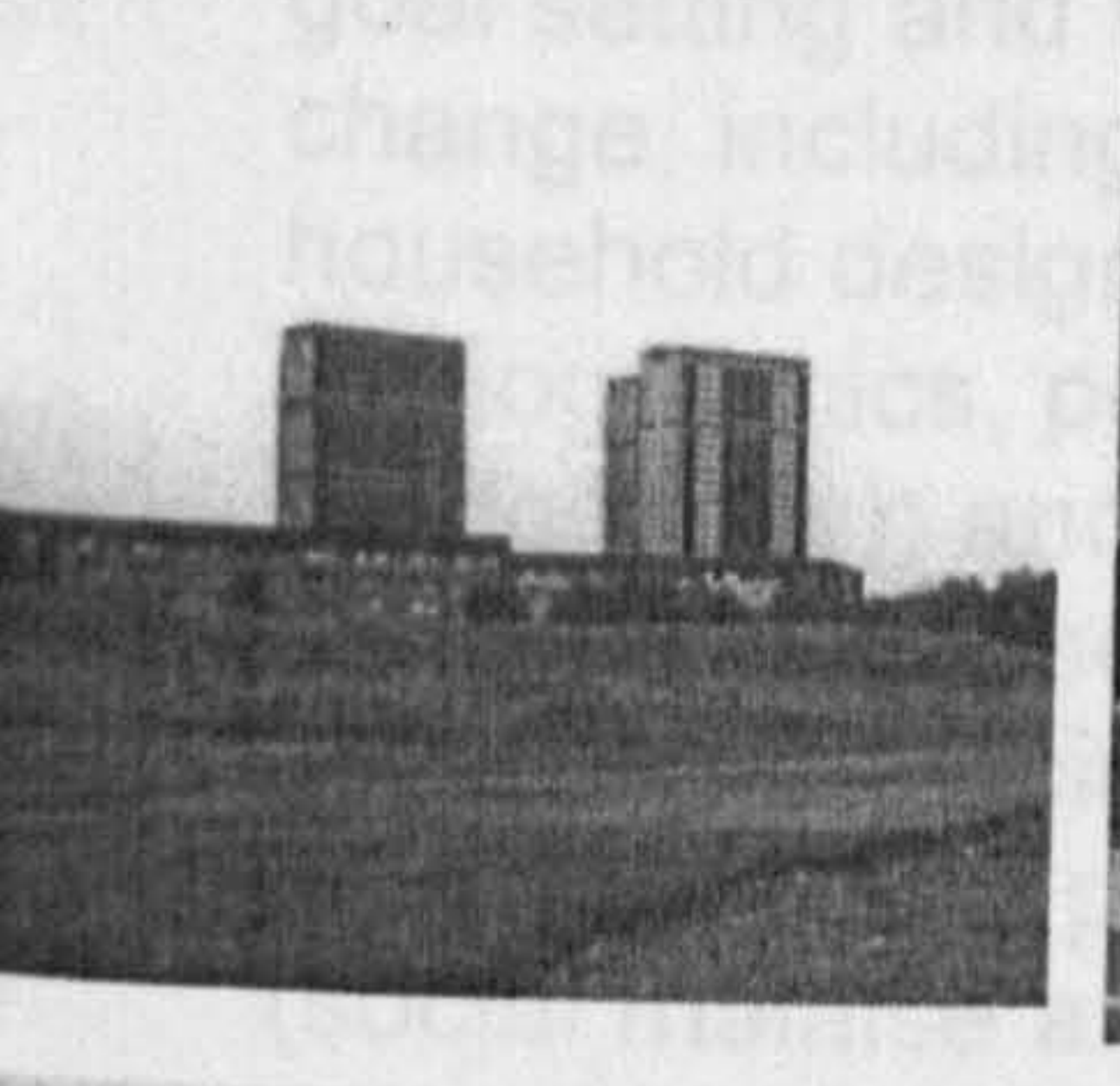
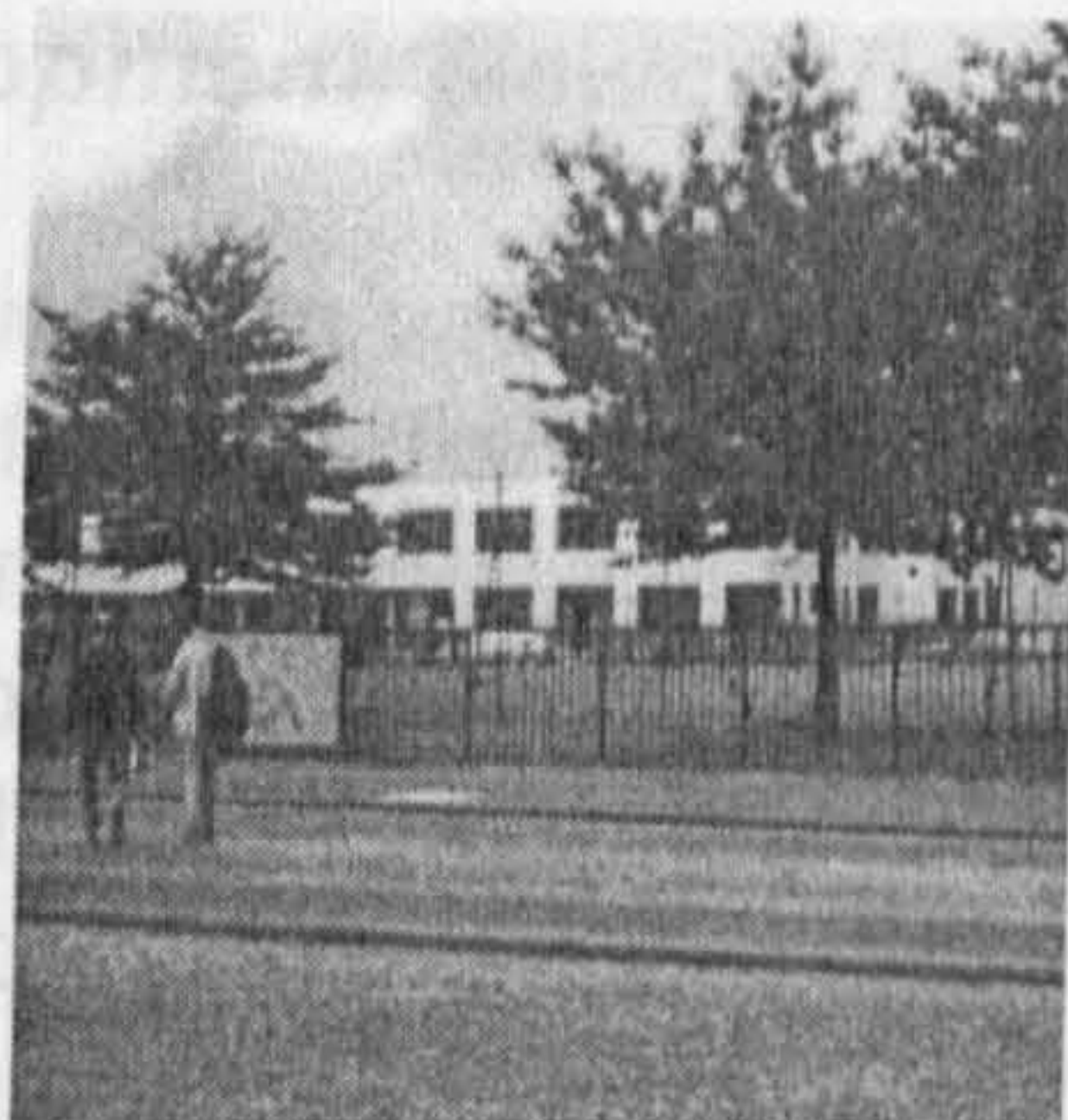
1/2/94

Caledonia Road

Caledonia Road

Castle Cash & Carry

Byker Redevelopment



(partial Gorbals spatial photogrid (after Lynch undated) as a low cost qualitative survey / recording technique of the physical environment)

Byker Redevelopment, Newcastle upon Tyne

Girls are walking with their mothers, shopping for clothes/Sons are sitting with their fathers, fishing for ideas in their souls ... The roads are stained, it seems impossible to clean/The oil and the salt mix to a shiny, shiny gleam. Down by the river its getting cold ... But it won't stop the bastards trying/And it won't stop the people from dying/And it's all because of you ... Down by the river its getting cold

"Down by the River" China Drum (1997) *Self Made Maniac* (Mantra Recordings)

The Byker redevelopment was chosen to review the effects of a large-scale participation process and the subsequent management procedures within a well-defined urban community. This involved an evaluation of the extent to which effective participation and urban management in the creation of a mixed housing area can maintain and enhance a sense of community ownership and responsibility, effectively testing of end-user feedback into the design and master-planning process.

The case study tests potential indicators of physical resilience and on-going community involvement, empowerment and effective management (after Finger and Kilcoyne 1995). A section of this case-study linked these measures with indicators of physical adaptability and robustness and a range of primary and secondary data sources was collated and geographically represented to show the links between various spatial indicators. It included; (i) indicators of community and neighbourhood, looking at social networks (community facilities, infrastructure, landmarks, districts and neighbourhoods, public/private differentiation), community values (Lynch 1981) and spatial networks (self-evaluation and association); (ii) indicators of participation and empowerment in goal setting and through the design process; (iii) indicators of robustness and change, including measures of physical resilience (strategic, neighbourhood and household designed and ad hoc adaptations) and social change (local demographics, politics and local government, housing management and fiscal implications); and (iv) indicators of management and change in physical systems – buildings (personalisation, sub-division, change of use, dereliction), energy (CHP, waste incineration), landscape (recreation, security), transportation (car-free design and public transport provisions) and social systems – crime/conflict (social malaise and vandalism), associations and involvement (identification of actors and stakeholders, membership, family connections), expectations and satisfaction levels (sense of place, community perceptions of environmental change, shared values).

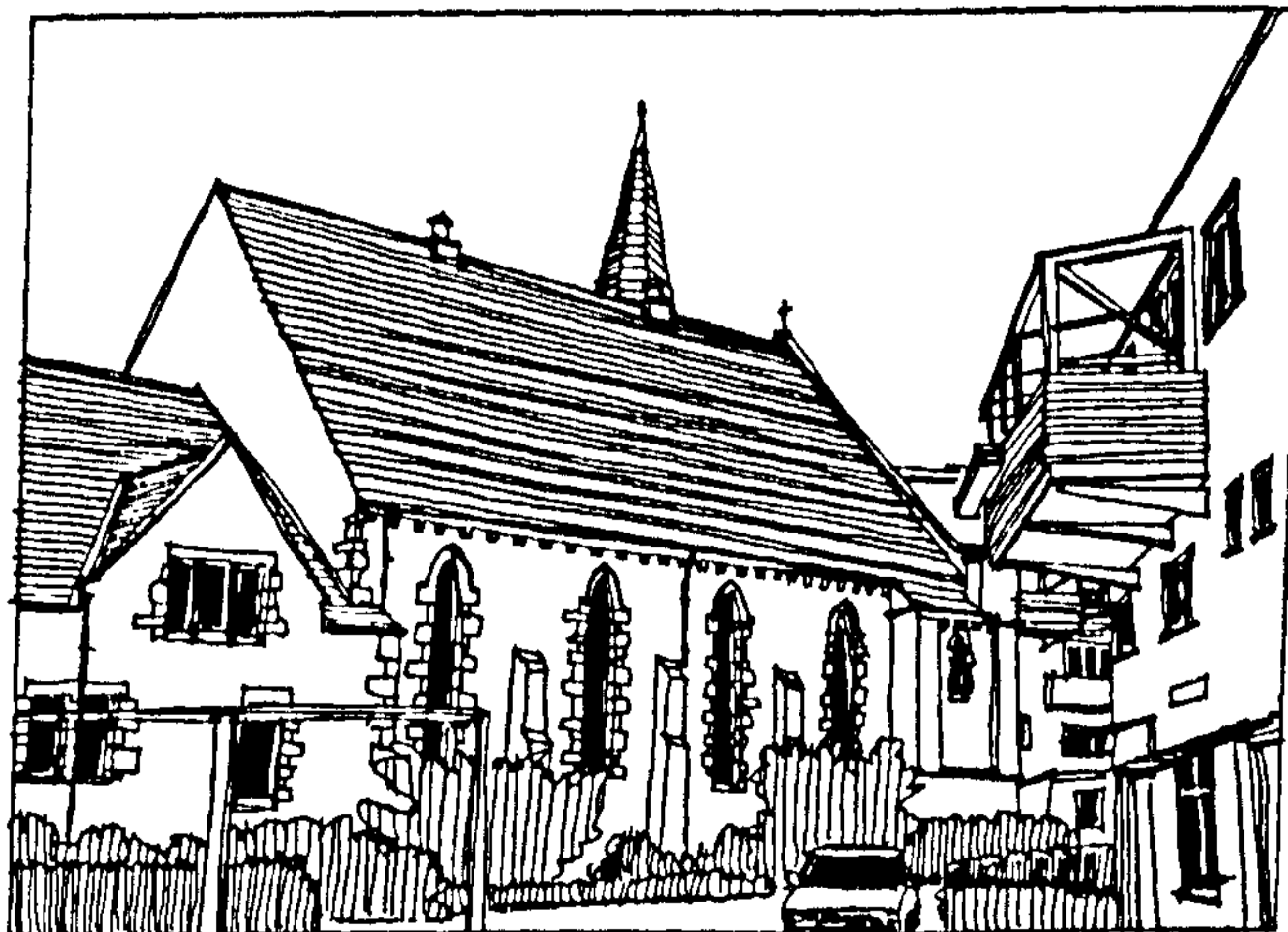
Indicators of involvement

Comerio (1987) chronicled the emergence and growth of the community architecture movement from its roots in advocacy planning (Davidoff 1965) to the point where participatory techniques set a distinct design process, exemplified by the redevelopment of Byker by architects Ralph Erskine and Vernon Gracie (Comerio 1987 pp 16-17, Jencks 1988, Erskine 1980). This has the danger of

placing too much emphasis on the process and feedback rather than the product – a product that should be a unique solution to the locality specific problem, raising the question of when community architecture/design stops and community development takes over.

The Byker redevelopment began at a point where local government adopted the principle of comprehensive planning; set out in the Development Plan Review of 1963. This plan set the boundary for the redevelopment area and developed it into the idea of Byker as a community – a community with a commitment to a unique locality. “Byker people saw themselves as a cohesive friendly community, and there was good evidence to show that a high proportion of people had lived there all their lives, and that very many said they wanted to stay there.” (Malpass and Murie 1982 p218). The relatively high densities and the nature of the street layout that ensured a lot of social contact was seen as a contributory factor, if not the dominant element, in the strength of this social unity.

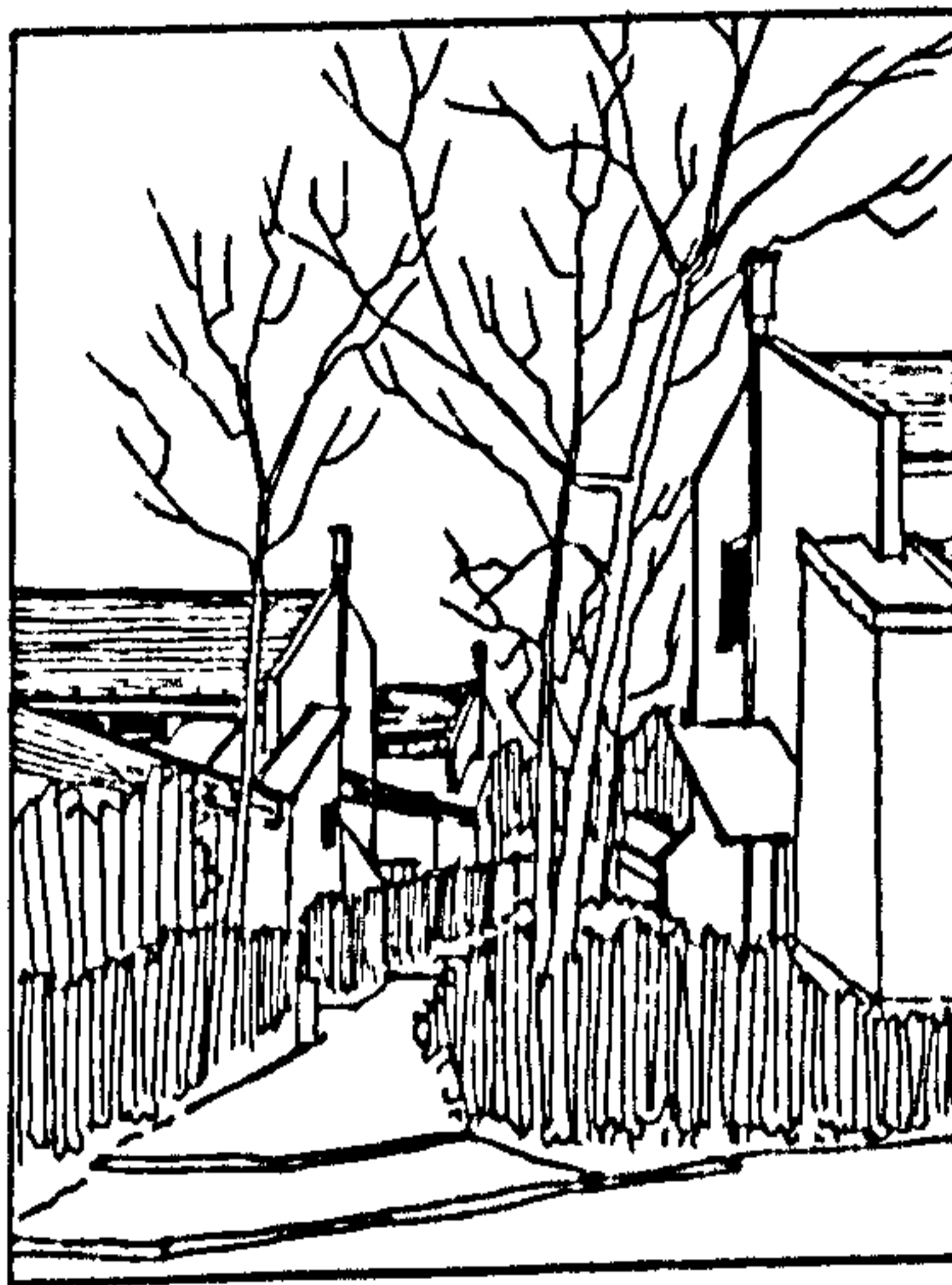
This sparked community action in the area, focussing local efforts on a policy of public rehousing that sought to retain the community. There was no community process built into the initial plans and it is suggested (Malpass) that the spirit of community in Byker and the strong sense of social entity (Rowntree 1975) was the key factor behind the adoption of a participative process as an additional, albeit poorly defined (Egelius and Futaguwa 1980), ‘policy layer’. A layer that sought to protect communities by retaining population locally and by fostering community spirit through physical design. Discounting the monumental Byker Wall, the result has been described as “... short terraces arranged in intimate groups with liberal provision of small communal space for play and gossip” (Barke and Buswell 1982 p65).



(Example of Public Baths and church buildings as retained urban elements of community value as a measurable indicator of community involvement)

This physical ‘community orientation’ placed value on the community and social fabric of the area as well as pressure for the best building stock to be retained. The redevelopment quickly became perceived as a prestige scheme

where local preferences; particularly that of retaining the well-established community networks would be central. "Within a relatively very short period (1968-1970) the notion of retaining the community had come from nowhere to occupy a highly visible place in this policy framework." (Malpass and Murie 1982 p220). While this approach was praised and achieved a high degree of positive press coverage, it is slightly slanted, in that the approach was a personal / professional preference of Erskine (Collymore 1994), and missed the fact that around half of the population density was re-housed somewhere else (Barke and Buswell 1992). This is borne out by empirical census records on the demographic make-up of the area (Newcastle City Council 1993 and 1988).



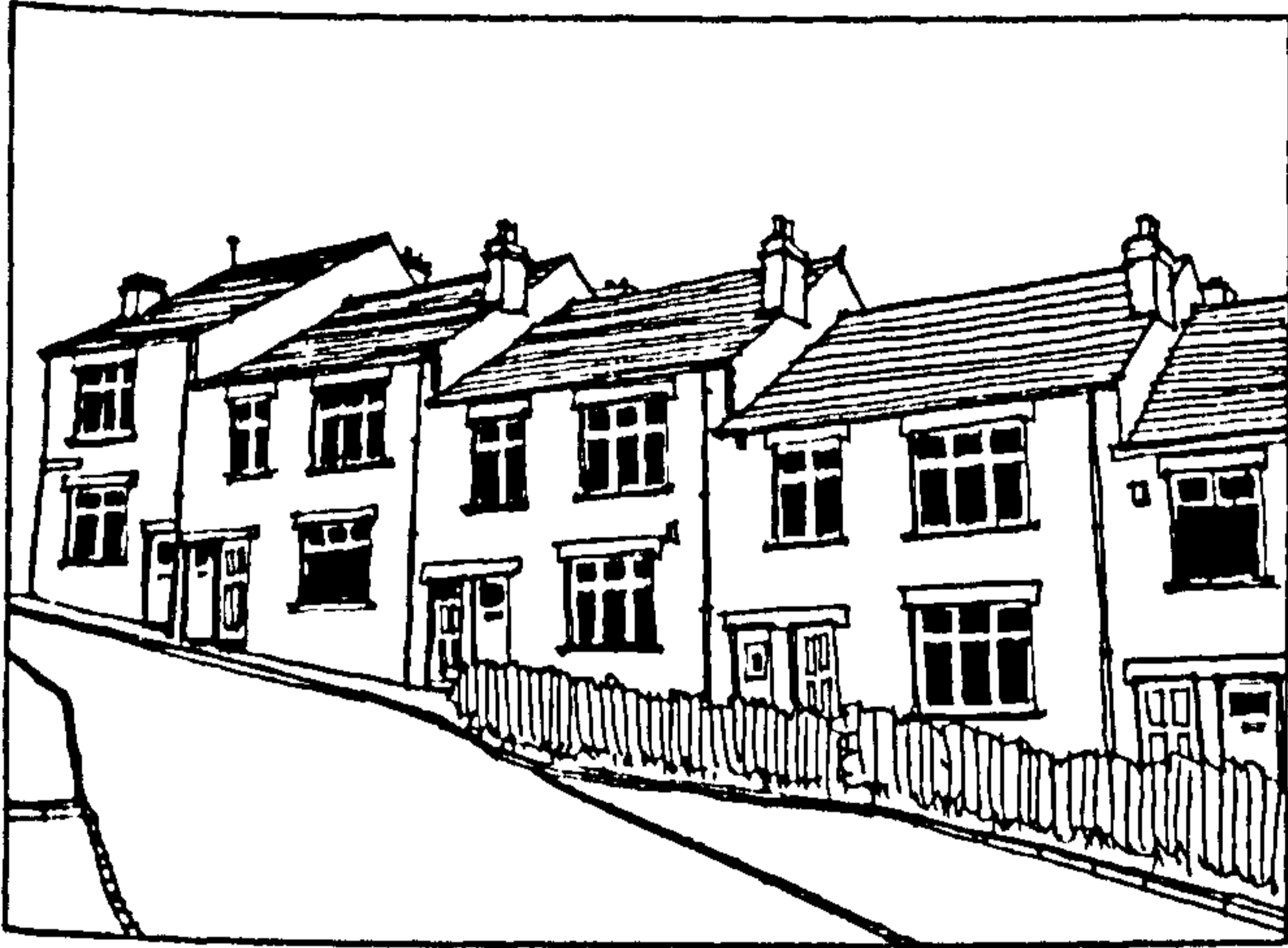
(The Byker Wall is the most prominent physical element of the redevelopment (left) but the low-rise (right) is more typical of the majority of the development – resulting in a substantial loss of population from the area)

Community elements, such as shared places, both hobby rooms (where community groups still meet) and open spaces, were built into Erskine's idiosyncratic designs. His background in low-rise social housing being influenced by his work with 'garden city' architects Soisson (Collymore 1981) and the promotion of an English village, characterised by the 'green' as an intimate social space.

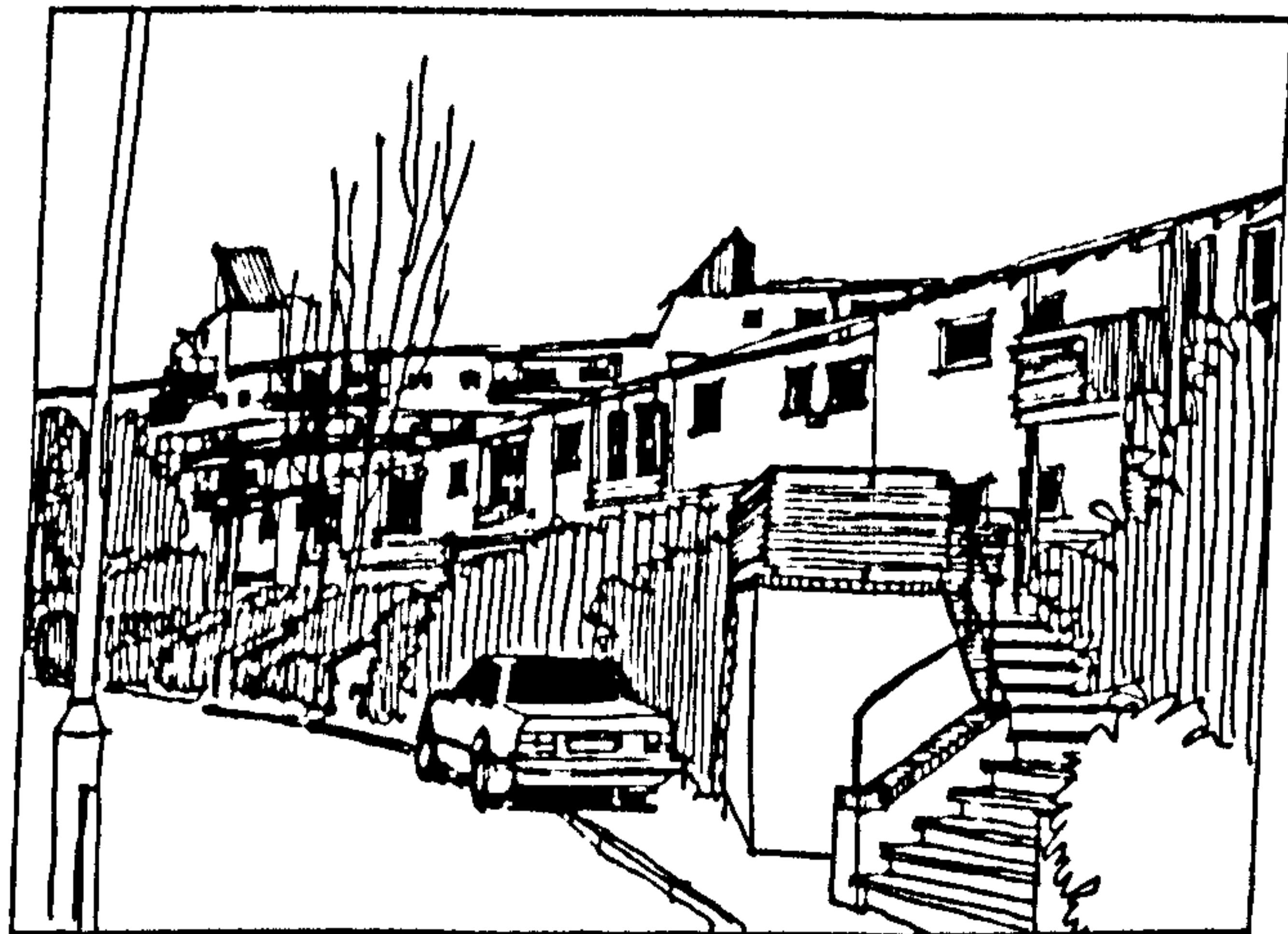
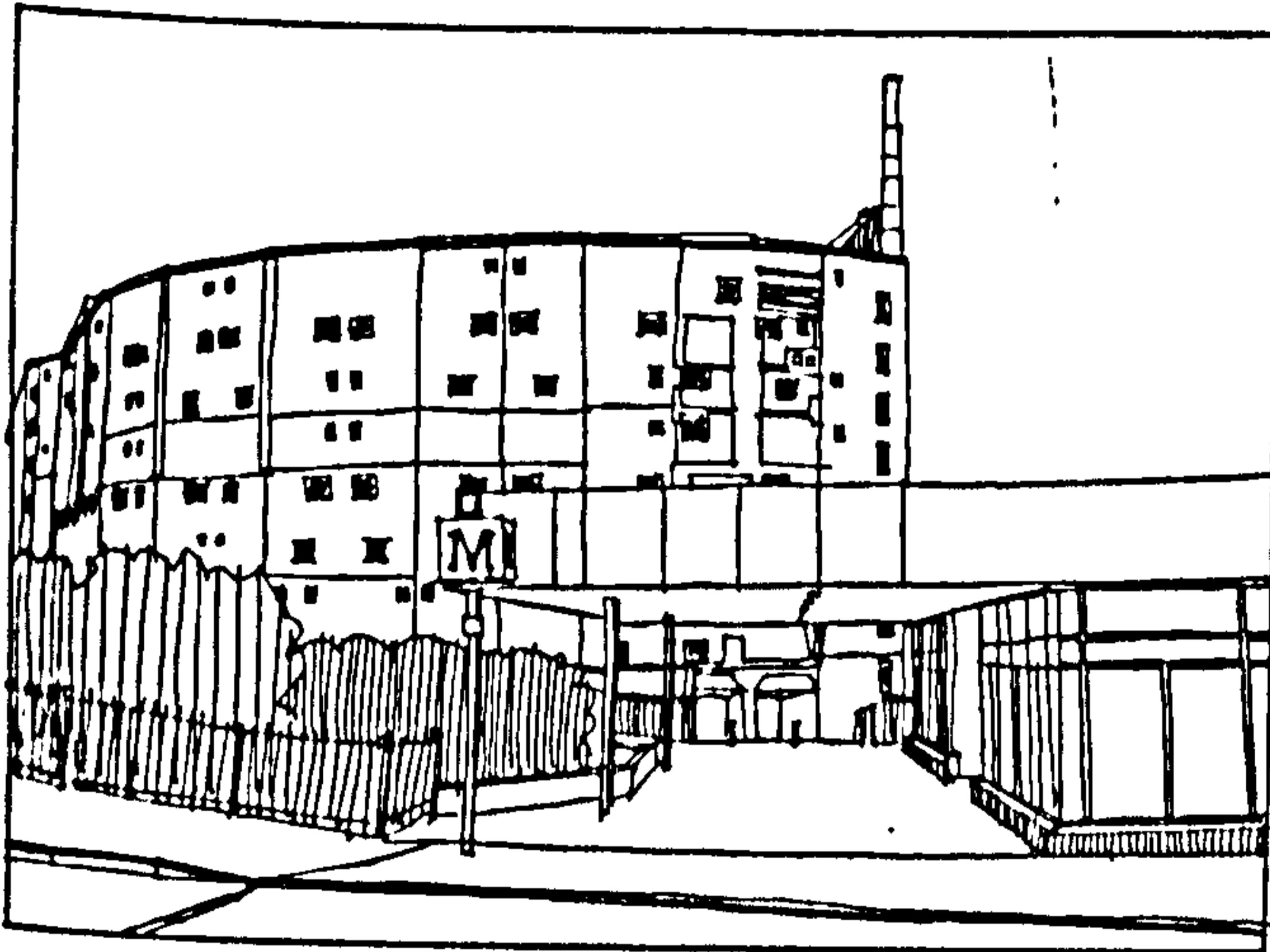
What is apparent, is that housing policy throughout the redevelopment was dynamic, reactionary and incremental. The most visible aspect of the local authority, the participation, was an afterthought and it is uncertain if the commitment at both member and officer levels was as apparent as the commitment to physical redevelopment – a reflection of 1960's determinism. Even the approach by Erskine and his team was 'open-ended' (Amery 1974) and evolved in response to local involvement. Robustness and flexibility were both process and design characteristics, allowing for on-going adaptation. For example, flexible housing units where 5 bedroom family homes could be easily converted into two 2 bedroom flats. Ironically, it was the lack of robustness of the old housing stock to changing needs, lifestyles and demographic trends that condemned it (Sjostrom 1976).

This did reflect a changing role of the architect, from autocrat to diplomat, taking a less deterministic approach and stressing flexibility, adaptability. (Architectural Review 1974) and social justice (Hultin 1981). The architect

drawing on knowledge from sociology and politics (Egelius 1981) and the recommendation of the Skeffington Report (Ministry of Housing and Local Government *et al* 1969, Erskine 1976a p35) as much as physical design – Erskine(1976b)describing it as a 'genuine collaboration' with the resident clients rather than the commissioning client (local authority).



(The unresilient 'Tyneside flats' (left) that remain in Byker. What appears to be terraced houses, is actually ground and first floor flats at a high density – note double the expected number of doors. These were replaced by a flexible block (below) – the Wall – designed to be able to be adapted and sub-divided both horizontally and vertically to provide a range of accommodation, from one bedroom flats to five bedroom family homes.)



In the redevelopment, there were difficulties and limitations for the population to become fully involved in the redevelopment due to lack of skills and control, leading to a charge of superficial community involvement. Others dismiss criticisms of tokenism and view the approach as well intended, successful and effective, most clearly in the development of social organisation, mobilisation and advocacy skills (Young 1980). The approach was affected by the attitudes of elected members and local residents, which in themselves altered in the course of the redevelopment.

The design process was useful in building trust and bringing the council and community closer together. It also helped to formalise community organisations and social networks and developed the role of participatory groups from physical regeneration to more holistic community development, advocacy and welfare/support (Hampton and Walkland 1980) and onto area management and local agenda 21.

Indicators of adaptation and change

“the longer-term perspective in the Byker example draws attention to policy-making as an incremental process in which problems and objectives are gradually refined and redefined. Various themes and goals are woven together, not necessarily neatly or cohesively, as new problems emerge and new solutions are promoted by a succession of dominant individuals and groups” (Malpass and Murie 1982 p216)

“... one must ask, how well will it last?” (Amery 1974 p362)

Malpass's summation of the redevelopment stresses the importance of robust design, of the physical product and the community development process, as both sorts of conditions will change throughout the life of the redevelopment. The longevity of the development is directly dependent upon the resilience of the physical environment to adapt and change to meet these changing social conditions. Thus, indicators of physical adaptation (informed by local residents) have been chosen to reflect the level of alterations and adaptations post-completion. This is the 'organic architecture' approach anticipated and favoured by Erskine.

“By choosing loose adaptable forms which are capable of developing in different directions according to the demands of their use, the lie of the land and the orientation, Erskine can allow his projects to develop with their own more natural logic, with fewer constraints than formality would allow.” (Collymore 1994 p34)

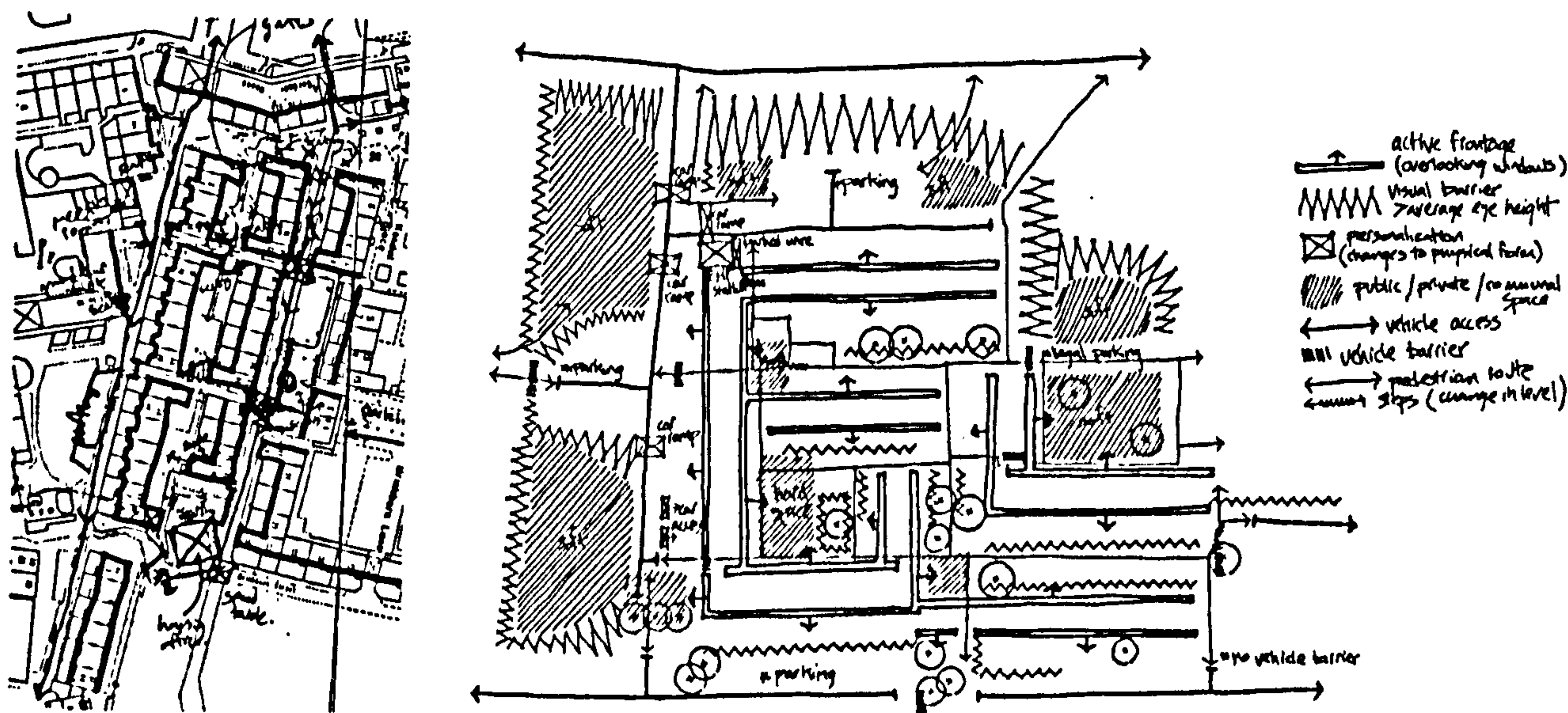
Indicator selection was informed by a series of agent interviews (recorded in full in the appendix) that helped to contextualise, suggest methods and provide a link to on-going agent action. These interviews of a range of local agents involved in the planning, design and on-going management provided routes to a

mix of measurable and/or mappable indicators. These are not discrete and can act as indicators of community, management, involvement or change.

One possible indicator is the actual impact community capacity building and physical changes made through the participative process. Was this real participation, or simply feedback from early phases of a long-term project, influencing the later design details?

“One cannot help totting up the number of items in the design that have been changed as a result of participation, and using this as a measure of success.” (Rowntree 1975 p338)

One change has been the improving accessibility to public transport, with the development of the Tyne and Wear Metro system in the 1980's. This shows a recorded 50-75% improvement in access (20 minutes travel time) to jobs and employment opportunities from the Byker area (Lewis 1986 p28, Davoudi *et al* 1993), in addition to other transport modes (Friends of the Earth Tyneside 1991).



Record of Shiblev Walk and Janet Square

Physical indicators of adaptation and change within Byker as directly recorded by annotated tour with residents' groups and 'community champions' (Selman and Parker 1997 p180), recorded on a 1:1250 scale OS base map and abstracted onto summary map. The initial physical indicators chosen for local recording were; presence of a visual barrier (approximate height above average eye height), personalization (householder initiated changes to physical form), vacant properties, presence of vandalism and/or graffiti, active or 'live' frontage (presence of overlooking windows from surrounding buildings), location of public/landmark buildings, open space (defined by public, private or communal

use), vehicle access points and barriers, level pedestrian routes and those with steps. The community is, in essence, adopting the role of a crude map-maker, updating the OS information so it fits into a spatial continuum (Source maps start from the early 1898 and 1916 versions through to the Erskine masterplan, the 1991 OS version and the resident's annotated update). This data set can then become digitised as point, line or polygon within a GIS framework.

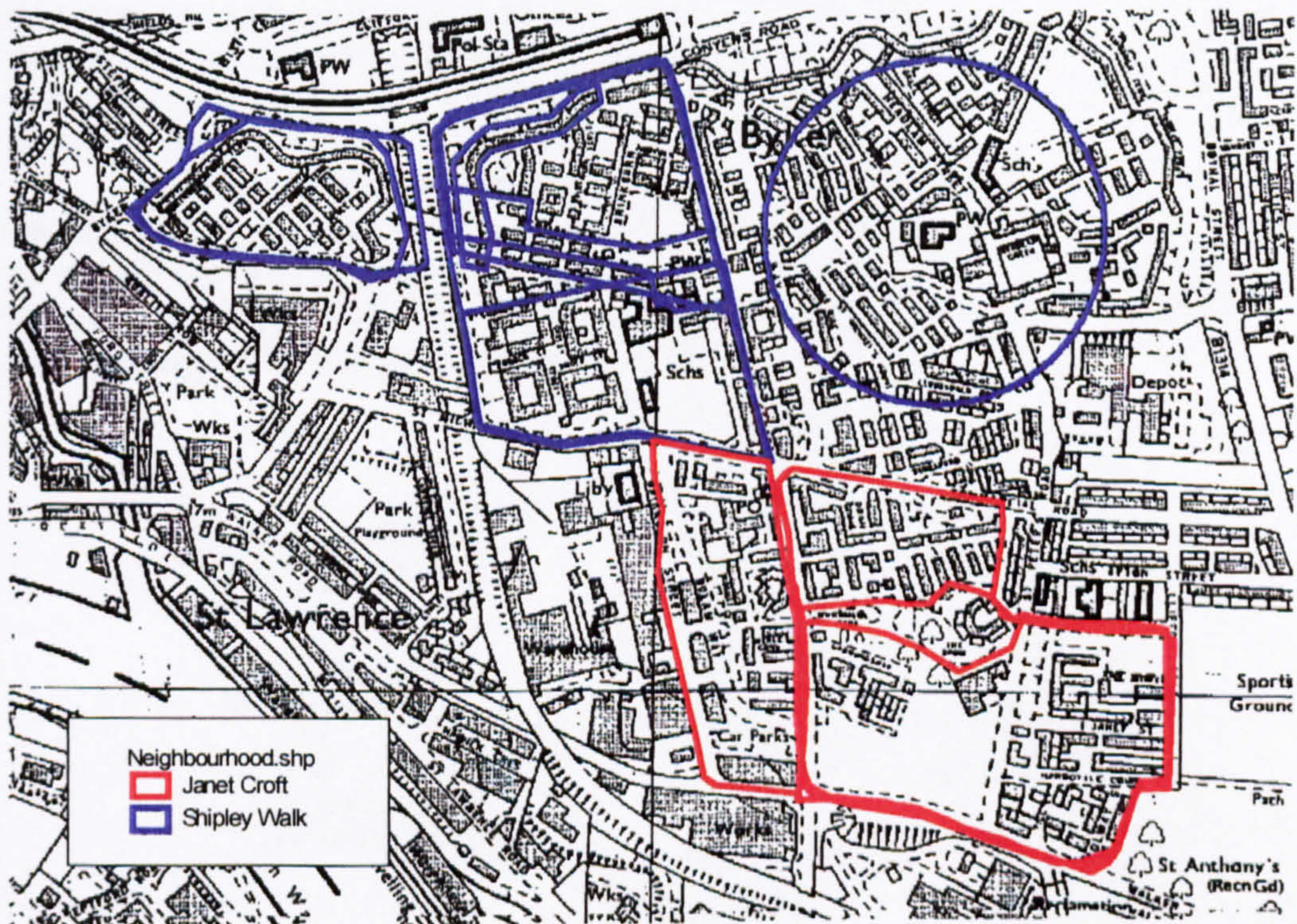
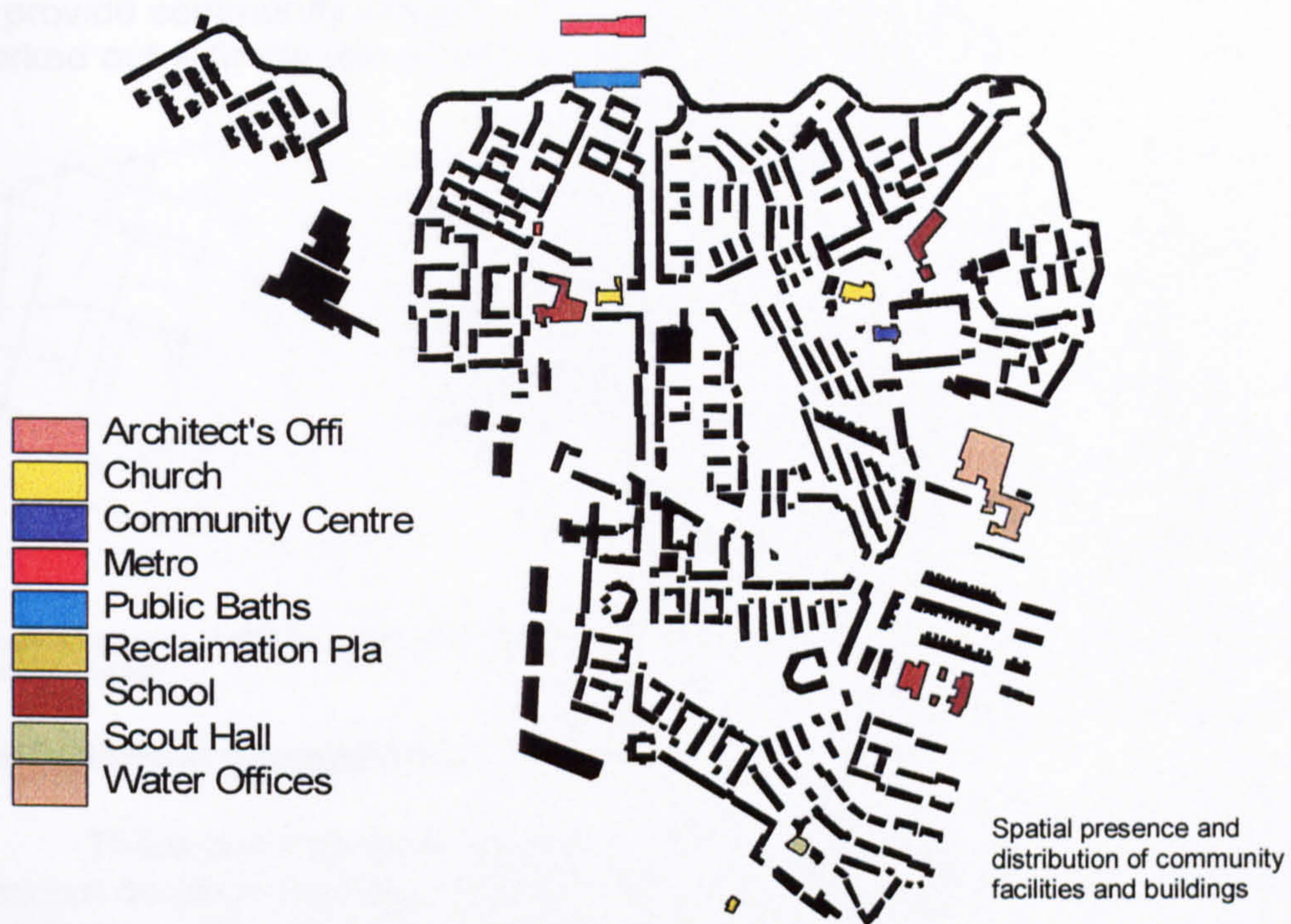


Indicators of community

Early views on community indicators from social history sources in Newcastle upon Tyne from the mid 1800's were mapping the concentration of pawnbrokers, clothes dealers and charity schools to illustrate spatial contrasts in wealth and poverty. Later measures of public health looked at cholera deaths, the size of open spaces and the level of overcrowding – all proving concerns for Byker residents from the 1930's to the late 1950's (Barke and Buswell 1992, Harrison and Yardley 1990).

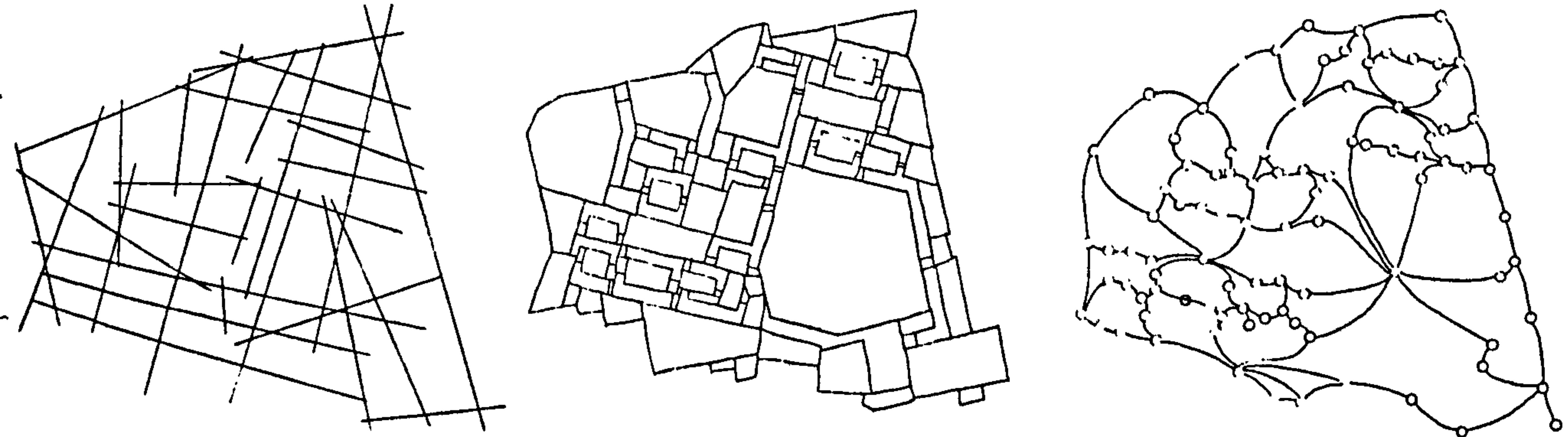
The methodological framework suggests a number of potential community indicators suitable for spatial representation, the simplest of which is the physical presence and distribution of community facilities and buildings. This is suitable for digital (polygon) recording methods.

Additional indicators are concerned with the testing and recording of community networks; the presence of local friends and family, as a simple response indicator, or counting the number of 'plonkies' (Resident Association allies), association members locally (estimated at about 50% of households), the gender split at association meetings (recorded ratio of 6:1 women : men at the meeting I attended) or the perception of neighbourhood boundaries and who or what lies within and outside these shapes (self-defined by residents).



(shared community boundaries, applying the approaches of Lee 1963 and Herbert and Thomas 1982 as a means of overcoming variations in the subjects' ability or otherwise to draw stylised maps of the area, the lack of 'measurement' required to spatialise the data and the requirement for a collective view – gathered in grouped format at residents' association meetings, drawn on a 1:10,000 scale OS base map)

A spatial analysis of the public realm (Buchanan 1981) can be developed to provide community indicators of 'connectivity' and potential social interaction – worked out with the use of *space syntax* analytical techniques.



(Space syntax record of Byker – axial map, convex map and Y-map (after Hillier 1984 p100) – as inputs for network and spatial analysis)

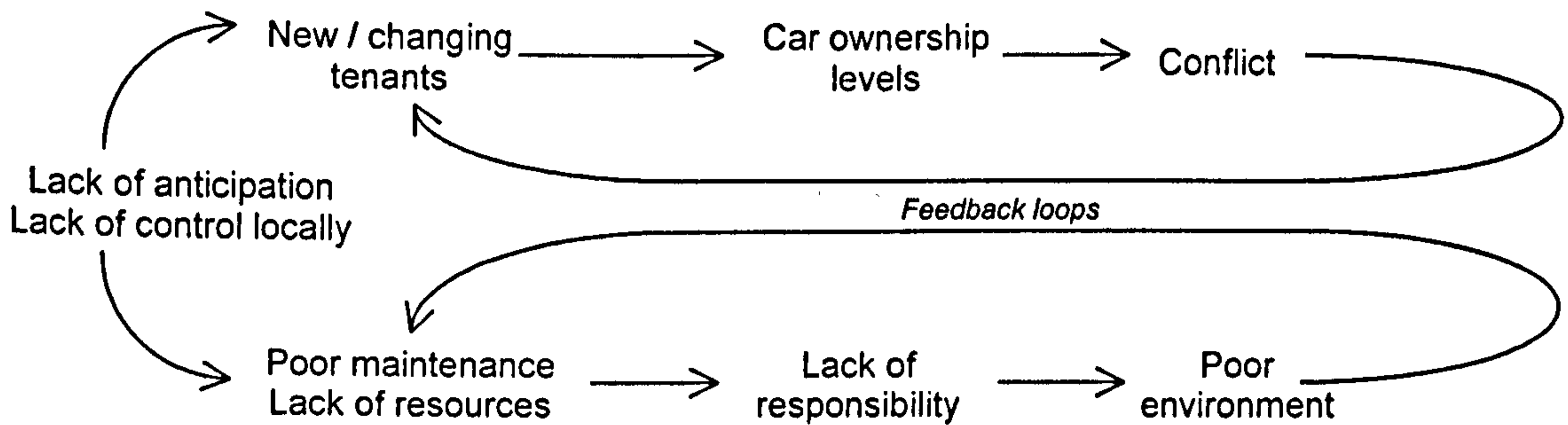
Indicators of management

There is a suggestion that an unwillingness of the local authority to devolve decision-making power to the community level left the 'elitist' (Walker 1984) approach with minimal impact, perhaps due to lack of mandate and thus democratic legitimacy within local groups rather than local authority members. Crude spatial records of planned expenditure and anticipated area of impact / benefit (For example; East End Partnership 1995) can give some indication of management emphasis and future changes.

Management processes and linkages to social change in Byker can be described from a resident's perspective, extracted from agent interviews, through (i) lack of control; and (ii) lack of anticipation. Ideally, this feedback, in whatever format it emerges from the community, should become an input for designers and managers rather than being dismissed.

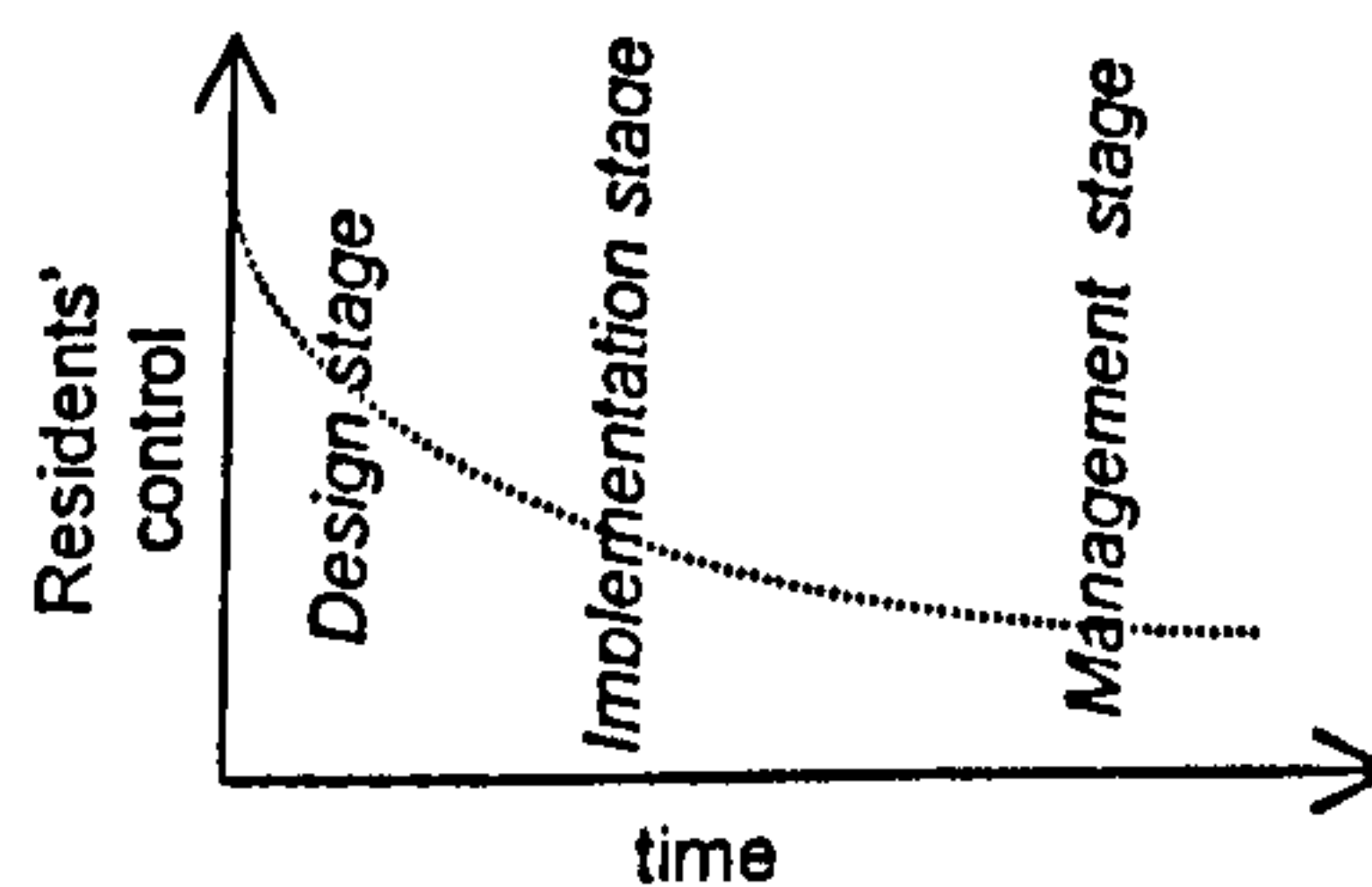


(a community leader's simplified cognitive map that describes some of the management concerns, abstracted from interview notation, and giving rise to a possible system process, below)



This suggests a number of possible 'process' or management indicators in the urban changed elements. For example, recording the use of the residents' maintenance guides for the landscaping or the municipality planting and soft landscaping management regime (to achieve an instant effect in planting, twice as much was initially planted in an understanding that 50% would fail. In fact, almost all the planting has matured and now provides a problem of security due to lack of maintenance, and anticipation). Variations in physical form may also be a reflection of changing demographics or 'housing need/demand', for example in an examination of the accommodation / housing stock profile derived from that contained in the detailed source material on accommodation, (Global architecture undated, Erskine 1976a).

Who has control / responsibility is itself an indicator that can be measured against aspirations of what various agents would wish to control.



This has direct links to issues of community capacity and procedural constraints. Management is dependent upon both technical (procedural capacity) and financial resources to maintain multi-agent management. Technical resources and media are constantly changing and could potentially have a role in overcoming both limitations in community capacity and procedural constraints.

“Couldn't photography give a lot to research, writing and teaching in sociology? But even as I write, photography and tape recording is confronting the video revolution.” (Plummer 1983 p11)

Monitoring change, redevelopment and physical adaptation has been the subject of photographic records (Konttinen 1985) in Byker. There are suggestions that qualitative indicators could be greatly enhanced by examining the potential impact of new technologies and tools for the use of the social

researcher and new procedural roles in management. Beyond photography and video, Virtual Reality provides a mechanism for many of the spatial indicators to adopt an additional dimension at the neighbourhood level.



(screen shot from a simple block model of Byker developed in VR, potentially a medium suitable for aiding the presentation of localised sustainability indicators)

Chapter 7

Synergy

Summary of case study findings – understanding of urban systems

Power of information, principles of operation and data protocol

Methodological role of 'toolkit'

Integration with action

Defining the relationship between data consumers and providers

Summary of case study findings - Understanding of urban systems

“If the community is seen as a series of layers, beginning with the house, the block, the neighbourhood, and the politically defined community, it is clear that most people come in contact mainly with the first two.” (Gans 1972 p21)

Accepting the complexity of towns and cities, there is still a requirement for a conceptual model of how to understand this complex system. The case studies show the development of a conceptual model of sustainable urban communities that is both multi-dimensional and multi-layered. There are interactions and feedback between the different layers and the different dimensions. The range of data levels used to describe the community has to link ‘hard’ and ‘soft’ attributes and also influence the sort of monitoring and/or modelling that is undertaken at higher or lower levels of decision-making.

It is recognised that even the act of defining the different scales in a layered data model is to some extent a technocratic process of defining community. Each of the layers is an abstraction and has to be described and communicated in this context.

Most of the case studies ran concurrently and the interplay between different techniques had an influence in the depth that any particular approach was followed (generally those that were proving to be most successful in practice) and the distinction between different themes (for example, visual survey work was also useful for dynamic and procedural indicators). This may have had the effect of a blurred and imbalanced set of case studies but I do not see this as incompatible with the adaptive framework established. The presentational approach to sustainable urban development, 5 key themes, is artificial and does by its own nature need to have overlapping areas of recording to respond to specific policy and practical requirements. As the case studies developed, the initial framework has adapted and certain methods have been emphasised but the core concerns of a mixed and multi-method approach to understanding urban communities has remained a strong focus, together with the practical benefit of being able to qualitatively, spatially and collectively record attributes of urban design.

In all of these approaches, a key task was to undertake a basic *inventory* of secondary information sources and public domain data comprising: data source; time series / trend availability; spatial scale / resolution; the possibility of geo-referencing non-spatial data; comparative figures; and cost of acquisition. This process highlights data ‘gaps’ where primary data collection is required to ensure the broad thematic scope of sustainability is achieved and to avoid the trap of being limited by existing data availability. The identification of data ‘gaps’ can be thematic, scale-dependent or due to problems of data reliability (collection methods, scale / abstraction / aggregation, frequency and updating issues). The findings from the pilot projects and applications suggest that the key areas of omission of data relevant to urban design are *qualitative* and *spatial*. Public data collection is dominated by the needs of empirical monitoring and fails to address key areas of qualitative research, such as perceptions,

attitudes and their links with individual household behaviour. In addition, spatial referencing is based on institutional boundaries, creating problems in disaggregating data at a scale appropriate to an urban designer or a community organisation. These limitations have implications for spatial database structures and design.

A theme throughout these studies was the potential to work with digital information for ease of collection, collation and presentation. This is an area requiring additional work to achieve a digital match to some of the indicators used. Some thought was given to appropriate tools to improve the management of the data collected throughout these studies. What is clear are the differences between three dimensional grid / spreadsheet data (normally regional/sub-regional datasets based upon externally defined administrative areas) and geo-spatial data models (physical and cognitive elements) that include user-defined areas of concern and levels of data abstraction. The indicators framework requires a range of mixed data collection methodologies appropriate to the technical and resource limitations of the end-user individual / organisation to help fill the identified data 'gaps', both qualitative data collection and spatialization. A number of qualitative data collection methods (customising traditional sociological methods, using complementary mixed and multi-method tools - mixed scanning) have been used within the pilot projects.

The research suggests that data collection and the use of sustainability indicators in whatever form they take is not an end in itself, there should always be a rationale for action that is practical or policy related. However, the process of building up a set of indicators can have a number of benefits: (i) these indicators can be directly linked to action, behavioural changes or new procedures; (ii) the process addresses skills and capacity buildings locally; and (iii) it can improve understanding of urban systems and processes, particularly in relation to the dynamics of management.

Power of information, principles of operation and data protocol

While there are locality specific findings from each of the case studies the emphasis has been the concerns over the identification of suitable indicators within the identified framework and appropriate methods for collecting and then spatialising this indicator data.

A number of key principles have emerged and then guided the collection, presentation and use of the data as it has involved real and theoretical studies.

Primary data collection is never an end in itself and the use of the material will be value-laden and political. Providers of data (municipal sources through to individuals participating in a household survey) can be cautious of the intended use of their resource and the extent of potential users. They may even adapt their data contribution in response to their perceived fears or wishes over the eventual use of the data. In response, there has to be honesty in the collection of material.

Apathy and 'research fatigue' can be a limiting factor in the involvement of community and residents' groups. 'Research fatigue' is a way of describing a one-way process of data collection, namely from community to researcher, that lacks any feedback on the use of, or findings from the information collected.

Communities and individuals who have a history of involvement in survey work, of whatever form, expect to be informed of the outcome of this collection work and maintain a desire for evidence to show how it has been used. Thus, work in similar areas with this apathy may already be well-resourced in local data, but lack of honesty and feedback on data utility and functionality may have created mistrust in any survey or analysis process. In this principle of operation, there is an implication to make the best use of secondary sources and improving analysis beyond the intended use of these sources, combined with a commitment to feedback to data providers.

The non expert base for the use of information combined with the above factors has resulted in a need for validation and feedback on the relevance, accuracy and presentational appropriateness of the spatial indicators. This validation is partly to assist in raising the relative weight of the soft qualitative evidence next to empirical evidence and partly to help build community based networks and trust between the consumer, provider and curator of indicator information. Validation is possible by 'triangulation' where data from a mixed and multi-method approach is self-reinforcing. However, I believe the process of two-way information exchange warrants validation by feedback and checking with the data providers and those subject to primary survey work.

<i>Principles of operation of 'toolkit'</i>
Honesty and objectivity in collection and communication, Validation through feedback, Make best use of existing primary data sources, Adapt secondary data sources from a mixed and multi-method approach.

It may be possible to extend the principles of operation to incorporate metadata and become the basis for an *information protocol*. A means by which both the consumer and provider of information makes moral and professional commitments to ensure correct use of data and avoid and abuse of trust. Potentially it would provide a quasi-legal basis for integrating values (analytical considerations) into the urban management process, and be a tool for aiding participation in this process.

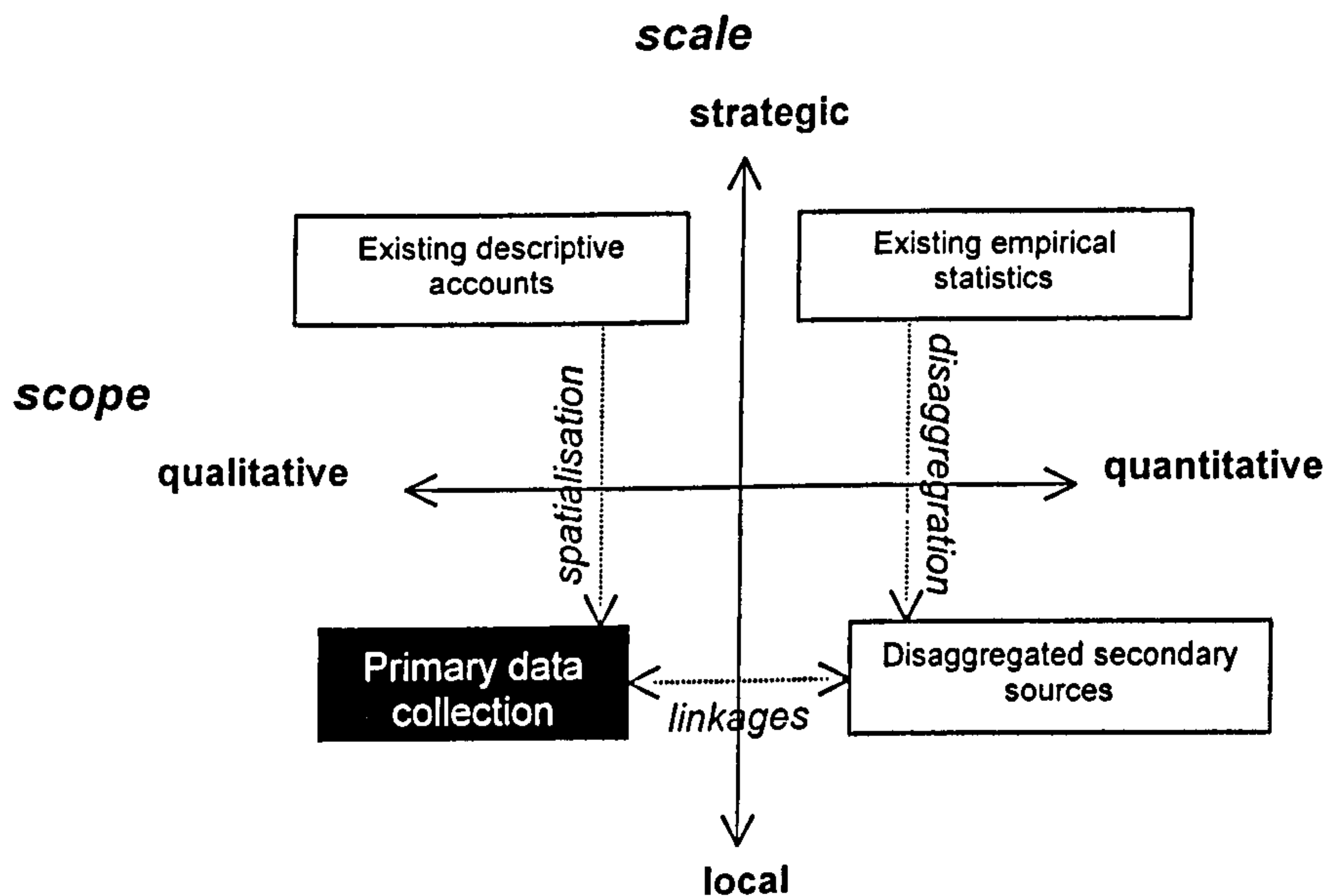
There is assumed power in the control (editorial and collection) of information sources. Mistrust and suspicion over those who collect, control and maintain any spatial database is real. Community sectors are very aware of the potential abuse of data for political ends, this sort of abuse being more likely if the data is built into a technical model which cannot be challenged by non-experts.

Any protocol would need to address such issues and it would be advantageous to customise the protocol to specific consumer / provider relationships. The suggested protocol would need to adapt to the dynamic nature of urban data sources and the changing consumer / provider relationship over time.

Methodological role of 'toolkit'

While the focus of the case study work has been testing a range of low cost approaches for primary data collection on a spatial basis, the ultimate functionality of the 'toolkit' is to facilitate *information exchange* and *integration*. To achieve this, there are significant requirements for an adaptive framework to spatialise qualitative / descriptive accounts from source documents, primary or secondary sources and to aggregate or disaggregate centrally produced empirical statistics as appropriate to the level of data required by decision-makers.

This is beyond mere data collection. The framework requires a methodological toolkit that, due to the bias towards low-cost non-expert techniques, makes the best use of existing data sources prior to developing new primary data collection methods. It also implies any primary collection techniques that maximise the potential utility of the information. This is consistent with the non-expert and low-cost basis of the adaptive framework.

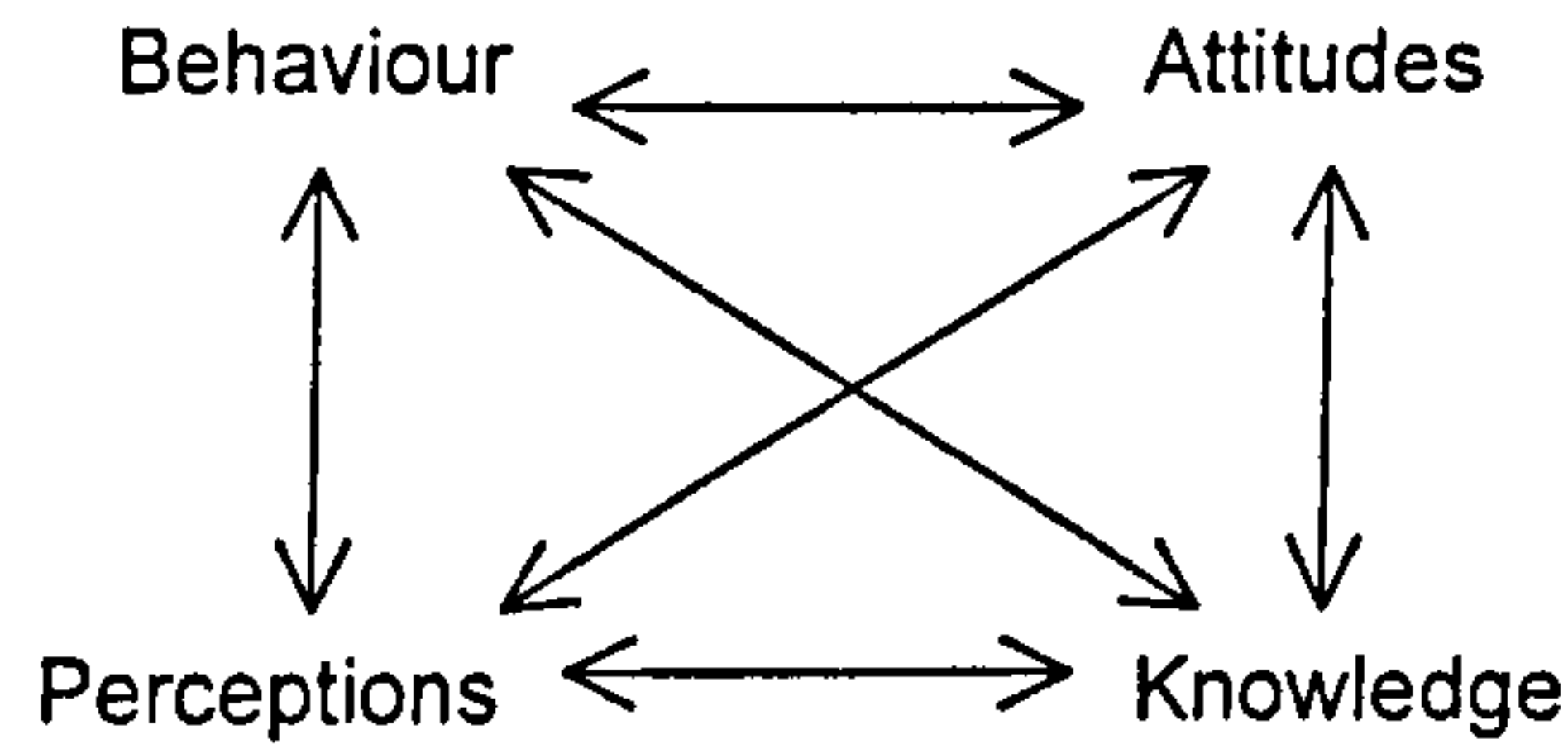


(extended utility of adaptive framework in scalar and thematic data integration)

Integration with action

Successful 'action' resulting from the use of the adaptive framework and linked toolkit can be altering design, attitudes or processes as a result of new knowledge or a new perspective gained on previously unstructured and unconnected information.

This has suggested a need to clarify and define the links between behaviour and environment in a way that is more than historical design or knowledge based determinism. It has to link hard and soft systems and it has to include a series of feedback loops (inspired by the descriptions and connections of Short 1984, Kirk 1951).



The above diagram illustrates multi-dimensional feedback and the relationships between knowledge, perceptions, behaviour and attitudes operating at individual, household, community and city levels. It also "... usefully underlines the *groundlessness* of systems thinking: there are no absolutes in our epistemology; as systems thinkers we are virtually driven to a process view of the world" (Checkland 1992 p1026) where behaviour is only loosely grounded in our limited perceptions and knowledge of the real world.

There are strong connections between any realistic urban theory adopted by a planner or an organisation and the perspective this provides on the role and balance of data and information in explaining this theoretical position and inter-relationships. For example, in looking for behavioural change there will be a bias towards observation and interview in data collection to explain any change. The theoretical position adopted will to some extent predispose the nature of the technical information collected and used to make 'informed' decisions.

Defining the relationship between data consumers and providers

The following two chapters will look at the 'packaging' of the adaptive framework and the methodological toolkit, to demonstrate the potential improvements to utility and functionality, of Information Technology and the behavioural and attitudinal links suggested above. The only way to investigate the multiple feedback between improving knowledge (although still only partial) and action (changing behaviour, attitudes or perceptions) is by direct interaction between providers and consumers of information, however artificial this distinction may be. Working through this process is a means of redefining the interactions and roles in such relationships.

Chapter 8

GIS and Sustainable Urban Design and Management Systems – Technology and Framework Combined

Information needs and technological developments

Integration and digitisation

Designing the GIS project

- Digital data input

- Managing and manipulating data within the GIS project

GIS as an explanatory tool

- Exploring existing relationships

- Defining new relationships

GIS as a predictive (modelling) tool

GIS as a policy-orientated tool – displaying results and designing the appropriate user-interface

GIS investigating relationships at an urban design / neighbourhood scale

Limitations and opportunities of GIS

- Data restrictions

- Dynamic restrictions

- Technical restrictions

- Three-dimensional restrictions

Democratic communication over technocratic analysis

The interactive dimension

The city of virtual layers

This chapter develops the utility of the adaptive framework and linked methodological toolkit by the use of Geographic Information Systems. The functionality of GIS as an operational tool to assist the management, integration and visualisation of the mixed data sources is seen as beneficial to the point where it out-weights some of the potential problems of using computers.

Some current uses of GIS within spatial and urban decision support systems are explored to discuss the advantages and disadvantages of working within a GIS environment for the development and practical application of the analytical framework and its associated spatial attributes as a multi-layered data model. The idea of additional dimensions of space (three-dimensional volume) and time (modelling dynamics) are placed within this GIS spatial indicators project.

If the transition to a computerised project is to be beneficial, the GIS project will have to be able to integrate socio-economic and environmental data into a common spatial database, assist in the spatialisation of public domain data and provide some low-level data manipulation and modelling facilities. In addition, the GIS project will need to provide the functionality and meet the information requirements of a variety of potential end-users within their technical IT constraints. These considerations help to tailor the use of GIS to a range of potential linked applications.

Throughout this overview, the inherent flexibility of GIS to add, remove or update spatial data layers makes it the most appropriate tool for complex and dynamic information.

Information Needs and Technological Developments

The development of user friendly information services, shared information sources, the strengthening of electronic networks, and better use of indigenous knowledge has become recognised as central to Local Agenda 21 activities "... in the broad sense that includes data, information, appropriately packaged experience and knowledge" (UNCED 1992 p284). Local Agenda 21 places special emphasis on the transformation of existing information into forms more useful for decision making and on targeting information at different user groups, through the application of Information Technology.

Increases in computing power and storage capacity, alongside falling prices in real terms and dramatic reductions in the size of installation have been the major changes occurring in the hardware sector over recent years. Every year, more computing power is available to the average user at lower cost, making hardware more easily available to many individuals and most institutions (Mitchell 1999). This increased power has resulted in a broadening range of users where GIS is no longer seen as the high-level preserve of scientists, academics and engineers, being increasingly used for low-level applications in planning, resource management, economics, teaching, landscape and urban design.

Integration and Digitisation

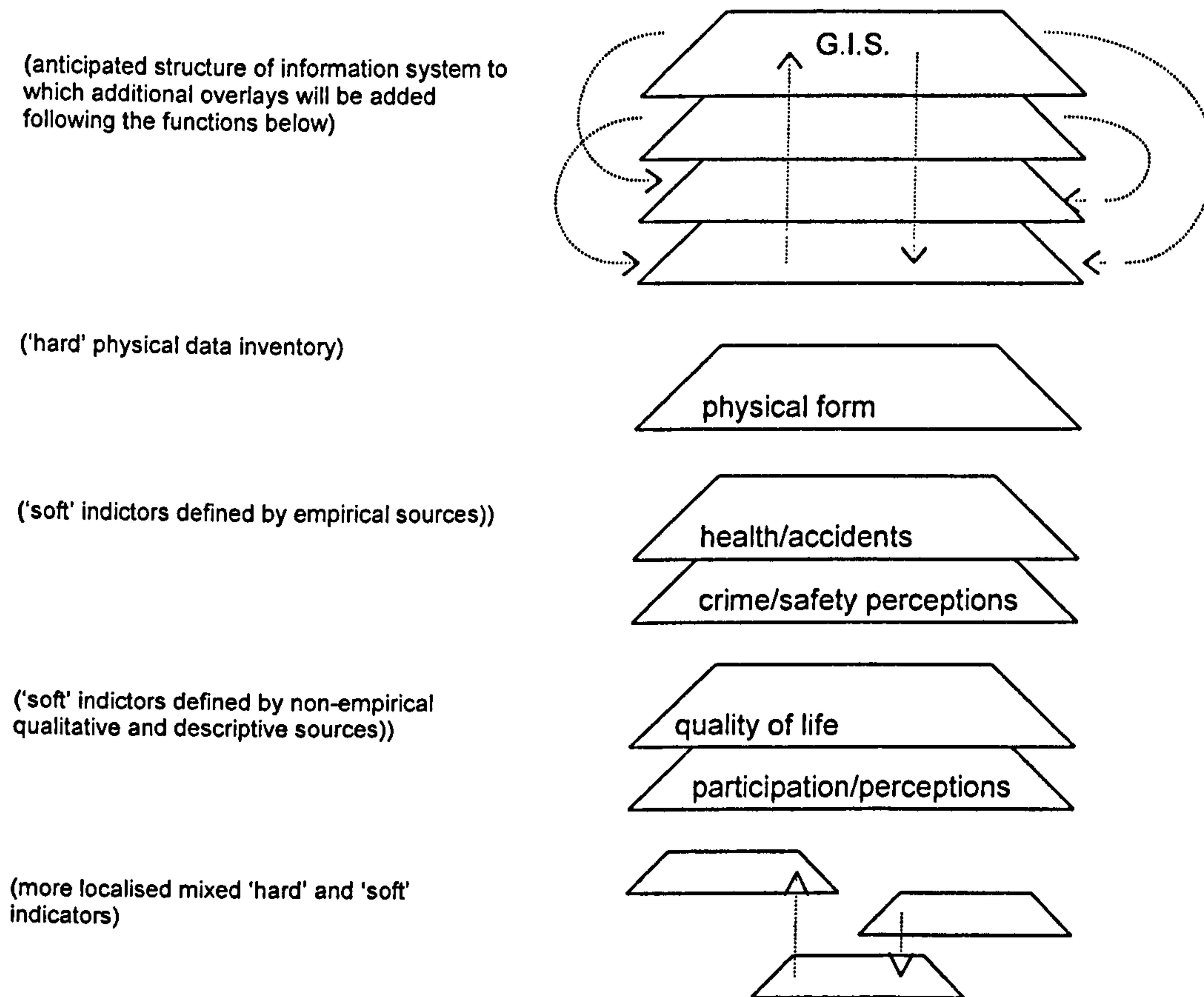
The integrated approach to decision making, as argued for by both high and low-level users, can be facilitated by GIS. GIS improves "... the use of data at all stages of planning and management, making systematic and simultaneous use of social, economic, developmental, ecological and environmental data, as well as stressing interactions and synergisms in analysis" (UNCED 1992 p66). Integration by GIS provides 'information synergy' since disparate data sources (information of different scales, sources, construction / system design) can be linked together on a common basis. The key to the application of GIS technology is the underlying database structure (Lindsay 1997, Frank 1992) – containing both geometric data (co-ordinates, shapes and topological information overlays) and associated attribute data (information describing the properties of spatial objects, numerical, string and Boolean).

GIS have been defined as "... a system for capturing, storing, checking, integrating, manipulating, analysing and displaying data which are spatially referenced to the earth" (DoE 1987). From an urban designer's viewpoint, the most significant advantages of GIS, compared to traditional mapping packages, are: (i) the potential to store and integrate, on a consistent basis, large amounts of spatially referenced information and data from a variety of sources; (ii) the unique spatial presentation of information in a form which is more comprehensible to decision-makers and a wide range of end-users (who may not be able to readily or rapidly distil knowledge from pages of tabular data); and (iii) the ability to simulate the impact of policy choices.

The initial attraction and strength of GIS as an integrating tool is the "... displaying of data spatially to provide a perspective that could not otherwise be obtained". (Lindsay 1997) The spatial dimensions of data form the basis for a unique way of displaying, analysing and making direct comparisons. It has the potential to allow disparate data sets to be analysed on a common basis (Frank 1993), a common basis which has traditionally only been explored in the fields of economics and cost-benefit analysis. It is also an appropriate basis because of the inherent spatial nature of urban systems (Nijkamp and Rietveld 1984) and the possibilities of integrating data sets and spatial scale (Goodchild and Proctor 1997, Despotakis *et al* 1992). Spatial forms and associated attributes can include economic measures but they are also capable of investigation of the distributional effects and can ultimately aid in decision making where trade-offs between competing goals is necessary. GIS data sets lend themselves to linking socio-economic and physical attributes on a common spatial perspective and thus "... GIS would appear to offer a powerful tool for increased understanding of human-environment interaction." (Martin 1996 p48)

The theory underlying GIS provides the basis for the development of a multi-layered data model of spatial indicators suitable for basic overlay and other mixed statistical and heuristic analysis (Portugali and Benenson 1995). The anticipated structure is a series of integrated overlays based upon physical and socio-economic indicators. The central strengths of using GIS to organise and analyse various data overlays are the spatial characteristics allowing for a

common basis for comparison and evaluation and a computerised information system to enable high-speed analysis of large amounts of data and provide a user-friendly interface. Integration is both thematic and scale based.



There are a range of possible applications arising from this data structure. It allows for the evaluation and testing of strategic options using coarse grain data. It can assist design process, improving the sustainability of detailed schemes and providing a strong interface with the user / client, allowing for participation and perception exercises to help in decision making and trade-offs between the various attributes. It can for the basis of a modelling tool, making future predictions based on ‘what if?’ scenarios and analysis of spatial interactions and linkages between the various attributes. It is also the basis for a monitoring system, involving updating indicators with ‘live’ data to allow for the testing of modelling predictions and future planning decisions wherein the structure of the system needs to be flexible to meet the data handling requirements of the appropriate planning authority. Finally, it can also form the basis of a user / public interface, providing feedback in the use of spatial data in public environmental information, recognising the links between individual actions / lifestyles and the level of knowledge and data relating to personal environmental and socio-economic impact (also implying a user friendly information retrieval system).

Overlays would be based on simple models adapted from external sources but using attribute data for the various spatial overlays. Throughout

these applications, there is integration between the substantive product, the design process and the on-going monitoring and management. This requires a system which is not only 'open' but is robust to allow for easy change and adaptation, for example, in replacing modelling overlays with collected data. The ease of analysis between overlays is crucial in defining connections and coding for predictive models. The system must also have a friendly user interface that is understandable for individuals involved in information retrieval and/or participation techniques - this would include considerations of presentation and visualisation.

Therefore the start of the project is the development of a spatial database based upon the adaptive framework matched to user / application needs. The stages of construction including a locational data inventory (being aware of the costs of extensive data acquisition or primary data collection). The aim is to adopt the principles of BADNEEC (Best Available Data Not Entailing Excessive Costs) in the design, evaluation, modelling, monitoring and feedback of various elements of sustainable urban communities.

Designing the GIS project

The structure of the spatial framework of the GIS project is a series of overlays where both quantitative and qualitative data sets can be mapped and analysed. Each of the overlays will reflect attributes of sustainable development, as established in the adaptive framework and organised in a systematic and coherent structure. In this context, the bulk of the data sets will be vector or single point (point, line or polygon) rather than continuous surface data (raster). This is a key consideration in the choosing of the GIS software.

The software chosen is ESRI's *ArcView* a windows based package that, along with the familiarity of the interface and operating systems, has compatibility with most database packages, CAD and image editing software. Additional functionality is provided by a range of analytical and visualisation add-ons to the basic software package. The skills and time required to master this package at present, still represents a significant individual commitment. However, once software operational knowledge is acquired it does have a wide range of potential functions all using the same package and linked spatial and geo-referenced data sources.

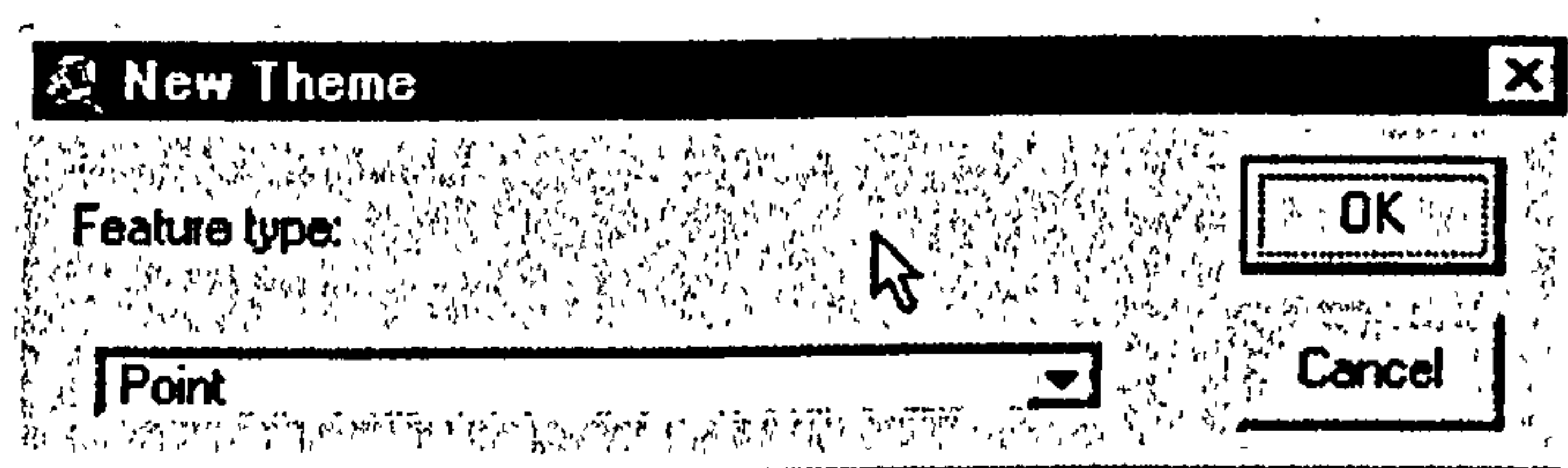
This 'skills-gap' is not the most significant determinant on the use of spatial information. Data input has been recognised as the major constraint on the functionality of any spatial data project (Maguire and Dangermond 1991), particularly those undertaken by non-specialists and independent researchers. At the strategic scale, the European Commission has used satellite and other remote images to construct land-use cover maps for use in environmental management and possible analysis. Initial research was at a national scale but the techniques of data capture have recently been applied to built-up regions to investigate physical attributes in the make-up of some urban areas (Cardoso 1996). At a more localised scale where the number of data users and data providers are less, there will generally have to be some degree of data input undertaken by the user.

In the GIS project, actual data input has been undertaken in three main ways: (i) direct data input via keyboard, where boundaries are pre-coded and data relates to the attributes of the boundaries, most commonly municipal or ward-equivalent boundaries. Data is abstracted from primary research (databases, spreadsheets and/or SPSS projects based on interviews or questionnaire returns), primary analysis (geo-referencing and mapping of spatial attributes originally recorded in a non-spatial format) and secondary sources (published statistical reports and on-line census records); (ii) secondary sources of pre-digitised information, for example, vector based CAD files, remote sensing (satellite and aerial images) vector and raster files of Ordnance Survey (or equivalent) map bases with some associated attribute data and relevant information extracted directly from other GIS projects; and (iii) conversion of scanned raster images into vector based data sets.

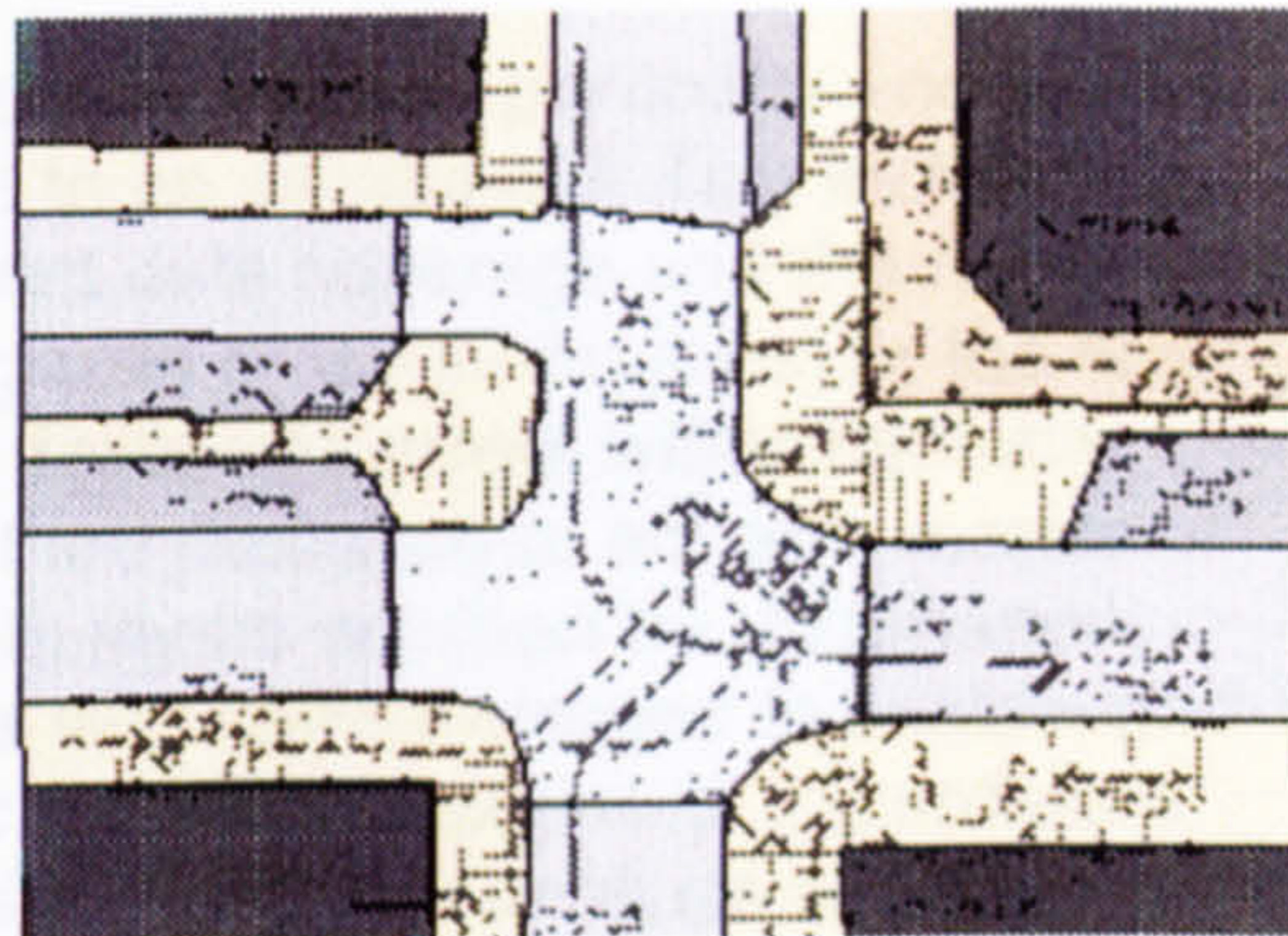
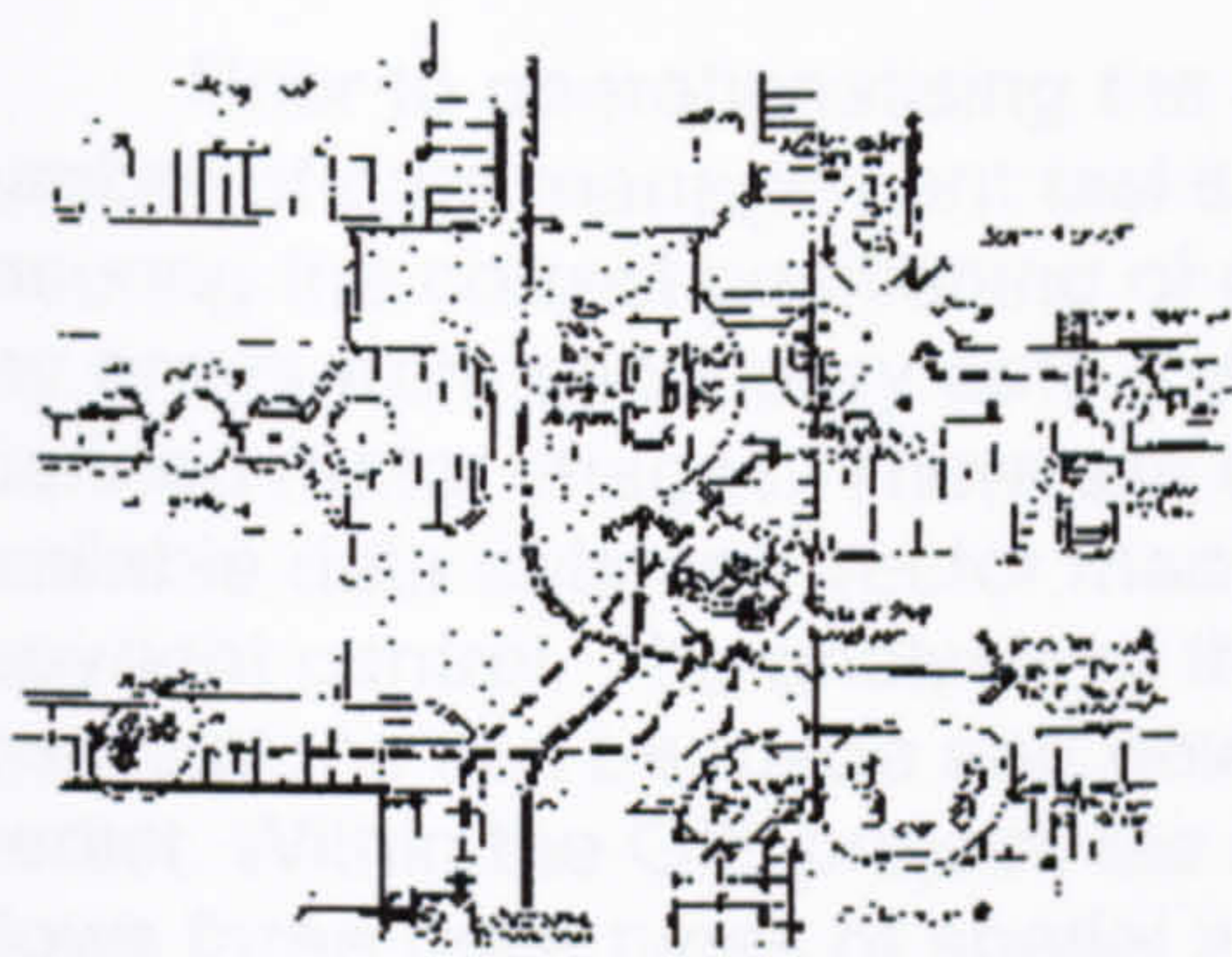
The time and cost constraints of data input at the strategic scale is repeated at the urban neighbourhood scale and has narrowed the focus of the research project to the demonstration of potential for GIS as an integrative, explanatory and predictive tool over a small area. The level of data abstraction, the geographical scale and the amount of data input required is linked to the size and scope of the organisation working with GIS. Ideally, organisations at different scales, including community groups, would share a common spatial database of indicators to reduce some of the data handling constraints.

Digital data input

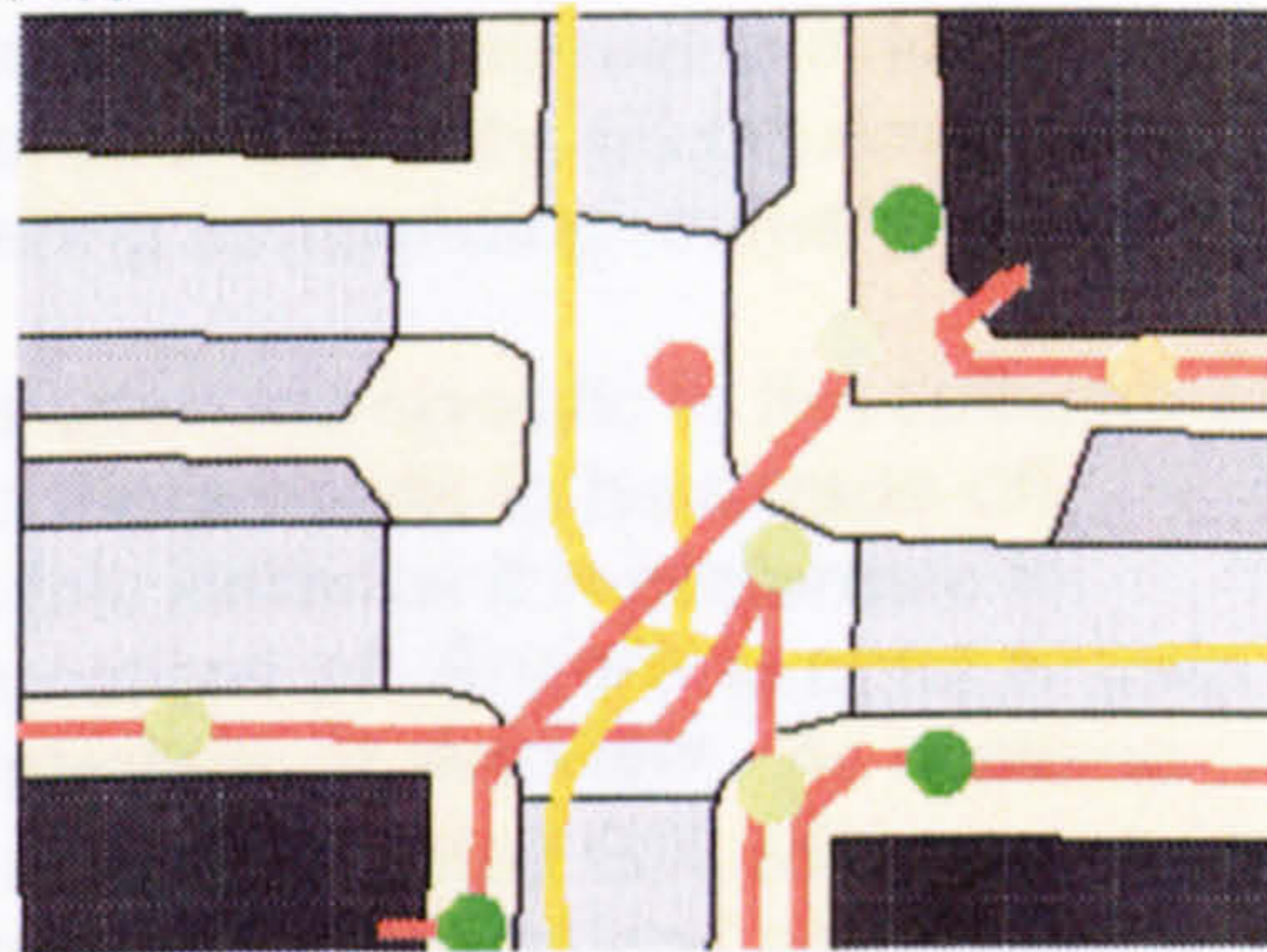
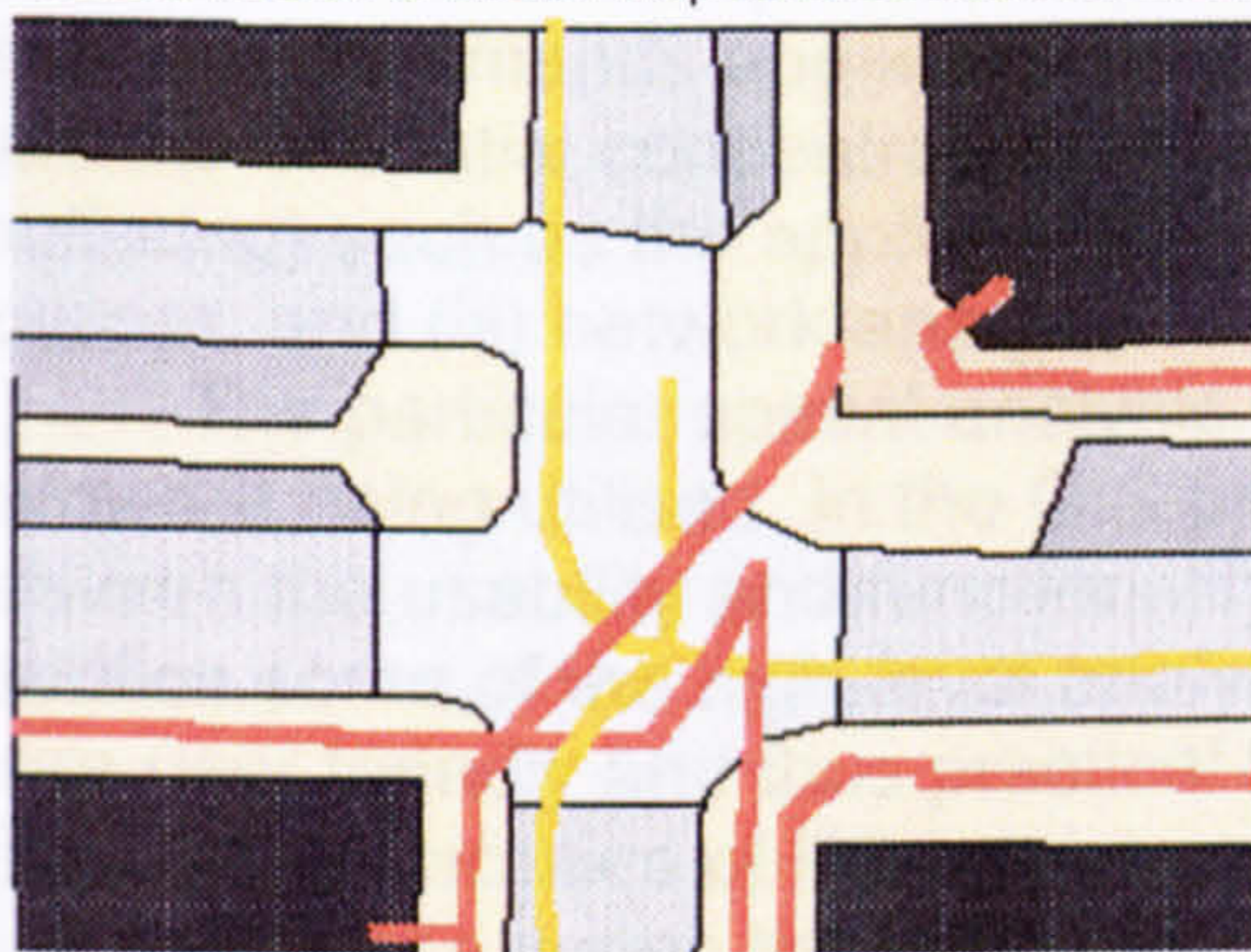
Within the constraint of low-cost data techniques, data input directly by the operator of the system is restricted to the three types of vector data or a raster (any grid based image such as a scanned image as a bitmap file) basis. Qualitative material collected using the toolkit has a requirement to fit one of these types of theme, point, line or polygon



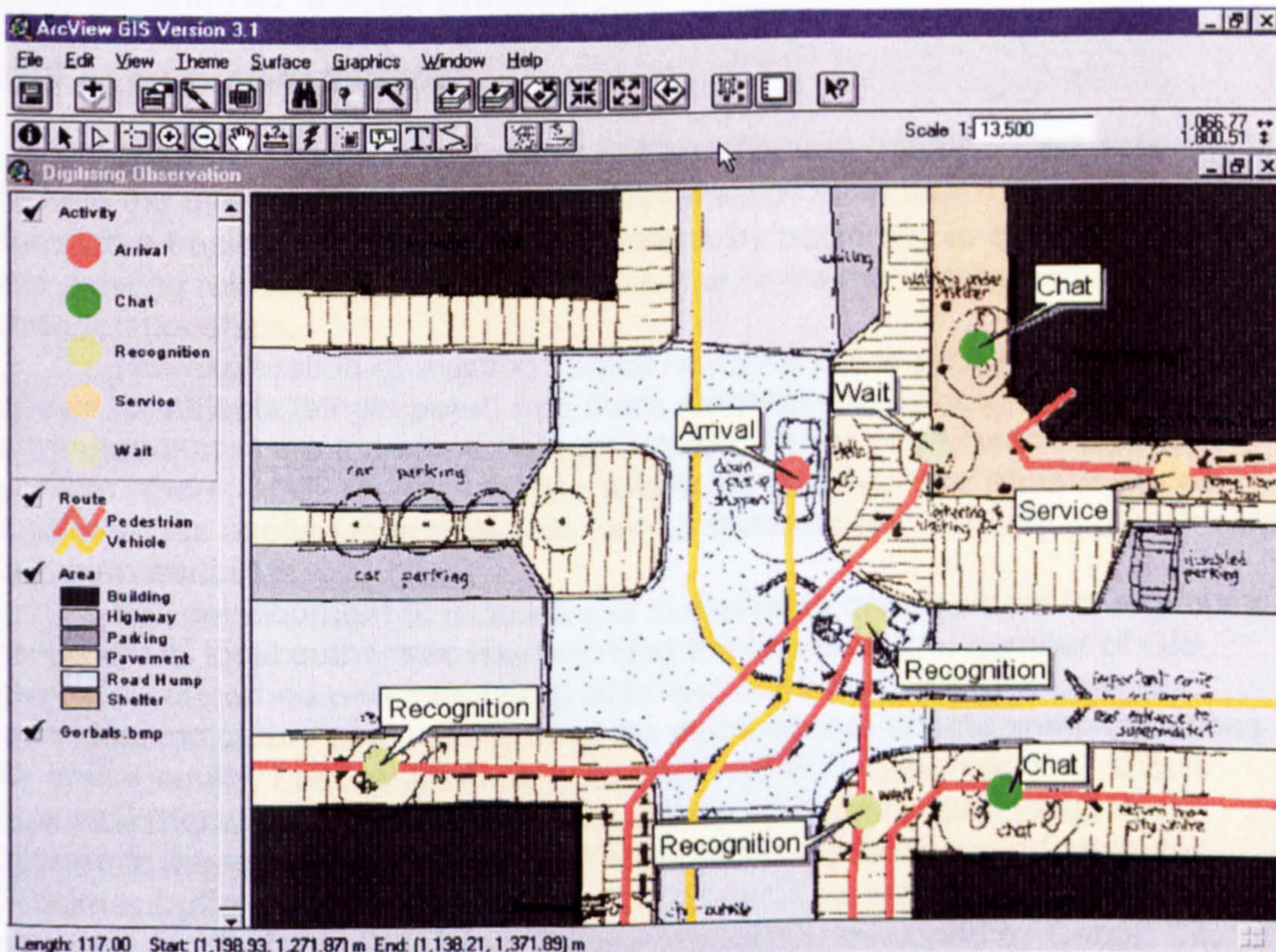
The following illustrated example shows how participant observation techniques on a sketch map basis can be digitised within these GIS operational constraints. This observational source, taken from the Glasgow case study, began with a scanning of the primary sketch information into a raster form (ideally this would be on a Cartesian basis and scaled). Then a process of coding areas, routes and activities as polygon, lines and point themes respectively on the spatial basis provided by the digitised sketch map. Attributes of these shapes were added in tabular format (as fields attached to the digital shape) to be used for display and future analysis.



Raster version of sketch map used as basis for creation of polygon 'zones'



Addition of network of lines as observed vehicle and pedestrian routes and point 'incidents' or activities



Screen shot of digitised database illustrating some of the concerns over and results of spatialising point, line, polygon and raster information

Managing and manipulating data within the GIS project

Prior to operationalising the GIS project for any particular end-user a number of data management tasks have to be carried out. This includes ensuring the correct positioning of different data coverage and the removal of any errors from secondary data (missing cells or discontinuities) or the editing of scanned raster images. There are often deliberate errors within centrally available data sets and vector maps that are designed to act as a means of copyright control. The analysis of the data layers will then be undertaken, observations can be made and new data sets can be created to explain and predict. Within the GIS project, the basic analysis functions of the software allows three main types of spatial analysis: (i) overlay analysis such as union and intersect overlay operations (the creation of new polygon coverage using 'and' / 'or' commands applied to attributes) where the interest is in looking at patterns of spatial concentration, dispersal and regularity; (ii) proximity analysis (buffering) such as the application of buffering surrounding routes and point sources; and (iii) network analysis.

The particular spatial analysis tools used are specific to the software and hardware being utilised. In the GIS project there needs to be a trade-off between the usability and functionality. In this instance it is preferable to sacrifice some of the high-level analysis functions of *ArcInfo* in order to gain a more user friendly and thus practical PC interface of *ArcView*. As systems develop, the facilities of PC based and windows operated GIS will improve (as they have done during the course of this research project) and add to the potential analysis facilities available.

GIS as an explanatory tool

The basic function of the GIS project after integrating spatial data sets is to help the user understand the linkages between attributes. This can be through a basic information retrieval system, by beginning to explore some of the existing relationships between the spatial indicators and by defining new data relationships.

The exploration of existing spatial relationships is possible because GIS allows for objects (single point) and fields (continuous surface) to have multiple attributes that share the same data structures. This is useful within a policy context where a GIS project can use traditional geographical analytical tools and methods applied to spatial data sets to correlate and quantify a relationship between attributes.

The development of indicators of sustainable development throughout a range of UK local authorities has provided the impetus for a number of GIS projects, concerned with integrating data and illustrating linkages between individual indicators and investigating the distributional effects and implications for social equity. Lancashire County Council's (1997) 'Green Audit 2' shows how indicators vary across the County, utilising polygon (ward based socio-economic measures), point (wildlife areas) and line (rivers) based attributes. Proximity buffering around locations of basic services provides the only GIS generated indicator in the report. Similar indicators developed by Cardiff City

Council (LGMB 1995b) are being linked to a GIS based model for energy and environmental planning (Jones 1996) and pollution & transportation (Gibbs 1996). GIS is being used as an information retrieval system, helping to explore some of the existing relationships between the spatial indicators and by defining new data relationships. Recent developments in quantitative (or mathematical) geography are increasingly adopting GIS for statistical analysis (Philip 1998) and the investigation of distributional effects. There appears to be scope to link with qualitative attributes, especially when we think of the potential for integrated (linked spatial and environmental) management tools, although this has tended to be strategic resource allocation with aspirations for applications that include 'state of the environment reporting and environmental monitoring' (Watkins *et al* 1997 p41) of physical attributes.

However, the potential role of GIS is more than as a common denominator in linking data-sets, it provides a spatial framework for the attribute data that can be worked interactively to reveal patterns and relationships between attributes.

Exploring existing relationships

Decision Support Systems (DSS), in the form of non-spatial evaluation frameworks, have been spatialised and linked with GIS projects (Despotakis *et al* 1992) to investigate the relationships and patterns between different physical attributes of sustainable development. Examples include local transport accessibility (Taylor and Ryden 1998) and community safety and crime (Hirschfield and Bowers 1998, Hirschfield *et al* 1995). The locality specific nature of sustainable development does make the inclusion of a generic evaluative framework a problem and where more localised methods are applied, it suggests that sustainable development is easier to evaluate at the regional / local rather than national / global level.

The challenging and innovative aspects of exploring spatial relationships, has been the translation of non-spatial data into a spatial format. A limited number of GIS projects have attempted to spatialise quantitative information from non-spatial data sets by attaching the attributes to their own established area boundaries. (Despotakis *et al* 1992) However, this stage in the GIS project has also focused on a range of subjective, cognitive and qualitative measures of sustainable development which have been geo-referenced to census areas, self-defined community boundaries, postcodes or individual households - a new application for GIS at the local level.

Defining new relationships

Walford (1995) has argued that GIS is the most appropriate tool for defining new data relationships and understanding their spatial patterns. Techniques and methods such as point/line density & distribution, adjacency & nearest neighbour analysis, line connectivity (trees and circuits) can be used to integrate data sets within a GIS project. The role of GIS as a data integrator is further enhanced when it is linked to statistical computer packages such as

SPSS (albeit with only the 'table' as a basic data model) where the analogy between the systems is valid.

The role of this type of GIS model (data model) is concerned with describing and understanding the real world by analysing and integrating a geometric representation of reality. Because of this, Frank (1992) has questioned the linking of GIS data models (geometric raster or vector data sets) with our human understanding of spatial concepts. Can we expect to get a beneficial understanding of urban systems by representing human cognition and understanding of space (for example; concepts of territory, sense of place, community) as part of a formalised data structure? It is clear that defining new relationships between spatial attributes, some of which will relate to qualitative aspects of human spatial cognition, will require new ways of spatialising and structuring data and then understanding the resulting spatial pattern (Cliff and Ord 1981). Where the attributes are locally defined, there will have to be specific means of structuring the data before linkages can be established.

It is useful to adopt Frank's definition of a data model as "... a comprehensive set of conceptual tools to be used to structure data ..." that are "... defined formally and are constructed such as they can be implemented" (1992 p412) to make a clear distinction between representative databases and predictive or empirical models linked to a GIS project. In the manipulation of data models, in the form of individual attribute overlays/databases, the GIS project is concerned with: (i) making a linkage between attributes through correlation; and (ii) empirically describing that linkage, to lead to a better understanding of the spatial relationships within the urban system. The modelling stages beyond these two steps (notionally (iii) testing the generality of the empirical relationship; and (iv) establishing rules of behaviour, Burrough 1992 p7) would imply elements of predictive modelling.

GIS as a predictive (modelling) tool

When specific environmental problems have spatial dimensions, there is potential to integrate predictive models into a GIS project. Historically, there are examples of using GIS as a tool for atmosphere, hydrology, land-use and biological modelling "... but in the majority of cases, GIS and environmental models are not really integrated, they are just used together." (Fedra 1993 p39). The recurring limitations have been adding dynamics or temporality to spatial databases, investigating three dimensions in a two-dimensional framework (for example the land-use planning applications of Webster 1990) and reliable data availability (Burrough 1992). Fedra (1993) argues that it is more important to ensure the GIS tool is useful to the policy maker within an easy-to-use decision support framework, rather than attempting to overcome the technical problems associated with the GIS computer architecture required to allow for fully integrated spatial modelling.

Most of the limitations of GIS in environmental modelling relate to high-level problem solving and not to supporting policy decisions. At the level of policy making, it is most desirable to integrate predictive environmental models into the decision making process by using GIS as a means of data capture and/or visualisation, where the model output is displayed on a spatial/map

background. The European CORINE programme is one example where GIS has been used for data presentation rather than for the use of its analytical facilities (Allen 1996, Watkins *et al* 1997). The development of a GIS based model for Cardiff (Jones 1996) is linking a series of existing sub-models (prediction of building energy use, SATURN transport model, traffic emissions) through a common spatial framework. Again, the major role of GIS software is in the presentation; axial and thematic mapping; of the various attributes under investigation. Similar work in Swindon (Steadman 1996) is also concerned with the linking of existing energy and transportation models through the medium of GIS, based upon earlier spatial modelling (Steadman 1989). The Swindon project uses Ordnance Survey and Census data, linked to previous land-use survey work, to create a detailed model of the building stock, land use patterns and the transportation system of the city. There are interesting features in the treatment of three-dimensional properties as a series of 'floor polygons' similar in structure to a CAD project. Again the limiting factor in the development of the model is the extensive data collection required and this suggests that the more successful GIS modelling projects are those with the flexibility and adaptability to become tailored to make best use of public domain data and incorporate low-cost primary data. Where data manipulation and analysis has occurred wholly with a GIS environment, it has tended to be simple models based on specific query building which in turn provide simple answers in the form of single words and/or numbers (Nyerges 1993, European Environment Agency 1996). Additional examples are in thematic areas of retail studies and business relocation and organisation (Braniff 1998) linking local household survey work on behavioural characteristics to low cost public domain databases and commercially available sources, environmental pollution modelling (Riain *et al* 1996) and habitat suitability modelling (De La Ville 1998).

Future directions could concentrate on the use of geo-referenced data being used as input data for algorithms to generate new spatial measures (the use of 'map algebra' as described by Tomlin 1990) or the coupling of GIS and models by ensuring the simple importing and exporting of modelled attributes. Goodchild argues that "... the greatest advantage of GIS is its ability to handle multiple models, and to convert data between them" (1993 p12) and that the linking of spatial models is more an aspect of data integration rather than predictive analysis.

GIS as a policy-orientated tool - Displaying results and designing the appropriate user-interface

GIS has been a useful asset for visualising urban society, simplifying complex issues and relationships in a graphic form that is easily understood by a non-expert audience. It has even formed the basis for an interactive tool for computer-based games and participatory 'planning for real' exercises (Houst 1992). *SimCity* is an ideal example of how a well designed user interface based on GIS technology can assist the exploration of multiple city layers. The game expects the player to follow their own goals for the city (even if they are not explicit in any format) and to adapt and change these goals as the city develops and in response to the displayed spatial information (Zampi and Morgan 1995).

In this context, the interface with the user is the most important aspect of GIS technology (Frank 1993) where visualisation can improve access to data and thus decision-making (Yoshikawa 1997). Any aspects of interaction and data presentation need to be appropriate to the needs and ability of the user. This includes accessing the computer interface and the updating of data sets and attributes as part of any monitoring process.

There are unique advantages in using maps or spatial representations to displaying a large volume of data and in highlighting the linkages between different data sets (Tufte 1983). Graphic representation is ideal for multivariate data sets and communicating issues of complexity, particularly to a non-technical audience.

Data maps used in the presentation of attributes and indicators as part of the research project include: (i) composite mapping (the combination of two or more attribute layers where the viewer is left to make their own 'eyeball' analysis of spatial connections); (ii) choropleth mapping (showing empirical data); (iii) scatterplots (useful in drawing attention to 'hotpoints' and areas of interest); (iv) isolines (to show connections between points of common attribute value. For example; drive times, accessibility or fluctuations in daily population densities.); (v) grid based data sets (isolated or superimposed over a geo-coded map base.); (vi) charts, such as pie charts (showing ratios) and histograms (showing trend data) displayed within their specific spatial context (area or line) or generalised locality (linked to point, where there are ambiguities over exact boundaries); (vii) *hotlinks* (flagging up links between spatial and qualitative attributes and presenting the qualitative information as an adjunct to the data map. For example, in descriptive text, picture, sound or video format.); and (viii) spatial analysis, such as density mapping (ie: point to raster) or simple buffering of vector data and selecting by theme.

In each case, the mapping notation used, in conjunction with the visualisation technique, must be understandable to the non-expert. This implies that at least some material will need to adapt notation (while maintaining the same underlying database structure) to suit the end-user.

The GIS project uses a combination of the above overlays where it is necessary to display more than one variable at a time. The output display should help in the various stages of the decision-making processes as outlined below. The potential importance of the user-interface and the visual display of spatial data should not be underestimated. "We spend vast sums on collecting raw geographic information with technologies such as remote sensing, and on modelling environmental processes, and yet it often seems that the biggest problem of all is the translation of this knowledge into useful and effective policy." (Goodchild 1993 p14)

Yet, the importance of an accessible user-interface is not just related to the graphic quality of the output. There is the need to ensure data, especially modelled data, is reliable and does accurately reflect real life and provides viable predictions (Burrough 1992). It is the combination of quality data, display and interaction that combine to make a GIS project useful for policy purposes and decision making. Discourse analysis within qualitative methods has been discussed in earlier chapters and reflection on this poses the question as to

whether it is possible to make a GIS project that improves the means of discourse and the GIS aiding a two-way flow of information.

The use of GIS for policy support goes beyond the field of well-designed graphics and computer generated cartography. It has to provide opportunities for three broad stages of decision-making; (i) intelligence, (ii) design and (iii) choice (Copas, 1993). These stages will require a well designed user-interface including graphic display but they will also need to share spatial databases and require a range of basic data browsing and interrogation techniques. As a decision support capability is central to the GIS project, it has been designed to be as flexible as possible in both the input (data availability, limitations) and output (display, investigation, modelling) interfaces. This will allow opportunities for a common spatial database to be used for design, assessment and monitoring of urban systems and thus become a fully integrated decision-making (policy orientated) tool. It will match the data output and scope of interaction with the range and scale of information ultimately required by decision-makers.

GIS investigating relationships at an urban design / neighbourhood scale

Theoretically, the scale of GIS investigation is only constrained by data availability and the IT skills of the end-user. Yet the potential of GIS has been significantly under-utilised at a community level and in the investigation of urban design relationships with only a limited range of single aspect projects on community health (Hirschfield *et al* 1994, Brown *et al* 1991). One exemplar application is that of neighbourhood organisations in Milwaukee developing a set of community defined indicators of quality of life, which link attributes of owner occupation, crime rates and property values (Huxhold 1996). These attributes have been mapped over census tract boundaries and the community utilised the results in negotiations with strategic funding agencies. This was limited to a fairly static process where the GIS project was little more than a visual mapping exercise. Other community organisations in the USA have had to contest the findings of GIS projects which had hidden political values in the scoring and weighting of individual environmental sensitivity measures and proximity attributes (Towers 1997). From this it is clear that GIS projects are not necessarily objective and scientific. They can be used politically in an advocacy role by communities or as quasi-technical methods for bypassing community involvement. They are embodied with political value judgements, which demand community participation whenever operating at a scale and within a policy framework where decisions affecting communities are based upon analysis of spatial data sets.

Social geographers have been concerned with socio-economic attributes at the localised level and such demographic analysis has been the closest application of GIS to practical neighbourhood planning and management, helping to determine or define neighbourhood characteristics. However, demogeographics has been far from an interactive process and it has been data-limited rather than user-defined. To overcome such constraints, Martin

(1996) highlights the use of spatial areas of self-classification based on local knowledge.

Locality specific areas and attributes may be the best way to apply GIS to neighbourhood problems, focusing on the exact area of interest rather than the area that the available data relates to. If users (community groups, local authorities and architects / designers) define their own area of interest, they will need to be able to generate the data they require at the appropriate scale by editing public domain data or by carrying out their own survey work and geo-referencing the results. Ease of use of the GIS project also becomes a major consideration when operating with small-scale users at the localised level.

Urban design and architectural applications have made extensive use of network models with a heavy bias towards the development of expert mathematical models, developments of gravity models (Krafta 1994, Ho 1989) and input/output models of flows (Leach 1996, Ochitwa 1984). Such network analytical tools are available as add-on packages to *ArcView*.

Other research and applications based upon the work of Space Syntax (Hillier and Hanson 1984), utilise spatial indicators such as centrality, morphology/texture (using both vector and 200m² raster images as source material) and connectivity (Lesen 1996, Webster 1995, Krafta 1994) to investigate the "... multi-layered complexity" (Stringer 1999 p39) of land use distribution and urban structures.

Batty (*et al* 1998) provide a useful overview of GIS functionality in the field of urban design. This overview shows an historical bias towards the visualisation function of GIS, but with a growing set of analytical tools available as an off the shelf 'ad-hoc toolkit' (p3) (as add-on software to *ArcView*) this is rapidly changing. The possible applications of some add-ons (*Network Analyst*, *Spatial Analyst*, *3D Analyst*) are explored in the following chapter, together with some qualitative *hotlinking* (an important aspect of a mixed and multi method approach) and customisations using *Avenue* (*ArcView*'s scripting language). The development of off-the shelf products continues to improve and the interface is increasingly non-expert and suitable for wider applications, including participation linked to data communication / visualisation.

The paradox in much of this work is that functionality is defined by very specific endusers and characterised by specific policy functions that render them impractical whenever the policy agenda progresses.

Yet this is the scale at which the adaptive framework operates and at this scale that the limitations of data collection experienced at higher levels of application, abstraction and analysis can most easily be overcome. The low-cost approaches outlined in the methodology 'toolkit' are appropriate for the use of the non-expert such as community groups, schools, local business and special interest / civic organisations. The process of indicator definition, data collection and system design in developing the framework can be beneficial for consensus-building, sharing responsibility and raising awareness of sustainability at the local level. It is an accessible framework that can be useful for improving local democracy as well as providing a framework for data analysis at a high-level application.

The project sets in place a common spatial (digital) database to be used for design, assessment / evaluation and monitoring of urban systems, becoming a fully integrated multi-use/stage decision-making tool for a range of different end-users at a variety of data abstraction levels. It utilises data collected by local interests and benefits from GIS capabilities as a "... 'toolbox' ... for geographic data manipulation" (Martin 1996 p185) (as *ArcView* has the utility to act as such a toolkit when add-on packages and user adaptations and scripts are included) becoming dynamic in its operation and updating, linking traditionally discrete stages in policy planning and design and providing synergy and highlighting overlapping concerns between different interest groups.

Limitations and opportunities of GIS

For a GIS framework to be useful it requires a pragmatic approach based heavily upon empirical links that are necessarily reductionist and thus we must be careful not to confuse *total urbanism* with this description of 'geometric reality', that by nature tends to over-emphasise empirical evidence, technocratic and voluminous databases (Dorling 1998). We need to be aware of the limitations of a GIS based approach.

Data restrictions

GIS limitations include the assessment and recording of metadata. This is not necessarily an IT issue but related to spreadsheet / survey design, sampling sizes and other practical issues concerning methodology in primary data collection. There is always error caused in collection. Added to this is error caused by data handling, scale variations (especially raster grid sizes, where spatial accuracy issues need to be recorded and linked as they are relevant to scale dependent analysis) and coding of data (Goodchild and Proctor 1997), such as field inconsistencies (especially longitudinal data inconsistencies in method and recording, for example as postcodes or wards change shape over time). Thus, there is a useful role of metadata in describing and informing the relationship between the 'mapper' and the 'viewer'. This is particularly important if this relationship is defined over time and involved the long-term maintenance of databases (especially with large databases and the use of subjective and individualistic collection and recording procedures).

Inaccuracy in data input and data inequality, together with the associated implications on resources for long-term monitoring and database maintenance is a key constraining factor in the functionality of any GIS project. Notionally, there has to be consideration of the time and knowledge required to correct errors in currently held data or caused by data entry (eg: via scanning). Data limitations have had a number of perceived effects on the scope of GIS.

(i) The strategic nature of public domain data sets and remotely sensed images has resulted in the majority of GIS applications focusing upon the regional rather than local scale (Yoshikawa 1997, Rao *et al* 1995, Est and Vroege 1984). This is more so for socio-economic issues where census data boundaries and issues of confidentiality have combined to limit the use of local data (Martin 1996).

(ii) Applications have been geared towards solving specific problems rather than an understanding of a complex urban system. A focused application tends to limit the overall data capture required but in doing so it also limits the range of potential applications and analysis. Perhaps the scope of sustainable development and the level of abstraction for neighbourhood data require the use of a commonly held spatial database (probably public domain) and supplemented with locally defined and collected data sets.

(iii) There is a physical bias in current GIS application (Martin 1996). Physical and quantitative measures have dominated over qualitative attributes and yet "... the demand for quantitative techniques within GIS may have been overestimated" (Copas 1993 p163) whenever decision making is more concerned with 'soft' qualitative problems of policy aims and goal-setting rather than investigating 'hard' scientific solutions.

(iv) The danger of ignoring key issues because the data is not 'spatial' (for example, referencing communities of interest, generic/strategic survey work or demographic figures) where "... a link between the nonspatial and spatial modes is crucial for developing a GIS-SD (sustainable development) hybrid system" (Despotakis 1992).

(v) Cost (data maps etc) can be prohibitive and so pragmatic low cost solutions need to be established, based upon specific application needs and maximising the utility / transferability and sharing of data (the need for low cost, small scale locality based projects highlights one advantage of local urban design based information, the relative ease of data collection and coding).

(vi) Incremental rather than continuous updating of data sets have a knock-on effect on the potential of understanding dynamic effects.

Dynamic restrictions

Time has been described as "... a hidden dimension" in mapping (Wood 1992 p126), where graphics have certain in-built codes relating to change over time; concentrating on selected strategic features which are unlikely to become subject to dramatic change. This means that small-scale and localised factors; for example, street lighting, vegetation cover; are more likely to be ignored in traditional cartography than basic factors such as topography, structures and underlying physical features. Daily or seasonal fluctuations in such features can have a huge effect on the usefulness of spatial representations and yet ignoring these dynamics can make certain graphic representations obsolete. This is particularly true when mapping socio-economic factors such as population densities and commuting patterns, where the density and movement levels depend on the time of day and week (Shapcott and Steadman 1978).

People have tended to side-step the problems of mapping dynamic spatial data (Langran 1993) and yet this is fundamental if a GIS tool is to be capable of effective resource management and long-term monitoring. Indeed, it is one of the strengths of GIS over traditional cartographic techniques in that it can deal with spatial dynamics (Goodchild and Proctor 1997). The modelling of dynamic urban systems by the injection of temporal issues could become a possible future direction of GIS projects. Presently, the aspect of time can be understood and integrated within a spatial database in a number of different

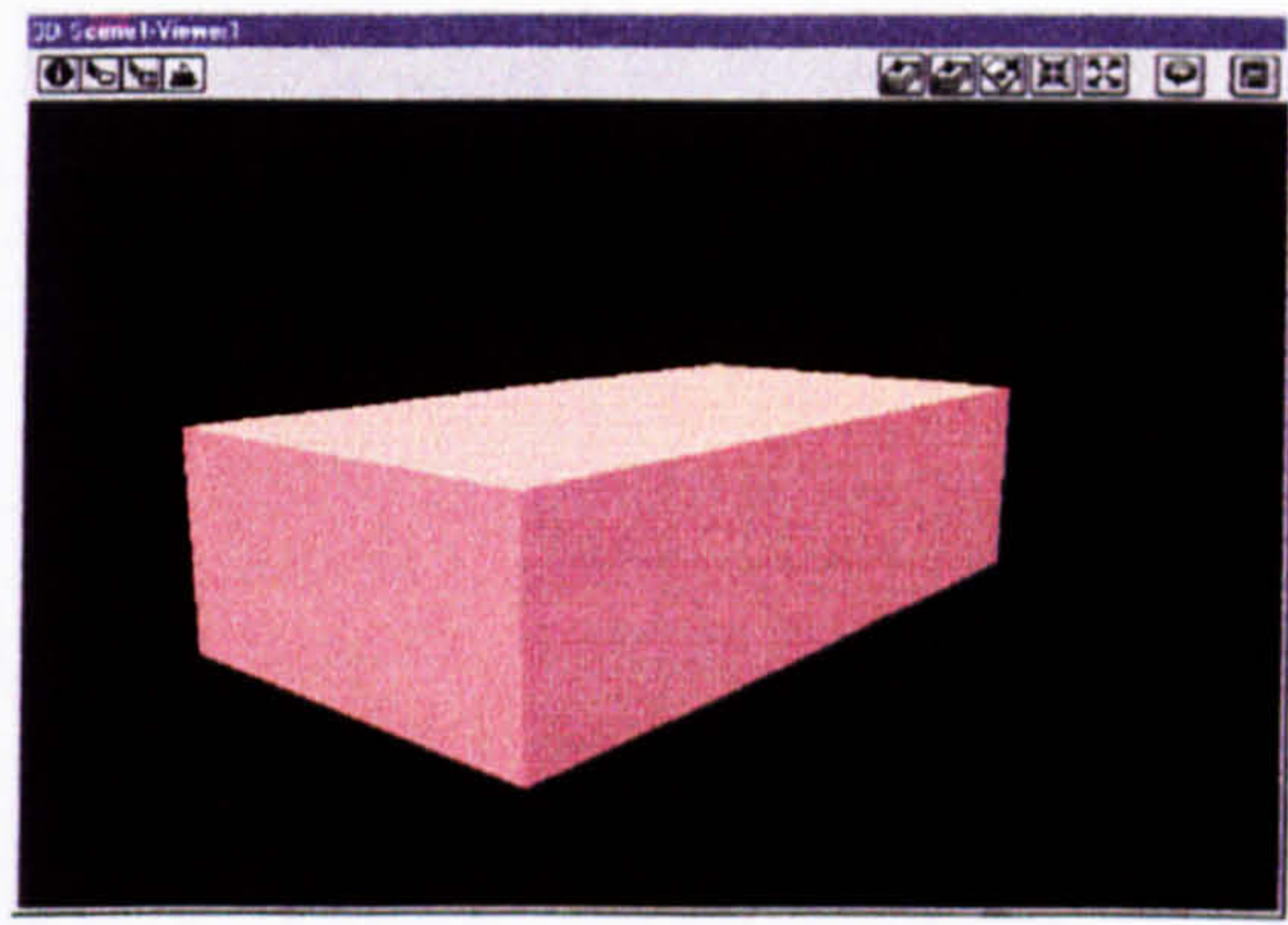
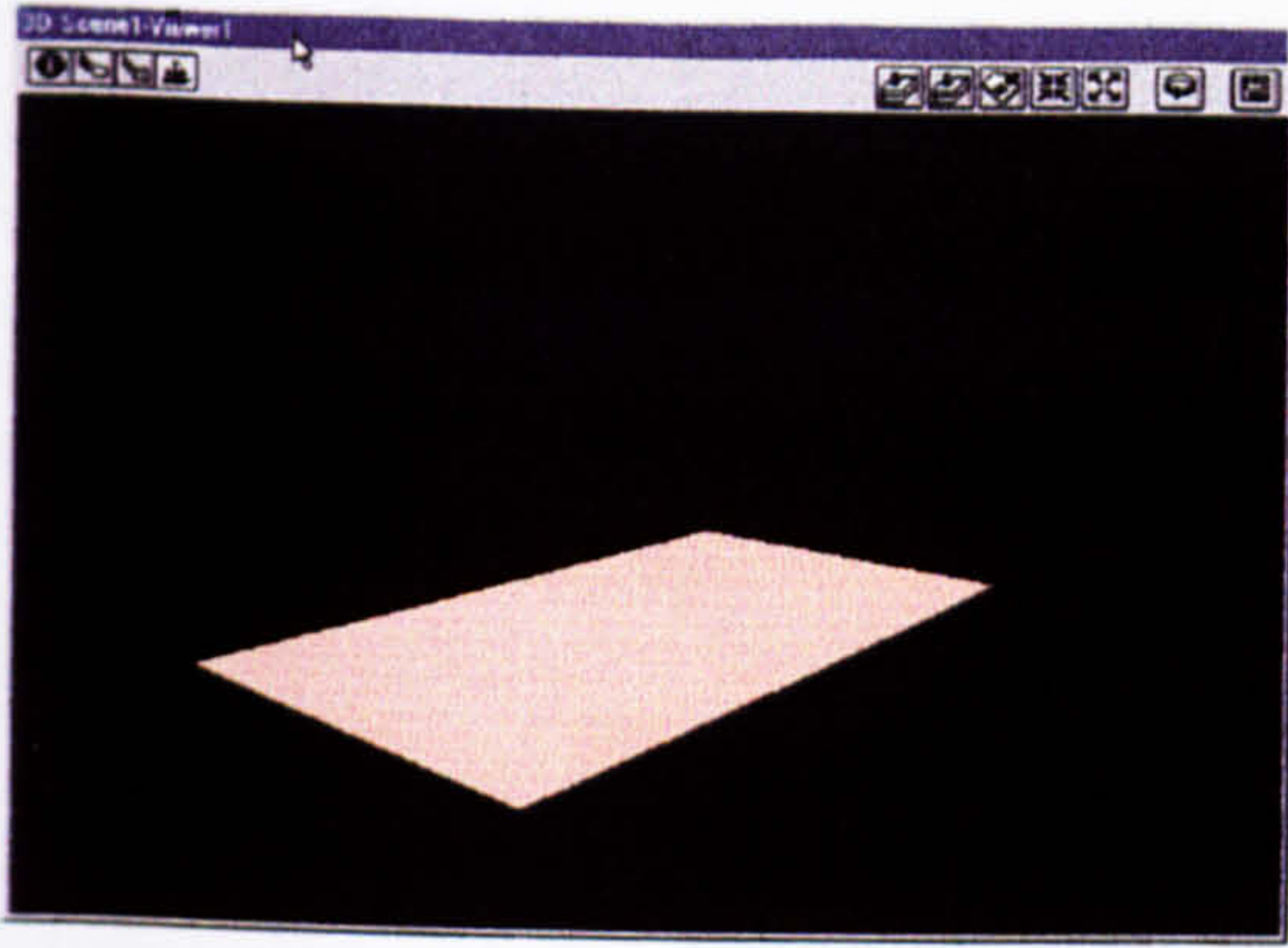
ways and in so doing will raise a number of concerns: (i) the analysis of time series is initially possible through investigation of historic data and changes to attributes or spatial boundaries but this still only presents change as a series of static descriptions, even time-dairies present a snap-shot; (ii) used to generate empirical dynamic models (Parkes and Thrift 1980); (iii) unique problems can arise in the presentation of dynamic, temporal maps but there are possibilities for using time directly as a spatial dimension – for example, where travelling time is mapped as x,y co-ordinates; and (iv) the complexity of spatio-temporal data may require special statistical tools for analysis and thus the GIS project concentrates on the display rather than the analysis of this information.

Technical restrictions

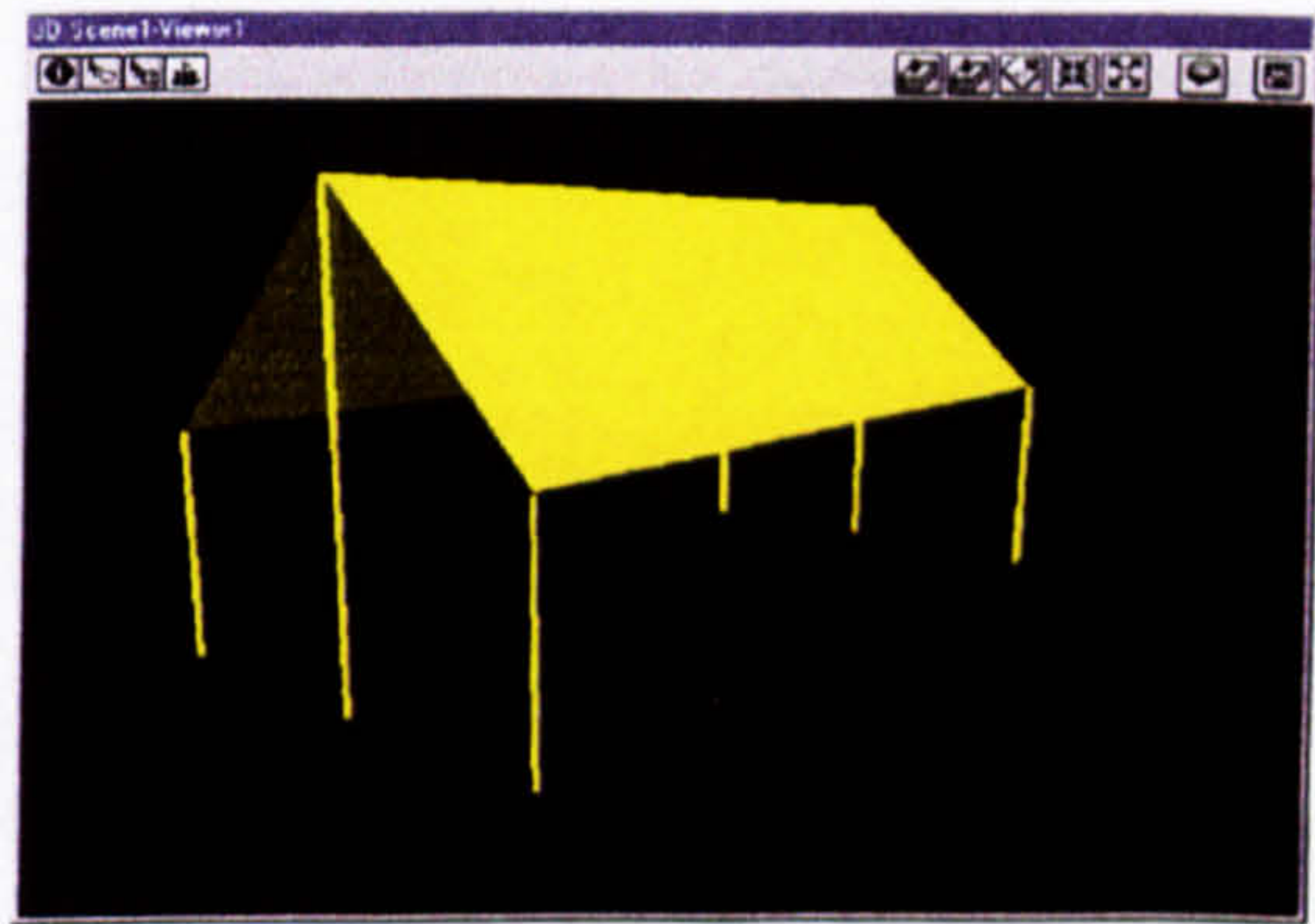
There is potential danger of misuse of digital maps and data due to an over-reliance upon the user's technical skills and access to the (digital) data (Clark 1998), threatening to create a technological underclass. We should aim to increase functionality and democracy with a multi-user interface where structure must not deny access. It must be non-elitist / non-expert and open access but within a context (mapping conventions of scale, notation and keys and metadata), otherwise it would be "misleading rather than enlightening" (Clark 1998 p312) being a clearly political tool with moral implications for its ultimate use. Therefore, we need to be aware of objectivity and political bias (Dorling 1998, Monmonier 1991 or the value mapping of the CPRE's 'tranquility' areas Wood 1992) in selection and presentation using this medium.

Three-dimensional restrictions

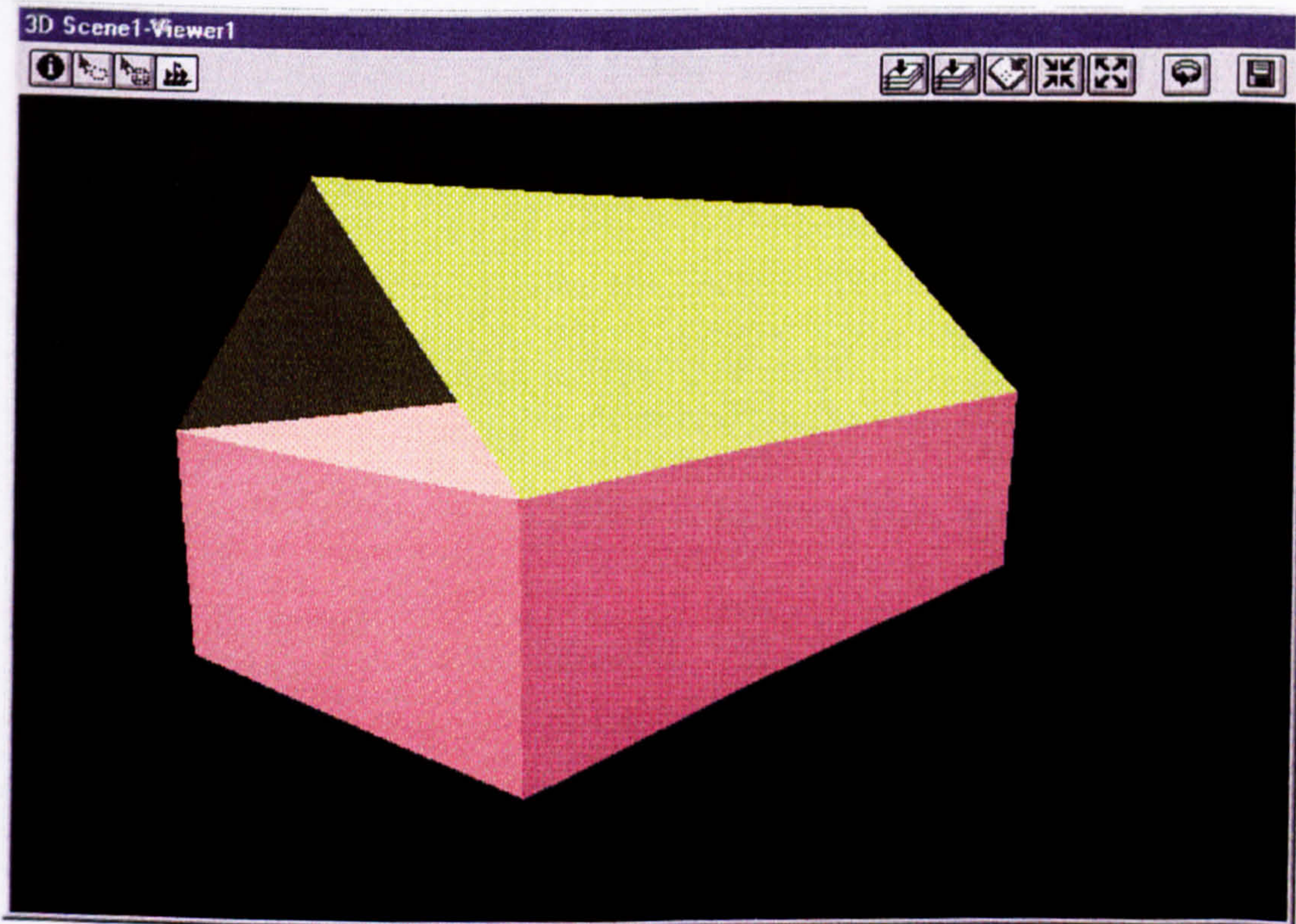
A specific constraint in the examination of the built environment has been issues of 3D representation and modelling. These have posed new problems for GIS projects. One response has been to treat the attached attribute data as z co-ordinates to describe building height in a similar manner to topography. Other approaches have included separate overlays for each building storey in a similar manner to traditional CAD systems. The GIS software being used in this project does have the ability to graphically represent 3D as a basic 'hillshade' facility imposed on underlying topography (or alternate physical or socio-economic isoline) and, with the *3D Analyst* add-on, used the attribute data for heights within a simple Virtual Reality viewer. This allows the user to extrude vector shapes to a particular height (for example, extruding a polygon shape will produce a solid block). Point data can also be used to create TIN surfaces (where the software performs a simple triangulation between different 'spot heights' to create a solid 'topographical' surface). Raster data, in the form of bitmaps (such as material textures, aerial photography) can then be pasted onto this topographical surface. A combination of the manipulation techniques is shown below and will be tested within the followed chapter.



(extruded polygon shape based on z value)



(extruded points based on z value and corresponding triangulated TIN surface)



(combined extruded block and TIN surface in three dimensional building form)

Democratic communication over technocratic analysis

Fedra (1993) argues that it is more important to ensure the GIS tool is useful to the policy maker within an easy-to-use decision support framework, rather than attempting to overcome the technical problems associated with the GIS computer architecture required to allow for fully integrated spatial modelling. Most of the limitations of GIS in environmental modelling relate to high-level problem solving and not to supporting policy decisions and other low-level applications.

The adaptive framework is not just concerned with data provision but improving knowledge and thus informing / influencing behaviour. This implies equitable stakeholder access to this information to empower decision making, knowledge and behaviour and so the most important pre-requisite / question for GIS modelling 'soft' systems is who will use it? Rather than what it is ultimately used for? Beyond the question of interface design, this suggests a requirement for: (i) some element of feedback on the utility of any system designed to meet specific user needs and applications; and (ii) flexibility in the system (Nijkamp and Rietveld 1984) to allow for changing data and to allow linked sub-system models in response to any user feedback.

Thus, the adaptive framework is initially designed to user specification and then adapted through use via feedback (validation of utility of data relevance and map use, both positive and negative). The system has the assumption that within this flexible framework the database will allow for a variety of techniques and thus the data structure and vector / raster representation will need to allow for all such eventualities; statistical analysis (matching polygons or survey points with linked numerical fields) , spatial analysis (vector based linked to weighted numerical field) and intuitive analysis (mostly visual and graphical connections).

The interactive dimension

Multi-media products present information in an interactive way, by combining digitally processed text, speech, sound, graphics and video. Applications of multi-media have increased substantially in recent years, due in part to the effects of increased hardware performance at reasonable cost, and the development of accessible software. It is possible to merge multi-media with GIS by providing geo-referenced 'hotlinks' to a range of multi-media files, which by their nature are made up of qualitative data sources. The adaptive framework then becomes an important 'map-based' interface that makes a common spatial database accessible and easy to use for a variety of environmental monitoring, assessment, design, and didactic applications.

Concerns have been raised over the power of maps to persuade (Wood 1993) and the fear that "... the digital medium inevitably carries more authority than the paper" (Martin 1996 p160) because it represents both data and the results of complex spatial analysis of the data. If it is true that more weight in decision-making is due to the use and application of GIS and information technology, we need to be aware of who controls the technology, how accessible it is and how it is understood. These are concerns similar to those

within the theoretical basis of the adaptive framework. One response to these concerns is the adoption and continuing development of such a non-expert interface to the GIS, the removal of technical barriers and a progression into three dimensions (Yoshikawa 1997, Fedra 1993) where "... the map of the future (may) be manipulated, interrogated, and analysed using Virtual Reality tools" (Taylor 1996 p20) or combine modelling and GIS. In each case there is a premise that improved visualisation of data can help to open up the planning system and decision-making to greater public scrutiny and understanding.

The city of virtual layers

Within the proposed data structure each layer is artificial while being potentially interactive and affected by the users. This is similar in concept to that of 'augmented reality' (Mitchell 1999 p40-41) where different agents have the ability to view the urban system, and the spatial indicator data held to explain this system, in a way that matches their own requirements for information. The act of doing so has an impact on the user.

The real-life applications are designed to demonstrate the benefits and potential for this approach in improved urban management for designers, municipal agents and at the local community-based level.

Chapter 9

Real life operational experience

Carrickfergus, County Antrim

Preparation of inventory of current environmental and socio-economic data availability

Identification of thematic information 'gaps'

Household questionnaire design to fill data 'gaps'

- Background variables and geo-referencing

- Attitudinal measurement

- Behavioural measurement

- Measuring knowledge and perceptions

Questionnaire responses

Coding and mapping of data

Regensburg, Germany

GIS planning tool

Urban design data sources

This chapter provides two examples for the spatial indicators working within a GIS / digital system. It is intended to illustrate how the adaptive framework can be tailored to individual projects, each with their own data, resource and technological limitations. The focus of the research continues to be the integration of physical and socio-economic issues on a common spatial basis where GIS is identified as the most appropriate mechanism for dealing with the composite range of anticipated data sets. The development of a GIS tool that utilises a series of spatial overlays would allow for investigation into the interconnections between these overlays. However, it should be remembered that GIS is a tool to achieve this integration of data and the required overview of *total urbanism*. This does not imply that GIS will remain the best or most appropriate tool to achieve this overview and the adaptive framework would remain valid in any future digital system or software development.

While some of the possibilities of using GIS have been incorporated into the earlier work on UK based case-studies, partly to demonstrate the strength of certain spatial data processes (collection and mapping) and helping with an important first step of familiarisation with the *ArcView* software and the range of add-on tools, this chapter shows a development into an exclusively digital context. While this is a bold assumption to make at the outset of any project, that it will be exclusively digital, it does have the advantages addressed in the previous chapter and a number of important implications. Firstly, the interface will be visual and simple. This is also true for any qualitative data collection techniques. Data has to be geo-referenced and fit as points, lines, polygons or grids, onto a Cartesian base map. Thus, there is a challenge to maintain the indicator scope required by the adaptive framework by adapting information sources to a spatial framework or filling any qualitative 'gaps' by specific primary data collection.

The two examples of projects in Carrickfergus and Regensburg illustrate the development of unique digital databases, the resolution of data availability, limitations of the software and timescale / resources and the progress from an initial data scoping exercise to an operational framework.

The distinctiveness of each example, strategic and local, helps to demonstrate the GIS functionality (specific to the software package(s)) in the manipulation and linking of data overlays at different scales to assist in evaluation (with feedback from urban agents), design (including contextualisation and visualisation), modelling/analysis, base-line monitoring (including a resource for local information retrieval system).

Carrickfergus, County Antrim

This work began with contacts to Carrickfergus Borough Council Environmental Services Department and an awareness of their aspirations for a State of the Borough Report based partly upon the Local Government Management Board model (LGMB 1995a, 1995b and 1994) and the Sustainable Northern Ireland Project approach to sustainability indicators (Crilly *et al* 1997 in response to Crilly and Mannis 1997).

Early meetings with council officers resulted in a proposed analytical framework for this work that went beyond their initial aspirations to a GIS based indicators project. This framework proposed a series of methodological steps and procedural considerations.

(i) Selection of indicators;

- Rationale & purpose of report
- Council Members & community involvement
- Range and extent of indicators (subjects to include & number of measures)

(ii) Collection of Data;

- Sources of existing information (following principles of BADNEEC – *corine* land use, social attitudes, demographics, environmental quality)
- Identifying thematic gaps
- Collection of new data (household questionnaire design – issues surrounding environmental concerns/perceptions and local agenda 21)
- Use of local groups, schools and businesses

(iii) Form of Data Collection;

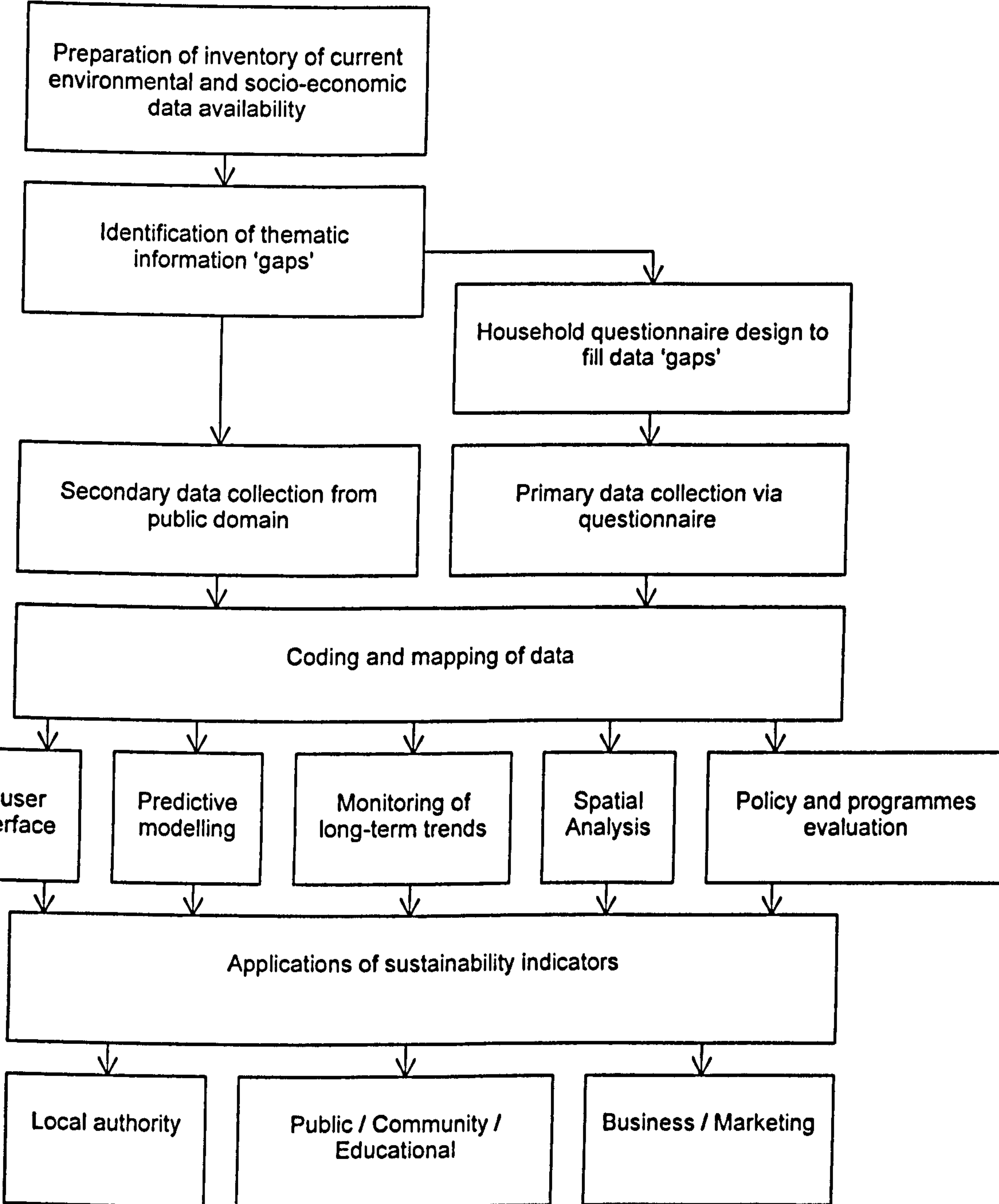
- Historical trends
- Consistent Qualitative data
- Geographical boundaries
- Spatial distribution (future GIS recording and analysis)

(iv) Dissemination and Use of Information;

- Internal council needs
- Community and special interest groups
- Local schools
- Appropriate use of Information Technology (council web site; interactive CD Rom; data manipulation via spreadsheets, GIS and statistical analysis packages)

(v) Running of Indicators Project

- Management group overview (membership of group to broaden ownership of project)
- Time-tabling and tasking between group members
- Funding of project and dissemination methods



(Linear sequence of tasks required in the production of a sustainability report for the Council area)

Preparation of inventory of current environmental and socio-economic data availability

The collection of public domain data began with known sources based on knowledge gained from linked indicator projects (Crilly *et al* 1997) with a desire to acquire as many of the identified important and/or relevant indicators included on the LGMB 'long list' (Carrickfergus Borough officers did this exercise on the basis of a self-completion indicators questionnaire). This included spatial data, empirical data and a geographical base on which to locate the empirical sources:

- Strategic land cover (where data is adapted from satellite imagery at 1:100,000) resolution provided on a comparative European-wide basis (Ordnance Survey of Ireland and Ordnance Survey of Northern Ireland 1994) and data on important / designated wildlife sites (biotopes) (European Environment Agency 1996, Planning Service 1997b).
- Underlying geology and mine workings mapped (Griffith and Wilson 1984), particularly important due the long-term effect of local salt mines and mine working that have restricted residential development in certain parts of the town.
- Secondary spatial sources for current landuse, tourist attractions and retailing (Carrickfergus Borough Council 1998).
- Statutory landuse designations (Planning Service 1997a and 1997b).
- Empirical sources suitable for attaching as attributes to low-cost spatial sources, such as the road centre line (Ordnance Survey NI). These included published sources on absolute and comparative traffic flows for the town's main roads (DoE(NI) Roads Service 1995 and 1993) which include sketch maps based upon OS data as a spatial referencing. And also secondary sources that were available from direct / formal written contact with the data providers, For example the Road Traffic Accident Records by date and location, as provided by the *Royal Ulster Constabulary Central Statistics Unit*.
- Housing data (Housing Executive 1997) on tenure mix, stock condition and some limited house price information.
- Electoral areas with parliamentary and local election results provided from other departments within the Local Authority.
- Mixed empirical and documentary sources for neighbourhoods within the District (Hawthorne 1997) both as useful data for analysis and as a basis for inclusion / exclusion of questions on the anticipated household questionnaire.

Many of these sources were accompanied with extensive metadata notes. These sources and metadata notes were tabulated and used as a checklist resource in the act of data gathering from the secondary sources, forming a crucial part of the project management as an aid-memoir, adding clarity and record progress.

Data source	Trends	Spatial		Comparison				Cost
		Scale/ resolution	Vector/ Raster	District Council	Northern Ireland	GB	European	
Environmental Health Complaints (by type – Environmental Services CBC)	Yes	Ward	Non-digital vector (polygon)	No	No	No	No	Free
Strategic Land Use (CORINE – European Environment Agency)	No	National	Vector (raster at 200m2 for Europe)	Yes	Yes	No	Yes	Free
Deprivation index (1991 Census)	No	Ward	Non-digital vector (polygon)	Yes	Yes	Yes	No	Low
Road Traffic Accidents (RUC Central Statistics Unit)	Yes	Street Survey Area	Non-digital vector (line)	Yes	Yes	Yes	No	N/A
Housing Executive (demand by sector, new building and investment)	Yes	District	Database (polygon)	Yes	Yes	No	No	NA
1:50,000 Base map (Ordnance Survey (NI))	N/A	Various	Raster (bitmap or jpeg format)	N/A				Medium (£350)
1:1250 Base map (Ordnance Survey (NI))	N/A	Various	Vector	Yes	Yes	No	No	Medium / High (£800 plus £500 annual fee)
Buildings at Risk (Ulster Architectural Heritage Society)	No	Regional	Non-digital vector (point or polygon)	N/A				Free
Statutory land use designations (Planning Service)	No	District	Non-digital vector (polygon)	No	No	No	No	Low
Historical development (Planning Service development control records)	Yes	District	Non-digital (suitable for vector or raster)	Yes	No	No	No	Low but time consuming
Department of Economic Development (NI) (unemployment, youth unemployment, long-term unemployment)	Yes	Ward	Database (polygon)	Yes	Yes	Yes	No	N/A
Valuations and Lands Agency (house sales and volumes)	Yes	District	Database (polygon)	Yes	Yes	No	No	N/A
Important habitats (Wildlife and Countryside Branch)	No	District	Non-digital (polygon and target note point)	No	No	No	No	Free but time consuming
Road Centre Lines (Ordnance Survey (NI))	No	District – all main routes	Digital (polyline)	No	No	No	No	Low
Traffic Levels (DoE (NI) Roads Service)	Yes	Main Commuter Routes	Non-digital vector (Point / line)	No	Yes	No	No	N/A
Bus Routes and frequency of service (Translink records and timetables)	No	All routes within Borough	Non-digital vector (line / network)	No	No	No	No	Free
Important buildings (listed buildings and conservation areas)	No	District	Non-digital (point and polygon)	Yes	No	No	No	Low but time consuming

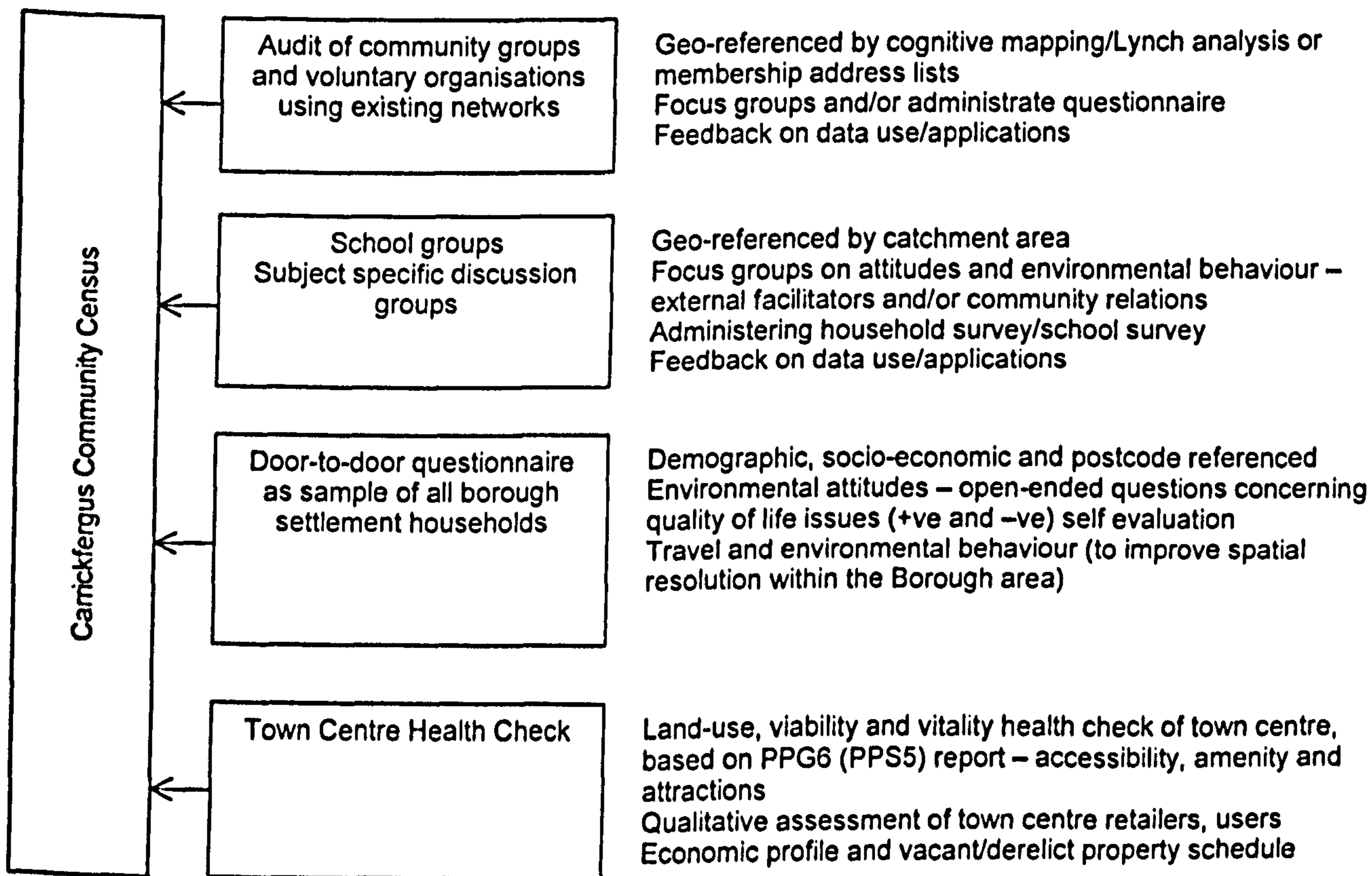
(extract from extensive inventory of data sources, format and availability)

Identification of thematic information 'gaps'

The data inventory within the District, in common with other geographical areas or urban 'agent' interests (Crilly *et al* 1999), demonstrated the abundance of public domain sources that rely on empirical and strategic data. However, the aim of the project in influencing decision-making and changing the environmental behaviour of all levels of stakeholders in the District demanded additional scope. This is specifically to overcome the lack of qualitative and subjective information; (for example, environmental perceptions, community boundaries, districts, landmarks, nodes, edges).

Additionally, the inventory also required rectifying in the spatial referencing of sources and certain aspects of dynamics to assess whether things are getting more or less sustainable. The lack of trend information was unlikely to be overcome in an adequate way for all areas of interest, although it was possible to assess householders' perceptions of change in the area as a baseline position.

The area of agent values, expressed through the use of District targets, required an exploration to understand the current 'baseline' situation and its relationship with any future aspiration. It was felt that this 'gap' could best be filled by a series of community planning events to follow the publication of the initial State of the Borough Report (Carrickfergus Borough Council 2000). While falling outside the remit of this research, these planned events (June to August 2000) are considered a useful feedback and validation process as well as a means of incorporating community values.



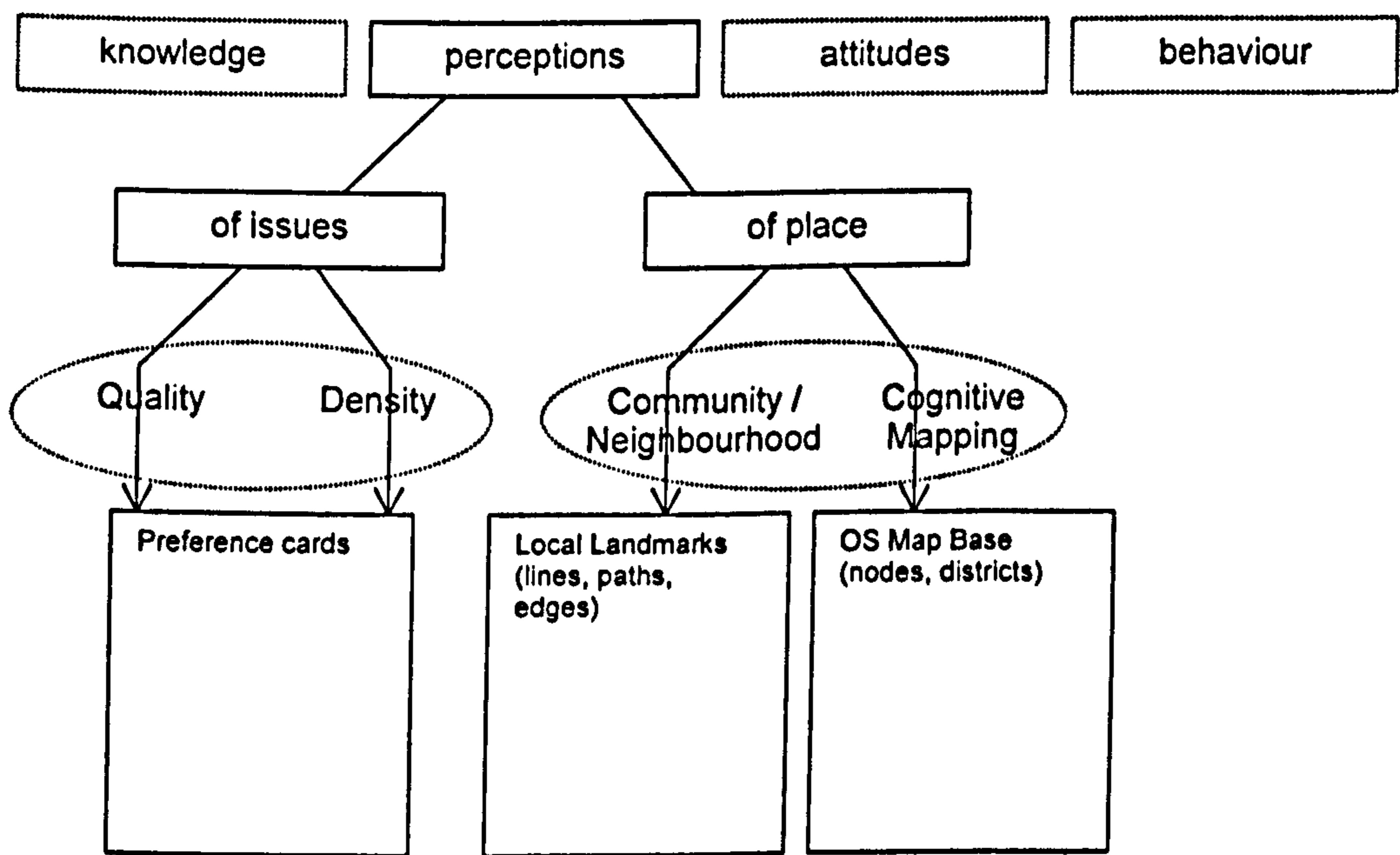
(Primary and secondary data collection from mixed sources that together provide a more holistic overview of the urban system under investigation)

There were a number of linked areas of research that the steering group became aware of during the course of the project. This included additional public domain data being collected as a town centre health check and other sources of community group audits beyond those already identified by the data inventory. This would include the proposed community planning and feedback events. It was considered necessary to anticipate the availability of this information and to make use of it in combination with current sources. The combined approaches would have been considered as a package of data sources that together provided a local 'community census'. This approach is consistent with the advocated mixed and multi method approach to data collection and integration within the earlier chapters.

It is within this context of existing and anticipated data availability that a household questionnaire was designed to address the outstanding data 'gaps'.

Household questionnaire design to fill data 'gaps'

The questionnaire was designed to develop and explore the multi-dimensional feedback and relationships identified in the last chapter in a direct and explicit format, based on the earlier case study work and inspired by Hester (1973). The actual structure of the questionnaire closely reflected this basis, as identified in the local data gaps, and this structure was also suitable for the development of earlier primary data collection techniques into this work.



The qualitative emphasis of the questionnaire helped to provide the basis of the structure and format; maintaining a simple, open-ended and highly visual format. It was important to adopt a phenomenological approach ('why' approach to questioning) that sought the reasons behind behaviour and attitudes, thus the open-endedness in the approach to allow for households to raise, weight and then explain their own concerns. It also had to be systematic and comparative.

The questionnaire was undertaken in conjunction with a small number of council staff. To ensure the necessary consistency in how the questions were presented, the introductory text to each question was included on each questionnaire and the individuals responsible for collecting the data were given a briefing / training session with the same end in mind. The consistency in words is particularly important whenever individuals are being asked about perceptions and meanings.

Background variables and geo-referencing

An initial decision was made to provide a unique reference number that would allow the Department to geo-reference the questionnaire to a specific location (based on street name) and then to aggregate upwards (based on grouped postcodes) rather than seeking to disaggregate below polygon georeferences.

The potential variables within this 'feedback' structure are locality, proximity to urban elements and the length of residency at the survey location – possible variables to both the level of knowledge of the local area and attitudes to the area.

Any optional additional personal details and possible variable (age, income group, household size) were asked at the end of the questionnaire.

Attitudinal measurement

The first questionnaire section investigated attitudes to the local area, determined by a series of open ended questions where the respondents were asked to provide their likes and dislikes and then to rank them.

This was followed by recording specific perceptions and attitudes to issues such as the density and quality of new residential development. This was an important and topical issue due to the on-going local plan preparation and the forthcoming public inquiry. These attitudes were recorded as preferences to a visual and descriptive prompt, showing a variety of housing archetypes throughout the Borough Council area (with a broad variation based on age and form). This was a record of the favoured and least favoured form of development and the open-ended follow up question to provide the reasons for their choice was designed to provide more usable attribute data for future development guidance.

Behavioural measurement

The second questionnaire section focused on fact finding, prompted by option cards, and the investigation of concerns over environmental behaviour. The sections addressed; (i) building energy efficiency and fuel use; (ii) household waste (with awareness of local recycling facilities as a variable and with a respondents option to provide suggestions for changes to local policy and / or actions); (iii) household travel behaviour (main mode of transport for commuting and other household options); and (iv) local shopping behaviour.

Measuring knowledge and perceptions

The third and fourth questionnaire sections were concerned with the respondents awareness of local landmarks and urban elements, recorded on the basis of naming / recall rather than recognition. A list of local landmarks for each settlement being surveyed were generated by local knowledge and then tested (Lynch 1981 and undated, Hirtle and Jonides 1985) with a selected set of local individuals within the project management team.

Extensive local source material was available for devising a potential shortlist for each of the settlements to be surveyed (Carrickfergus Borough Council undated, 1994 and 1998, Robinson 1994, DoE(NI) 1977 and 1992, Camblin 1951). The questions were then in response to a series of visual prompts of images of these landmarks. Care was taken to ensure that any distinguishing marks, particularly signage, was deleted from these images.

An opportunity was given for respondents to make any additional comments, as documentary source material for use within the final report production.

The final question was an adaptation of the approach developed by Lee (1973 and 1968) and tested in the earlier Byker case study. This involved respondents drawing a line on a map base of the area they understand to be their neighbourhood. This was deliberately left to the end of the questionnaire as it has proved, in Byker and in the piloting of this questionnaire, to be one of the aspects people are most reluctant to complete. This can be understood in terms of confusion over the imprecise meaning of community and in map reading difficulties.

Questionnaire responses

There was a significant delay in the data collection exercise due to unanticipated sectarian rioting on the inner estates within Carrickfergus town during the summer of 1998. This had a knock-on effect on the sample size and its variations by settlement. Temporary summer staff, initially intended to work on the questionnaire data collection, were unavailable whenever it was finally safe to begin the door-to-door survey. Council officers felt it was unwise to survey the areas directly affected by the rioting and so a proxy approach was undertaken by gathering data from a local child care centre that served the estate. This prevented a consistent random sample of collection every 5 or 6 households, as elsewhere in the survey, but was seen as the most pragmatic means of getting a consistent spatial coverage of the area.

There was a political sensitivity over the need to cover each of the three major settlements within the borough council area by the survey (Carrickfergus, Whitehead and Greenisland). This required a customisation of the survey for each of the settlements, particularly in the preparation of an extended list and visual databank of local landmarks. A report of the project was presented to full council and all party support from members was evident for the work within this customisation requirement and the Environmental Services Department were able / resourced to make a number of professional staff and student placements available for the door-to-door work.

A level of pre survey publicity was obtained by local press coverage (see appendix) and each staff member carried identification and an explanatory letter from the Head of Environmental Services.

The work achieved a good level of responses from the various settlements (3-4% sample) and a satisfactory level of completion for the range of questions within the survey. Feedback gained in a number of debriefing and reflection sessions on the approach from perspective of the interviewer and the interviewee provided an interesting perspective on the success of individual questions.

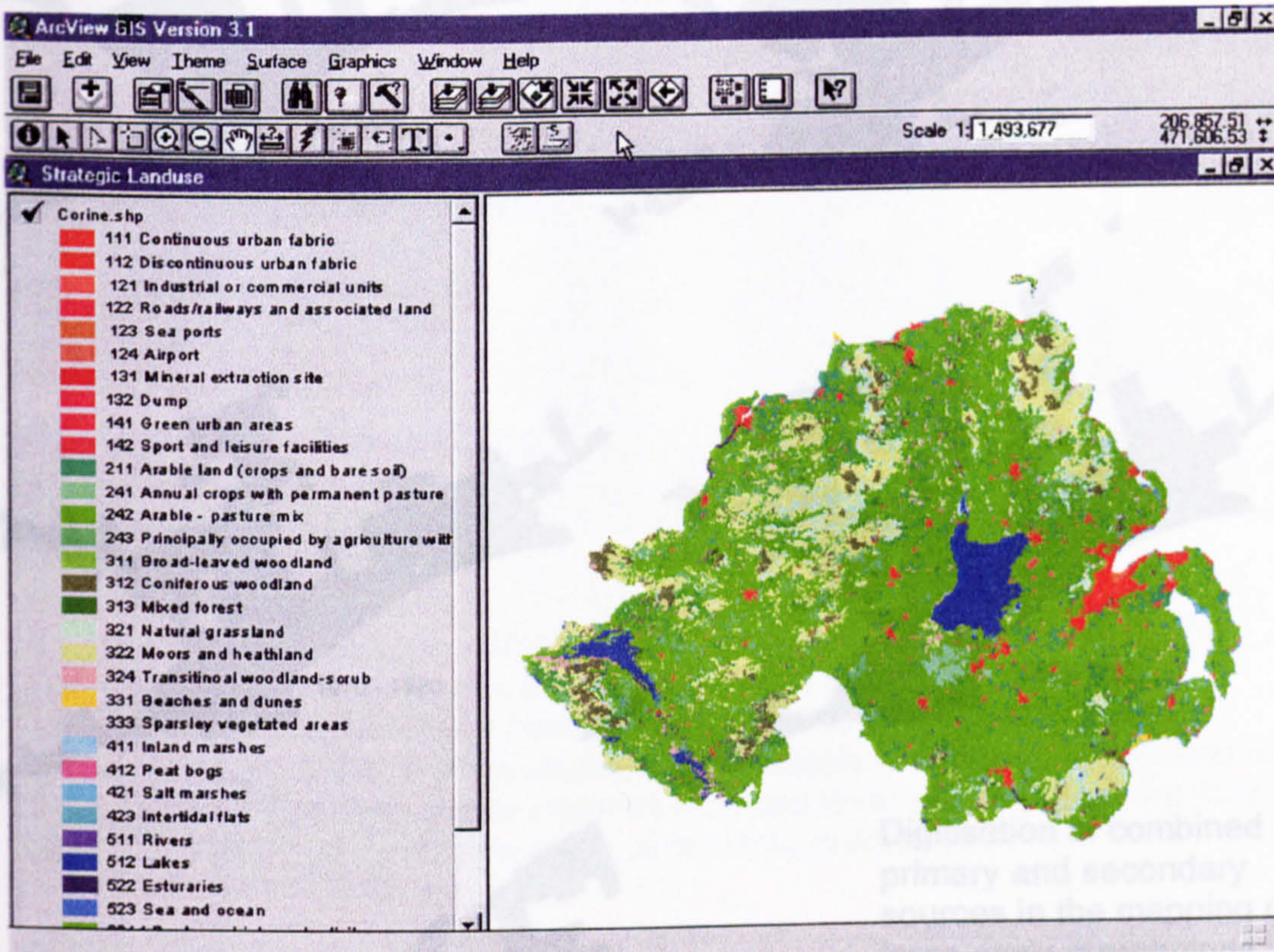
The qualitative questions, soliciting a response to a photographic and visual stimulus, proved to be the favourite of many interviewees. The question on the recognition of local landmarks prompted a high level of interaction, challenge and entertainment. Those favoured questions provided the highest level of completion, although they also proved to be the most time consuming for the questioner on the doorstep.

Coding and mapping of data

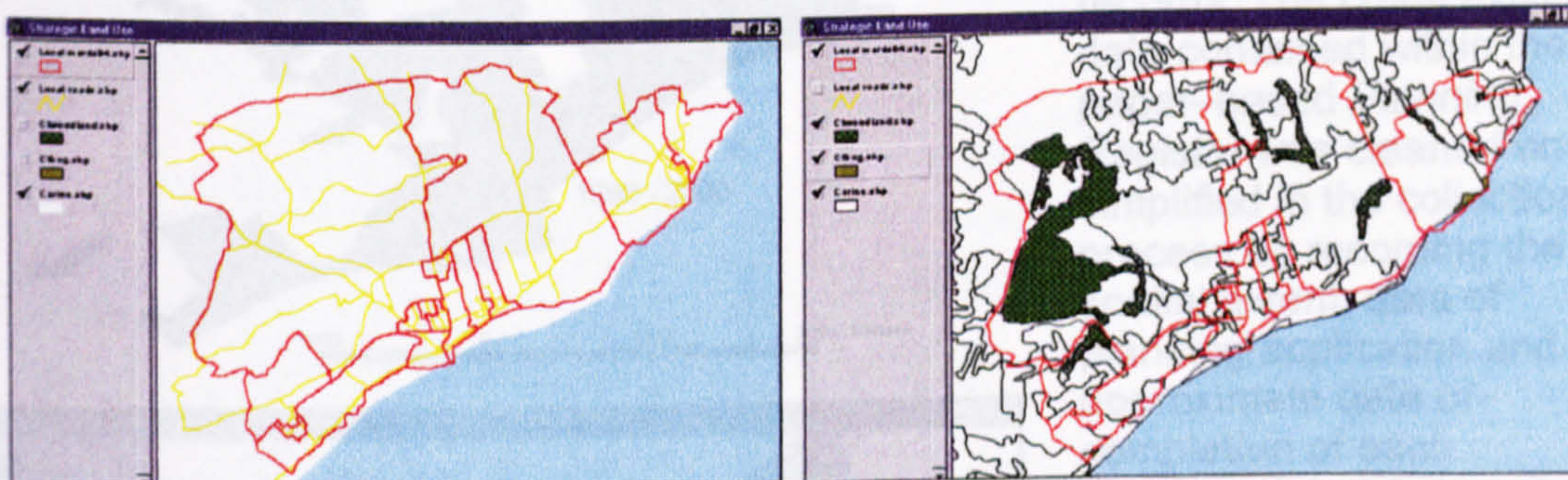
Non-technical support was provided in coding questionnaire returns in spreadsheet format suitable for matching and geo-referencing in a GIS framework. This included a unique questionnaire reference that was repeated within each digital dataset. This reference number was used to match to individual address points. This approach was effectively the beginning of the adoption of a GIS data handling code with internal/external checks and balances, specifically to ensure an approach that considers issues of; democracy and access, self critical review and feedback, transparency and openness. An approach that followed a similar approach to the Geographical Information Charter Standard (DoE 1997, Ordnance Survey of Northern Ireland 1997). (This pilot work in the use of GIS within the Local Authority was formalised in the inclusion of Carrickfergus Borough Council officers into the newly formed Northern Ireland GIS users organisation – formed to ensure the use of the Charter Standard, testing of new digital datasets and consistent formats).

Complementary to the establishment of a series of indexed and coded databases, was the principle work in the digitisation of each address point by settlement (approximately 400) and the smaller community polygons (approximately 200 based on a 50% response on the cognitive mapping question). The abundance of data gathered by this exercise, requiring a significant time and resource commitment on behalf of the small local authority to store, maintain and analyse the data in a format suitable for simple or sophisticated analysis as required by end users.

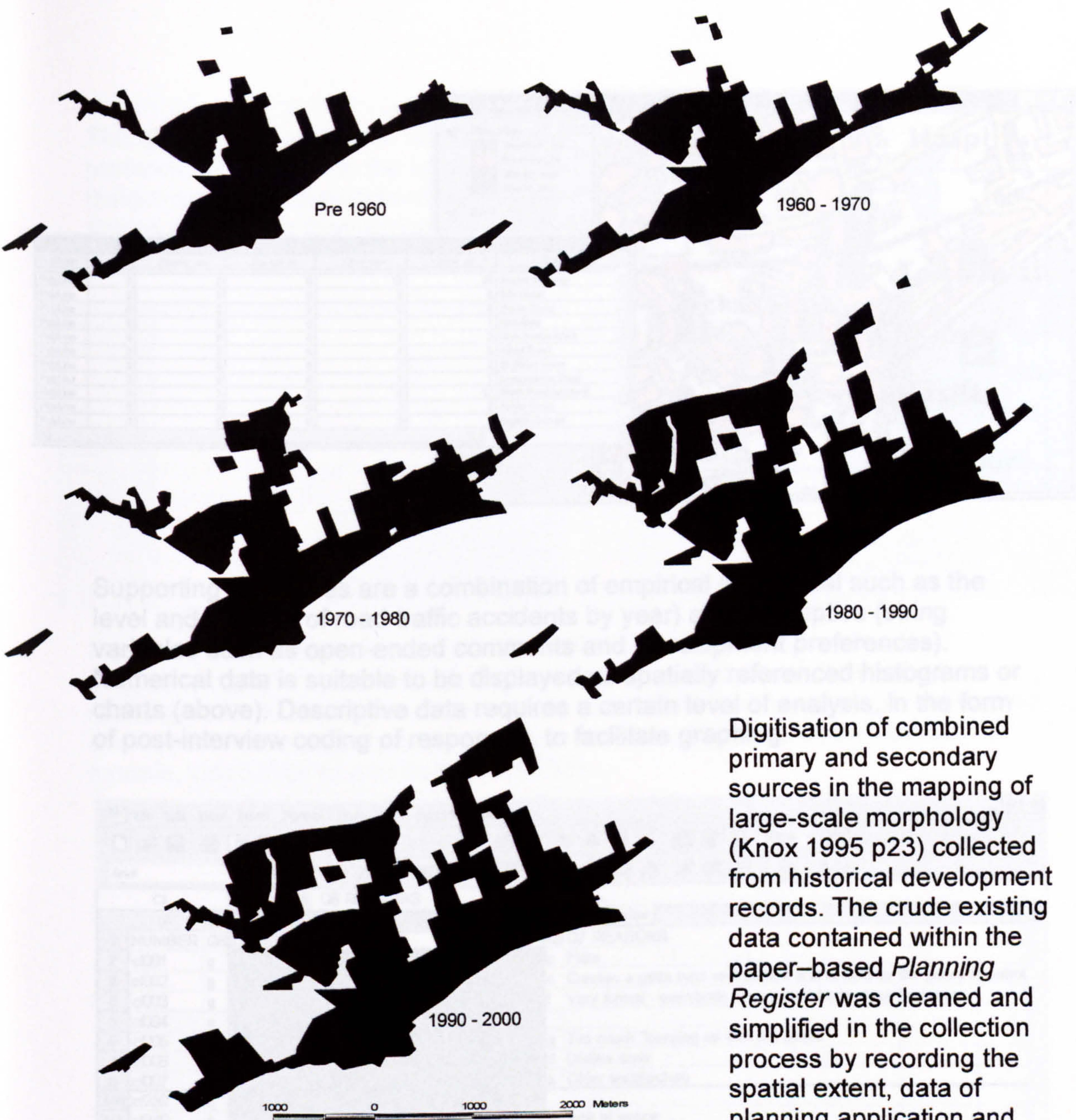
Analysis work in the GIS project is on-going and awaiting feedback from the initial state of the borough report. The following examples illustrate the development of the GIS project, the linked database and the digitisation of primary / secondary sources and questionnaire returns. This is a substantial interactive resource, requiring adequate IT storage and processing power.



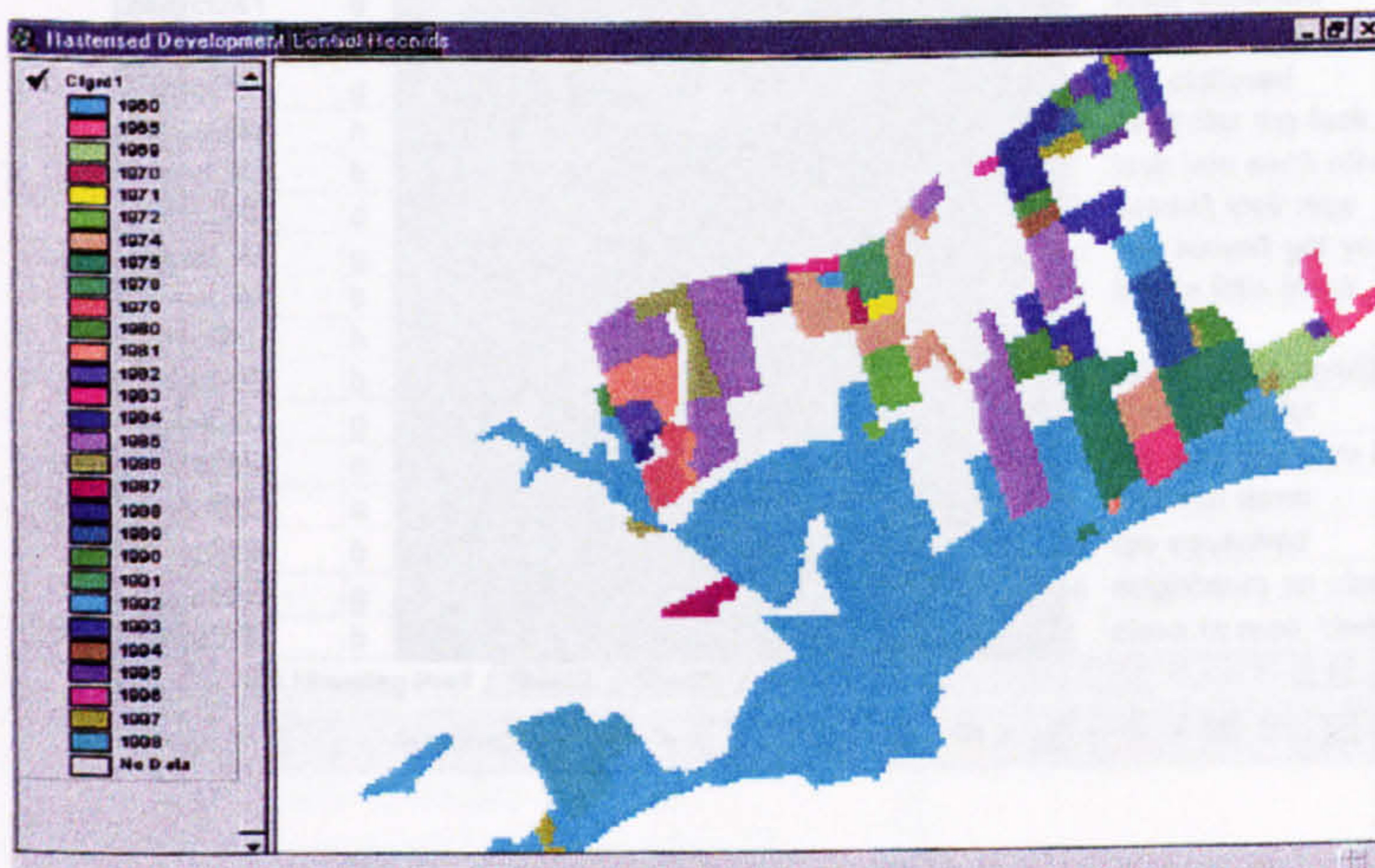
(CORINE vector data set (Ordnance Survey of Ireland and Ordnance Survey of Northern Ireland 1994) and OS road centre line data can be selected by area and/or theme to provide a local data set)

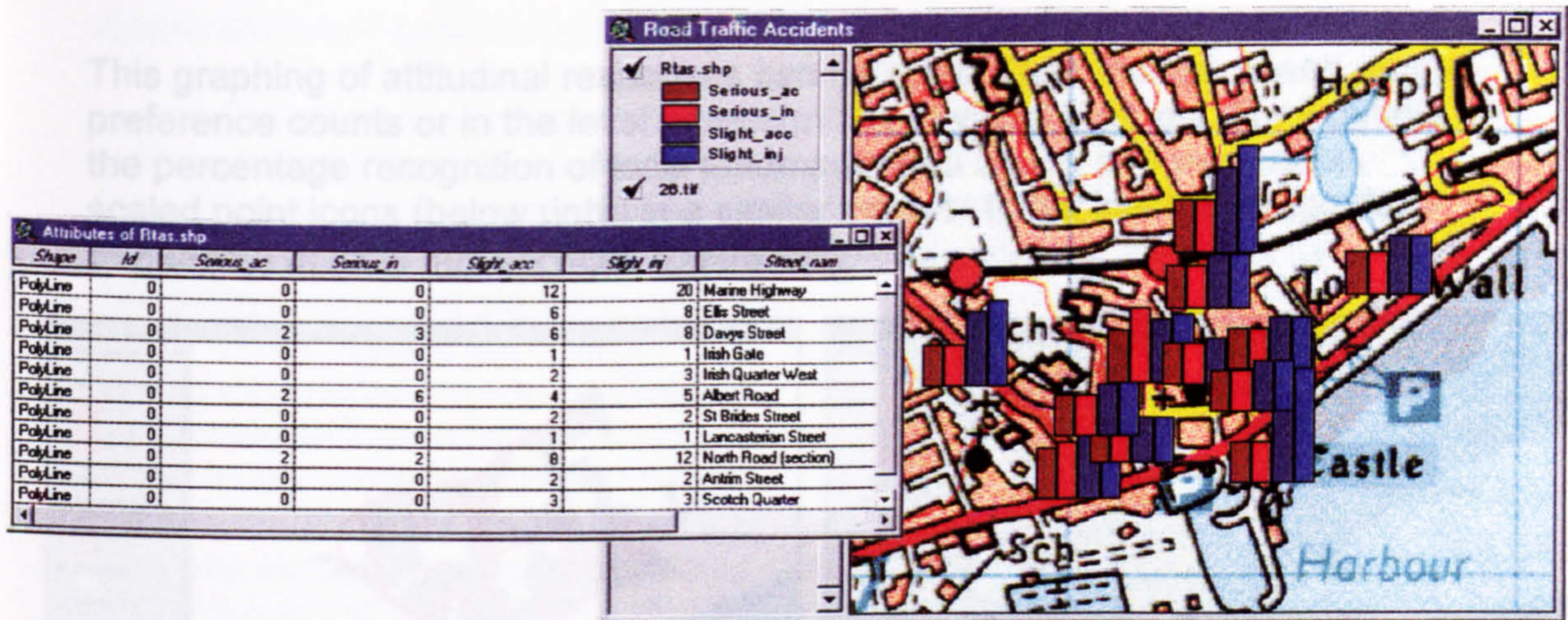


CORINE landuse and the OS road centre line data sets are provided for strategic analysis purposes but are suitable for adaptation to meet localised data requirements. The road centre line (vector – line) can be selected for the district council area and used as a basis for displaying route information such as public transport provision or road traffic accidents. The strategic land use can be selected by theme (vector – polygon) to provide local habitat information, that is valuable information on its own and a useful spatial link to attribute information.



Digitisation of combined primary and secondary sources in the mapping of large-scale morphology (Knox 1995 p23) collected from historical development records. The crude existing data contained within the paper-based *Planning Register* was cleaned and simplified in the collection process by recording the spatial extent, data of planning application and approximate date of completion of each residential development with capacity above 10 units. As the planning authority data was limited in date, only going back in records to 1973, site visits were undertaken to gauge the approximate age of other housing estates. This was combined and digitised as vector data onto an OS map.





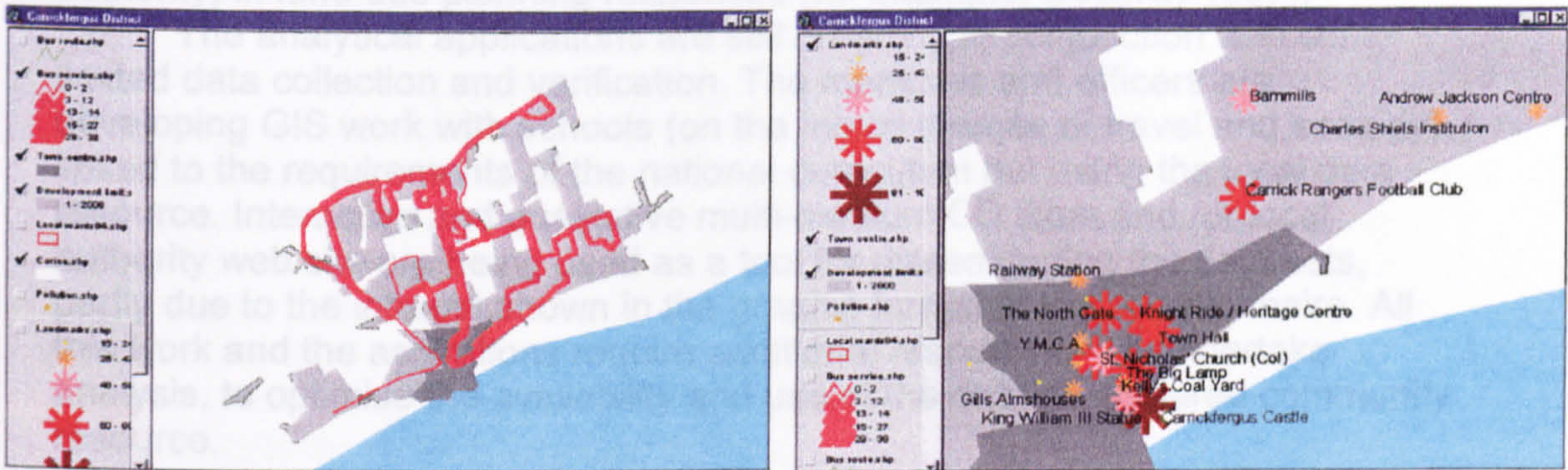
Supporting databases are a combination of empirical (numerical such as the level and severity of road traffic accidents by year) and descriptive (string variables such as open-ended comments and development preferences). Numerical data is suitable to be displayed as spatially referenced histograms or charts (above). Descriptive data requires a certain level of analysis, in the form of post-interview coding of responses, to facilitate graphing.

The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B	C	D	F	G	H	I	J
1	NUMBER	Q6	Q6 REASONS	Q7	Q7 REASONS				
2	cf001	g	More spacious	c	Flats				
3	cf002	g	Open plan - it gives people their own identity	c	Creates a ghetto type environment and is hard for the police to patrol				
4	cf003	g	It has a bit of space around it	f	Very formal - everybody knows everybody else's business				
5	cf004	a	It overlooks the sea						
6	cf005	b	Old architecture	g	Too much "keeping up with the Jones"				
7	cf006	g	Like bungalows	d	Dislike style				
8	cf007	g	Prefer bungalows	e	Older architecture				
240	cf239	a	beside sea						
241	cf240	h	space	e	lack of space				
242	cf241	b	attractive	f	least attractive				
243	cf242	d	architecture	j	match boxes				
244	cf253	g	space around house for garden	d	too cluttered				
245	cf244	h	no stairs	d	don't like the look of it				
246	cf245	b	like the old style	f	look into each others' houses				
247	cf246	d	looks nice	b	doesn't look nice				
248	cf247	g	less maintenance involved	c	you haven't got your own front door				
249	cf248	b	offers more privacy than modern houses	a	look a little bleak, no character				
250	cf249	b	character of a Victorian house	c					
251	cf250	b	like traditional house	c	rabbit hutch conditions				
252	cf251	g	new and has facilities	j	they are awful				
253	cf252	e	familiar type of house	a	too new and bare looking				
254	cf253	a	modern	j	look run down				
255	cf254	b	traditional	e	too squashed				
256	cf255	g	no stairs	e	neighbours so close				
257	cf256	b	sea views	j	close to road, timber construction quite noisy				

Applications of spatial information

This graphing of attitudinal responses can be colour / icon coded, based on the preference counts or in the level of recognition of visual prompts. For example, the percentage recognition of local landmarks was coded and mapped as scaled point icons (below right) in a similar manner to the level (average daily frequency) of local bus services (below left).



However, the qualitative and descriptive data sets can also remain in their original format (image or text) by maintaining a digital copy of the sources materials and 'hotlinking' them to specific geo-referenced vector keys – set-up so a windows button triggers a file reference location. (This is also suitable for models, video clips or any multi-media file).

The screenshot shows a web browser window displaying a document from Carrickfergus Borough Council. The document title is 'Landscape Study of Carrickfergus Borough' and it includes sections for 'Introduction', 'Background', and 'Recommendation'. A small window in the foreground shows a photograph of Carrickfergus Castle with a 'Scale Image' button. The document text includes the following sections:

Introduction
The Carrickfergus Borough Council is pleased to announce the results of the Carrickfergus Landscape Study. The study was carried out by the Carrickfergus Borough Council and the Carrickfergus Borough Council is pleased to announce the results of the Carrickfergus Landscape Study. The study was carried out by the Carrickfergus Borough Council and the Carrickfergus Borough Council is pleased to announce the results of the Carrickfergus Landscape Study.

Background
The Carrickfergus Borough Council is pleased to announce the results of the Carrickfergus Landscape Study. The study was carried out by the Carrickfergus Borough Council and the Carrickfergus Borough Council is pleased to announce the results of the Carrickfergus Landscape Study.

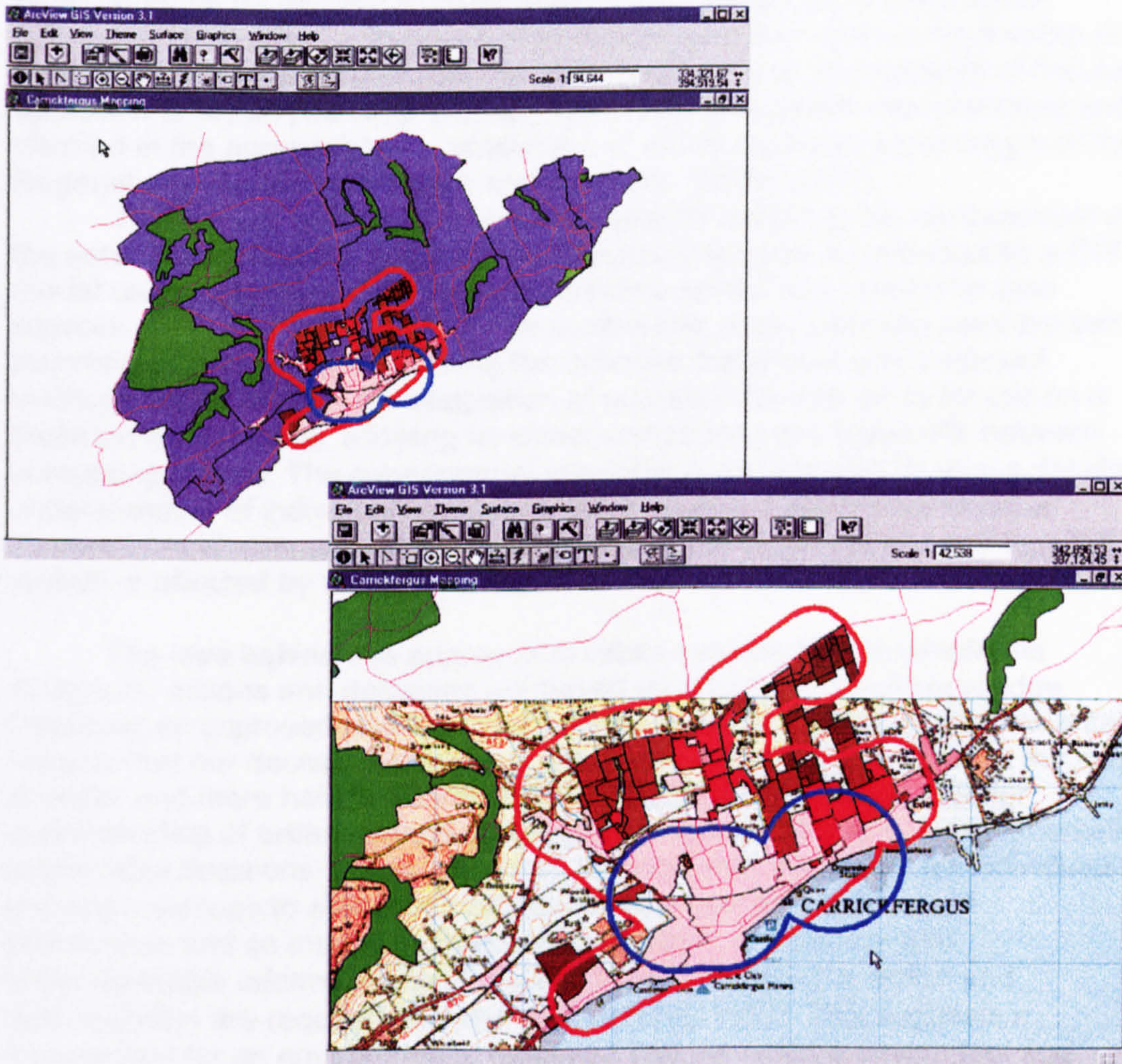
Recommendation
The Carrickfergus Borough Council is pleased to announce the results of the Carrickfergus Landscape Study. The study was carried out by the Carrickfergus Borough Council and the Carrickfergus Borough Council is pleased to announce the results of the Carrickfergus Landscape Study.

(Examples of 'hotlinked' documents in the major local landmark of the Norman Castle and a background local authority committee report)

Applications of spatial indicators

The ultimate application(s) for the digital database go beyond raising environmental issues internally and externally. The power of the information and the spatial medium in which it can be displayed makes it particularly suitable for advocacy on behalf of the local authority (who do not act as the local planning authority) in land-use planning responses (for example, DoE(NI) 1997).

The analytical applications are still on-going in conjunction with some limited data collection and verification. The members and officers are developing GIS work with schools (on the mixed themes of travel and ecology) linked to the requirements of the national curriculum but using the local data resource. Interactive and qualitative multi-medium CD Rom and /or local authority web site are being used as a tool for disseminating the data sets, partly due to the interest shown in the graphic format of the questionnaire. All this work and the aspirations require additional resources – to undertake analysis, to optimise the availability and use of the data as a shared community resource.



Regensburg, Germany

Regensburg is a different scale of interest and thus implications for data collection, handling and management that can be considered as complementary to the Irish example.

GIS planning tool

The READ (Renewable forms for Energy in Architecture and Design) group of architects and technologists have been influential in the development of 'solar districts' in cities at a masterplanning scale at Linz, Austria (Sir Norman Foster and Partners, 1996a) and Regensburg, Germany. In recognising the complexity of working processes in the design and realisation of an innovative masterplan for a new 'model' urban quarter they have gained a general insight into the integrity and dynamic of design, evaluation and monitoring as part of an overall urban planning process (READ, 1995). In addition to project briefs, they have suggested additional work investigating new approaches to monitoring environmental performance (particularly energy performance) and socio-economic attributes, "... to gain further insight, but also continue to develop on an analytical academic level the qualities, requirements and benefits of this new approach to urban planning" (READ, 1995, p4). This desire was reiterated and clarified in the appropriate "... production of a GIS model as a planning tool" for Regensburg (Sir Norman Foster and Partners, 1996b, p276).

This explicit requirement was the basis for exploring the development of the solar district and the potential functionality that could be provided by a GIS model using, adapting and integrating existing spatial and qualitative data sources. The use of GIS as a tool for sustainable urban planning uses the same theoretical approach underpinning the adaptive framework and proposed methodological toolkit - the adaptation of sustainability indicators for use on a common spatial basis, allowing for direct comparison and trade-offs between competing factors. The experimental approach is not intended to give a detailed understanding of individual aspects of urban master-planning but rather a comprehensive overview and understanding of the urban system and how this system is affected by the intervention.

The idea behind this approach to urban sustainability is simple. As designers, actions and decisions are based on information and knowledge. Obtaining an improved understanding of the urban area and the environmental impacts that our decisions may have at an urban design scale, through the use of better and more holistic information, should lead to us having a better understanding of urban change and help us to make better and environmentally sustainable decisions. In this approach, opportunities must exist for individuals and organisations to adapt their environment at appropriate levels of intervention and so means of *choice* (the provision of objective and understandable information) and *control* (indicators linked to action and responsibility) are required (Behling and Behling, 1996). This suggests a requirement for an environmental database that becomes a design tool and then provides the basis for a spatial management system.

Data source	Trends	Spatial		Comparison			Cost
		Scale/ resolution	Vector/ Raster	Regional	National	European	
Statutory protection (buildings, land use zonings)	No	Local authority area	Non-digital (raster and vector – polygon)	Yes	No	No	Low
Environmental standards (air quality, river and groundwater quality, sewage treatment)	Yes	Various	Non-digital spatial (vector line)	Yes	No	No	Low
Local groundwater	Yes	Abstraction point	Non-digital vector (point)	Yes	No	No	Low
River levels and floodplain	Yes	River Corridor	Non-digital	N/A			Free
Climate – rainfall, humidity, windspeed and direction (statistical abstracts)	Yes	Local authority area	Non-digital	Yes	No	No	Free
Habitat and ecology (including protected areas)	No	River corridor	Non-digital	N/A			Free
Geology	No	Local authority area	Non-digital (vector – polygon)	Yes	No	No	Low
Energy consumption	Yes	Power source	Non-digital (vector point source)	No	No	No	Low
Personal / household expenditure	No	Local authority area	Non-digital (database)	No	No	No	Low
Transportation plans (route hierarchy and pedestrian streets)	No	Urban area	Non-digital (spatial / vector lines and/or polygons)	N/A			Low
Business / employment locations	No	Local authority area	Non-digital (point plus attributes)	No	No	No	Free
Major new building projects	N/A	Local authority and city centre	Non-digital (vector – points)	NA			Low
Existing built form (base maps)	N/A	1:7500 and 1:1000	Non-digital (spatial / raster) and digital (CAD file polyline)	N/A			Low / Medium
Aerial photography (perpendicular and angled)	N/A	City centre	Non-digital (spatial raster)	No	No	No	Low / Medium
Proposed development	N/A	Development site	Digital (CAD file polyline)	N/A			Medium

(extract from extensive inventory of data sources, format and availability)

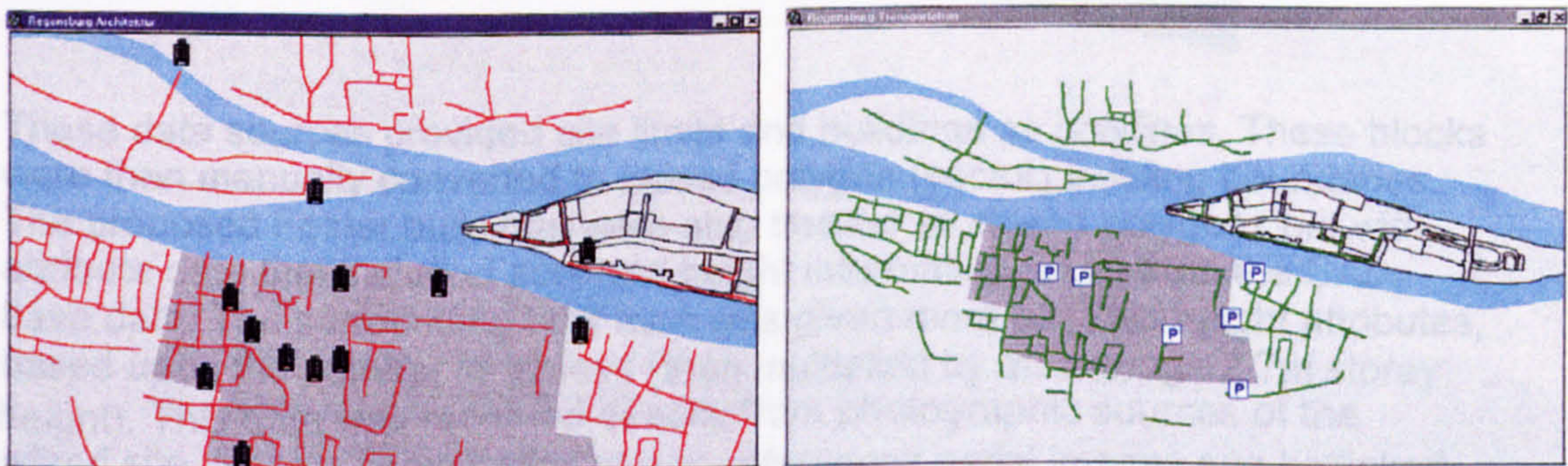
Urban design data sources

The aims of the masterplan were set out in an explicit brief (Stadt Regensburg 1996), and the data inventory reflected a number of the information requirements from this document. Many of the 'soft' city issues fell outside the explicit concerns of the designers, who were not required to undertake any major public consultation exercises. This placed an over-reliance upon public authority data for the vision, values and views of the current and future population of the island (For example: Stadt Regensburg 1995 and 1996).

A large amount of strategic socio-economic (BBE Bayern 1992) and demographic (Stadt Regensburg 1983) data related to administrative areas and was available to contextualise the site. Spatial data such as local geology (Stadt Regensburg 1990) or attribute data that can be attached to spatial references (For example: river data can be mapped as abstraction / sampling points, line or polygon flows) as available on a similar strategic basis. Due to the nature of the development site, in a river corridor, there was a heavy bias towards physical environment information and climate with the assumption that physical redevelopment will respond to an analysis of these issues, even if it only has a limited informative effect at the urban design scale.



(Geology, water abstraction / sampling points and regional rail routes for the local authority area set within a regional framework and strategic municipal data sources were directly referenced to administrative boundaries)

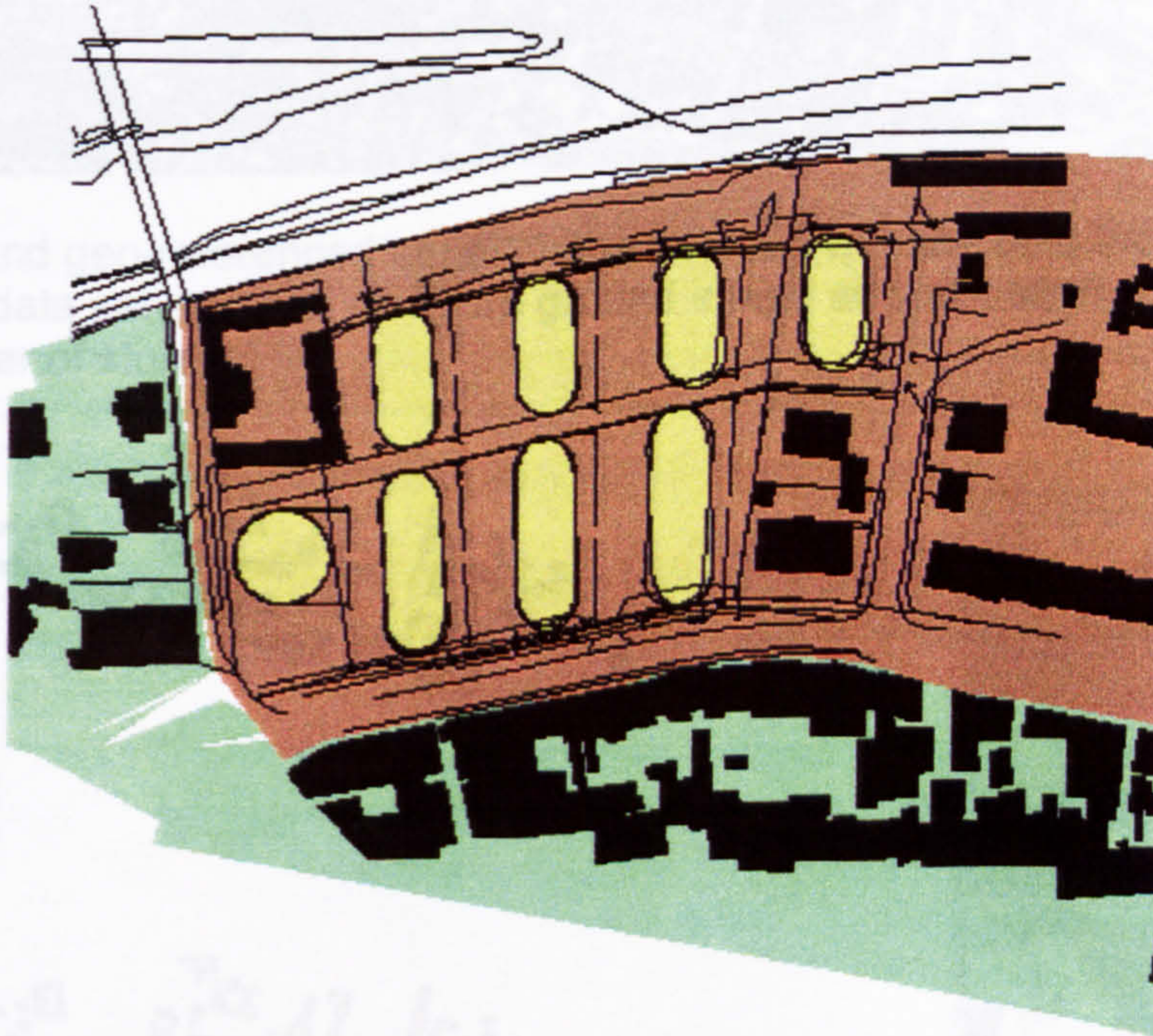
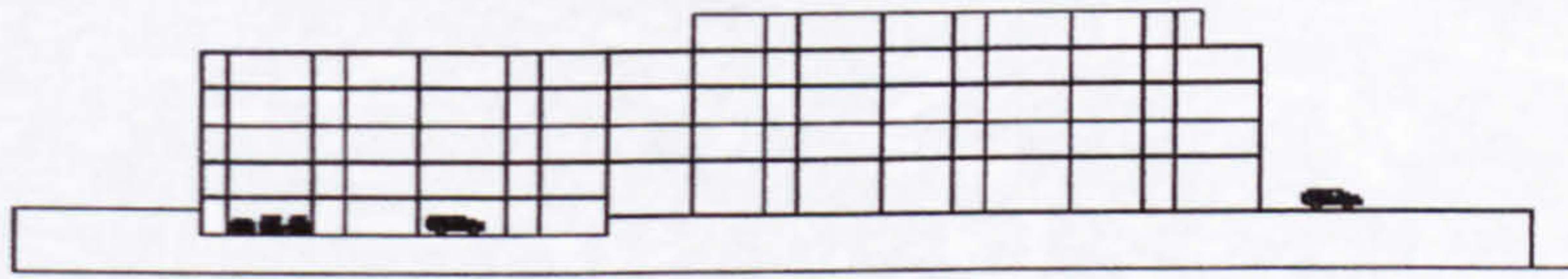


(new buildings projects in the city centre; hotlinks to imagery (where available) of the scheme, and parking locations with attached database on size and use)

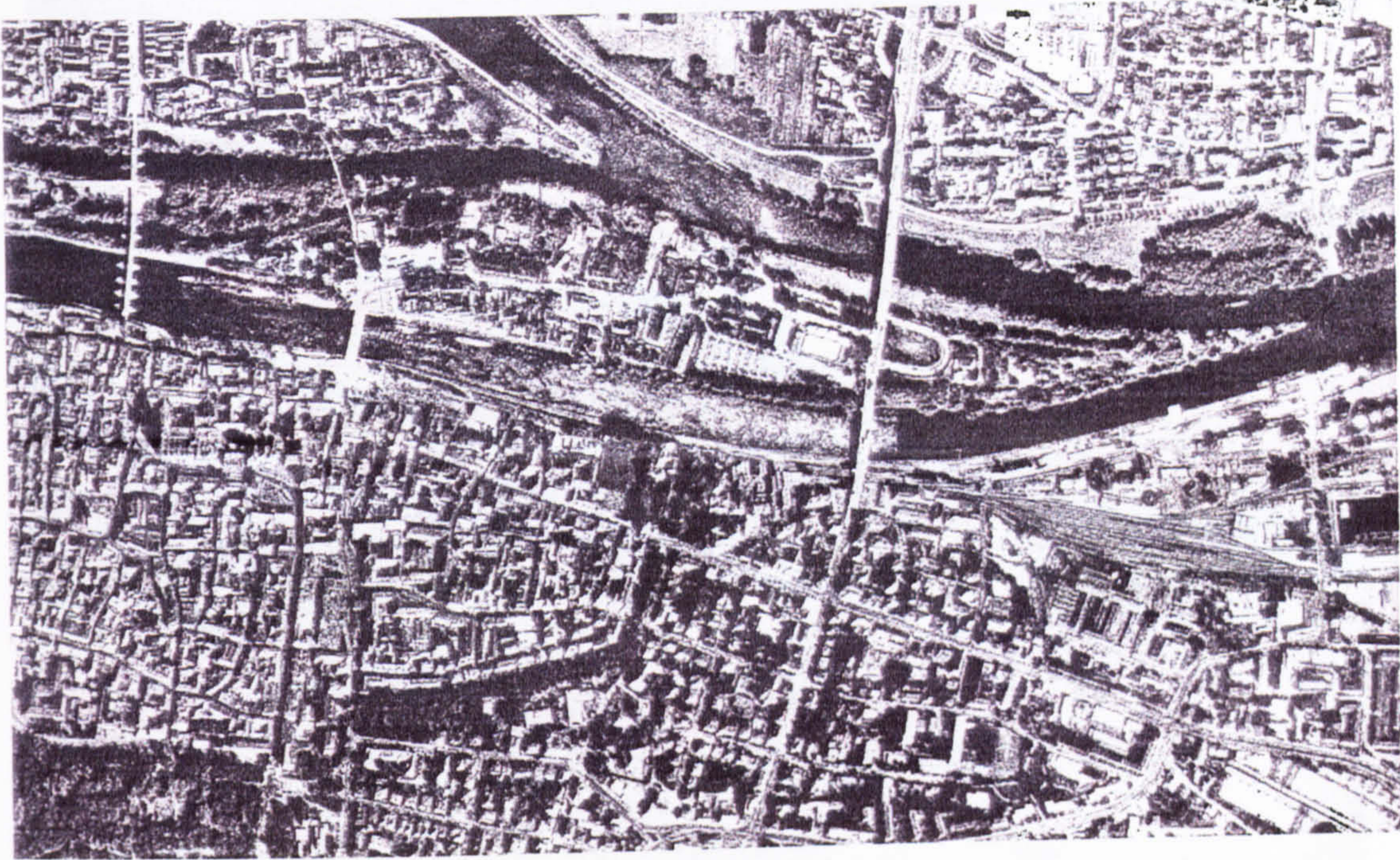
Urban design data sources

The principle interest is the physical design characteristics as they relate to the historical building fabric, the movement / transport characteristics, environmental constraints and the visual massing and scale, including three dimensional issues. This required the GIS software to be compatible with other software packages to integrate architectural CAD data sources with a vector map base.

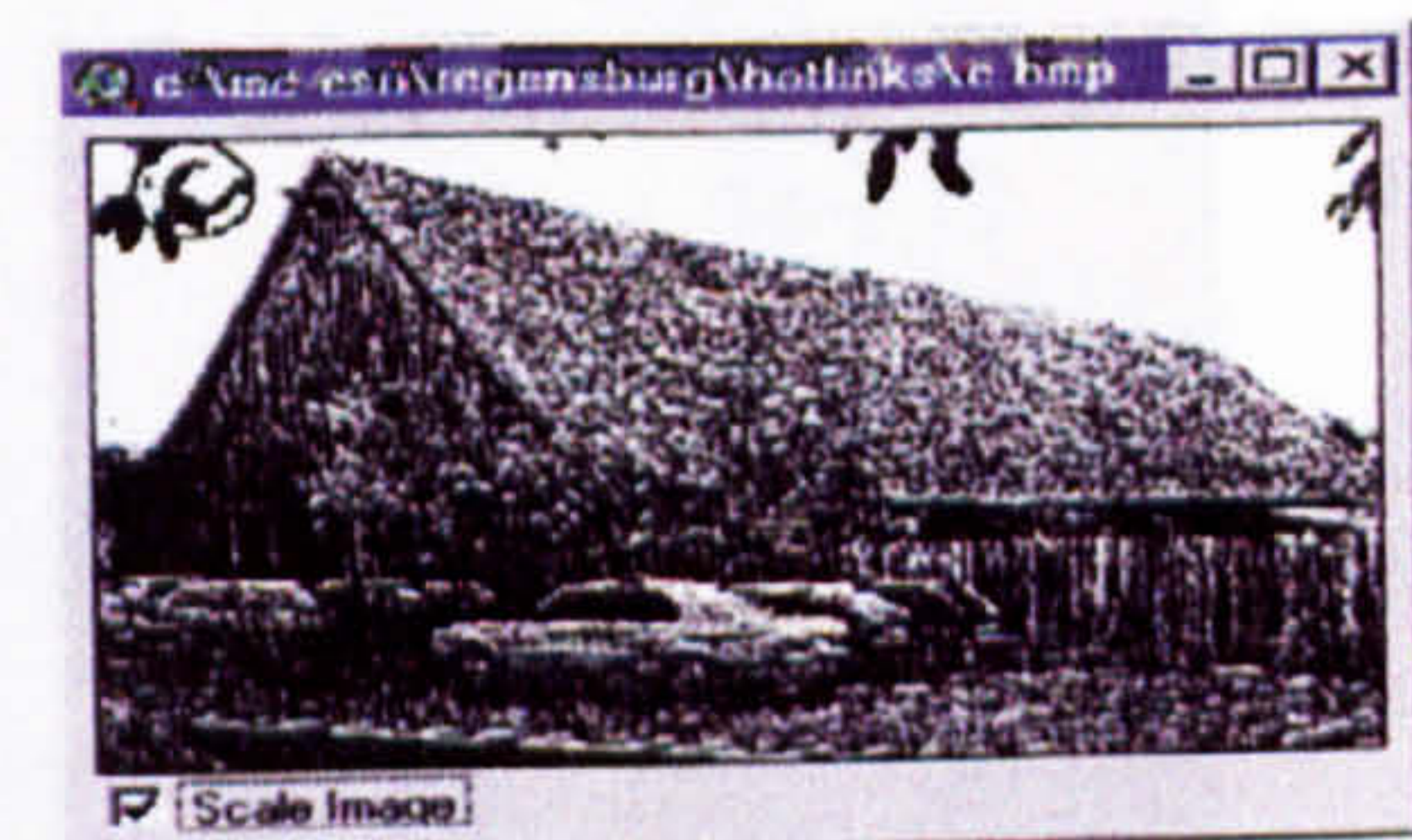
Data was imported and then scaled and fixed in space by writing a world (grid-referenced) file that placed the proposed building blocks onto the map base.



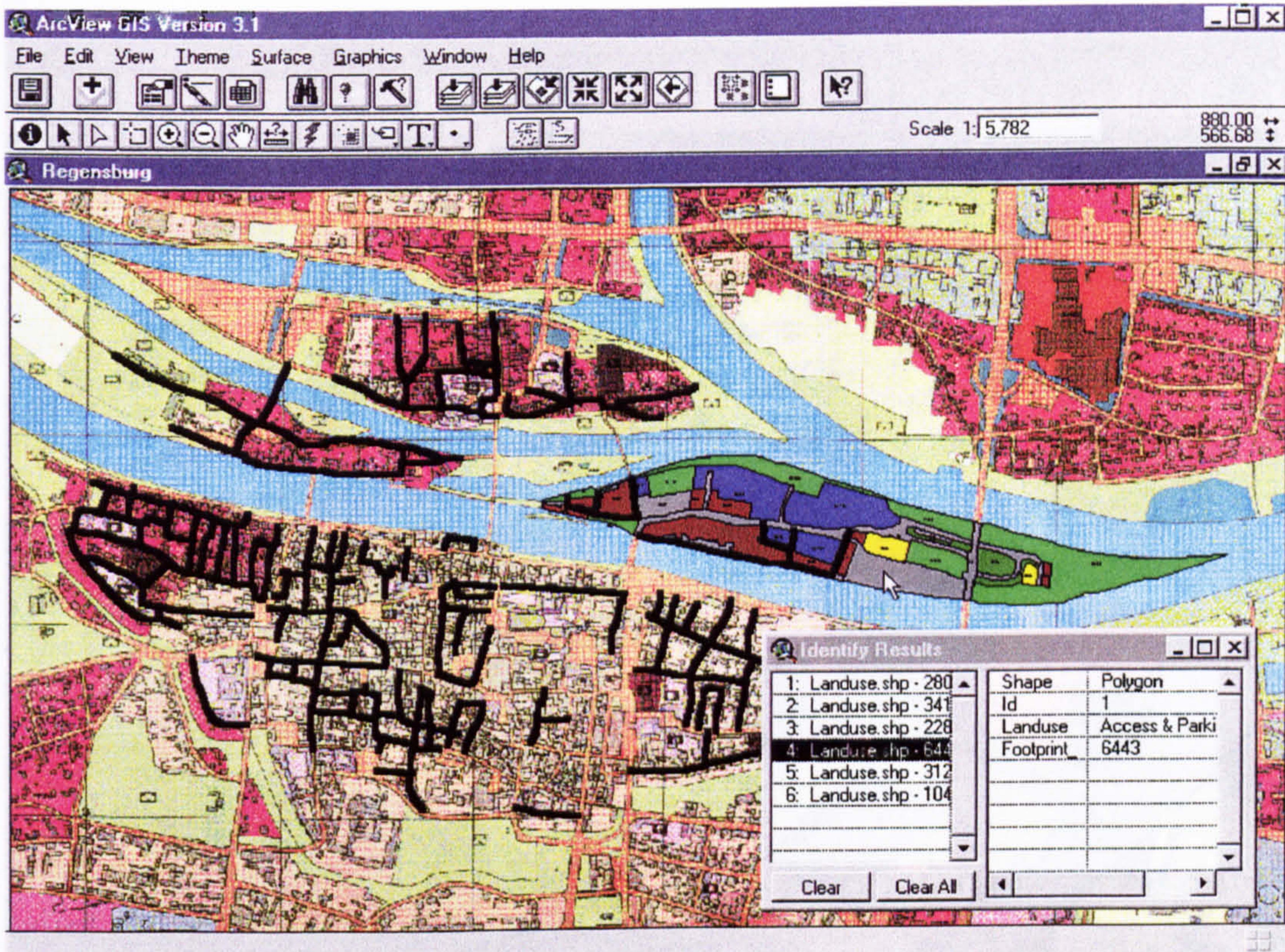
These data sources provided site limits and buildings as *polylines*. These blocks were then manually converted to closed polygon (vector) building boundaries. The proposed Foster buildings were also treated as closed polygons but with attribute data that included accurate height information taken from the CAD base data. The surrounding built form was given more abstract height attributes, based upon the number of storeys (then multiplied by an average 2.7m storey height). This data was recorded directly from photographic sources of the island site, using a combination of geo-referenced aerial images and hotlinked building images for the most important historical properties on the island.



(scaled and geo-referenced aerial image overlaid with the built form as closed polygon data set – shown as figure ground image and as coded polygons based on number of storeys)

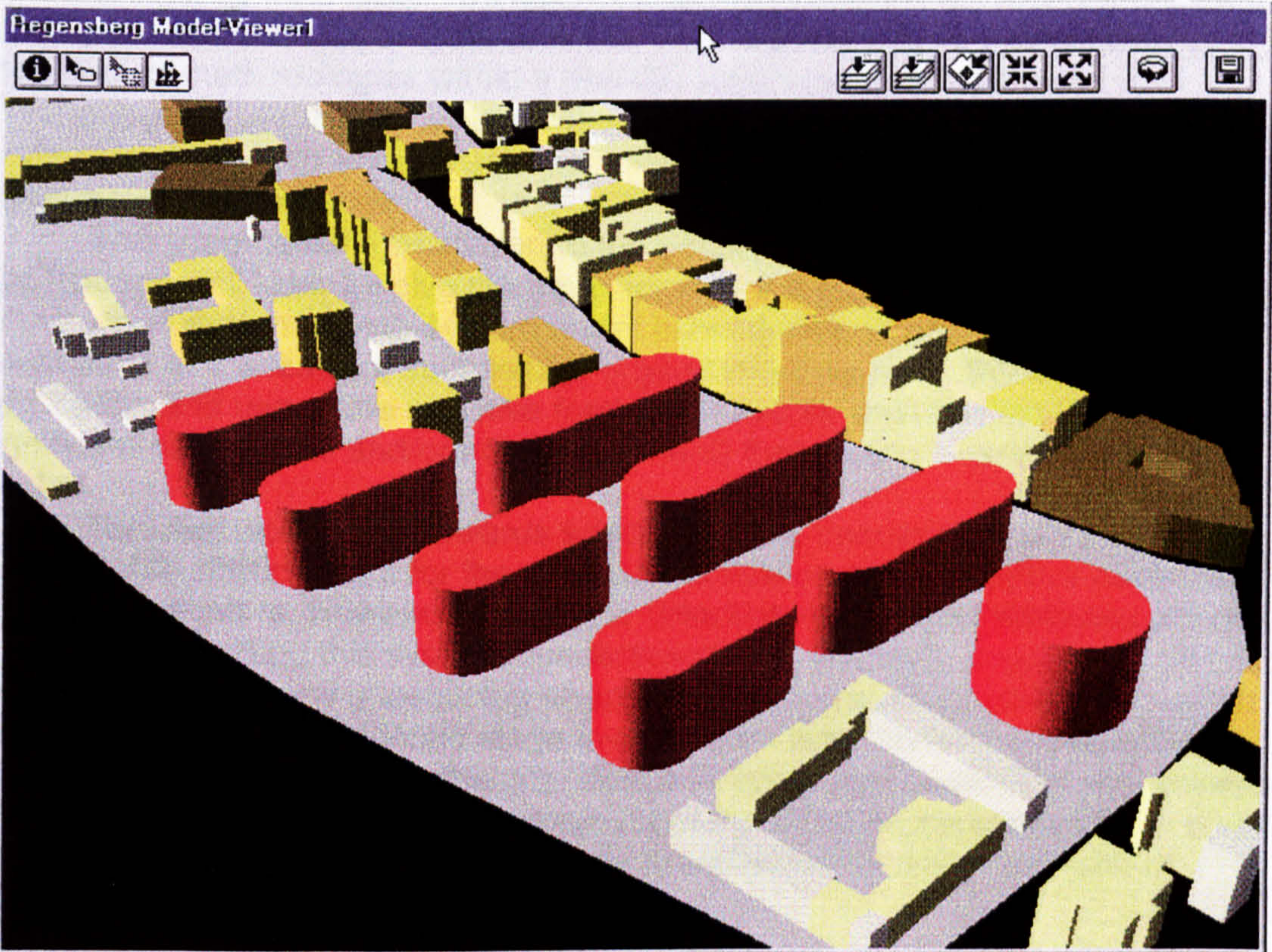


This three-dimensional data was the basis for the interactive exploration of the 3D add-on to *ArchView* – at a city centre scale and then at an architectural / site scale. Throughout these explorations, the local design material was on the same operational framework as the contextual spatial data.

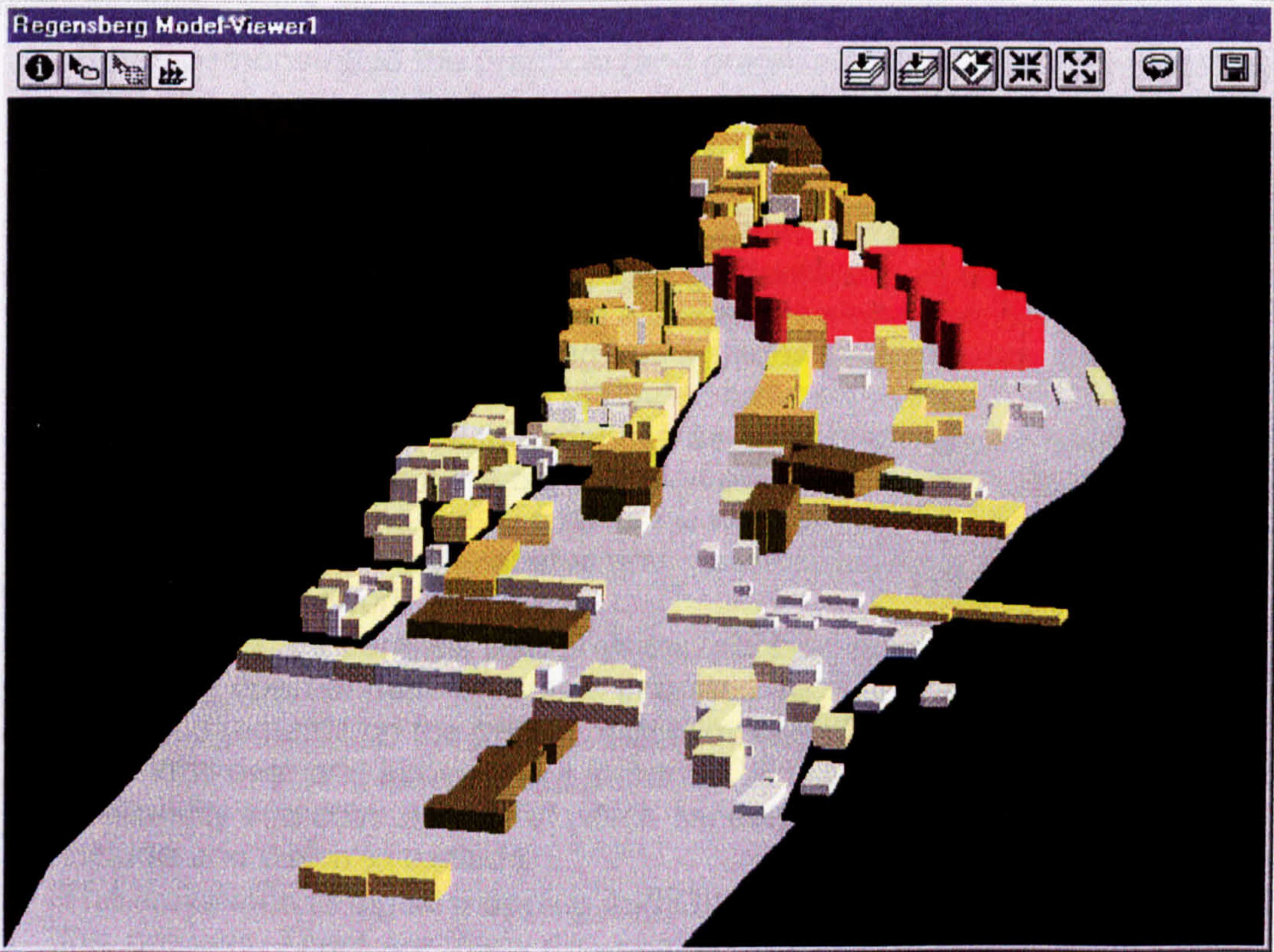


(city centre land use information, in a combination of raster and vector data sets, linked to strategic routes throughout the centre and the island site)





(closed polygon data and building height information, overlaid on island site and explored in three dimensional VR package suitable for GIS interface)



Emerging from these two distinct scalar and applied approaches are clear locality specific benefits and dis-benefits. This is partly due to the necessary 'bending' of methodologies within a real-life *action-research* application. Throughout these complementary case studies, pragmatism was considered a professional strength and a means for individual decision-makers and designers to effect substantive change.

This pragmatism transferred to the generalities of other potential applications, will likely involve the development of a more focused understanding of the urban system or sub-system under investigation within the contextual constraints of the lead (or sponsoring) organisation. As such, the specific application and use of the adaptive framework has its' own context (including a significant commercial and/or political element) that means it cannot be value neutral.

This real world 'bias' towards specific scales, thematic areas or actions is an inevitable starting point for the use and application of the adaptive framework of spatial indicators. However, the 'learnt' links between spatial attributes are also an aspect of building this systemic understanding and should suggest additional work, arising from new questioning of apparent links (causal or otherwise) within the urban system. This second stage investigation is to develop and deepen any initial understanding. Hence, the importance of on-going questioning, investigation and feedback on the use and development of the adaptive framework. This should improve and inform it's commercial utility, practical functionality and level of political and public trust given to the process.

The key lessons of this approach emerging intuitively from personal reflection of these practical demonstrations are:

- It has demonstrated the practical (and pragmatic) flexibility to allow for time, cost and experience limited approaches to building a mixed quantitative and qualitative spatial database that is the basis for analysis at a variety of distinct spatial scales. This flexibility is demonstrable over time as new data sets are gathered, structured, geo-referenced and linked.
- The requirement for feedback (ongoing adaptation) on the use of the framework can be established as a stage of participation and discussion that also allows for a broadening and a deepening (including specific non-spatial understandings) of the attributes included within the project.
- The methods and use of the adaptive framework of indicators is initially, best internalised within the organisation and used by those individual decision-makers who are closest to the work in progress and thus best placed to benefit from the spatial and systemic 'learning' inherent within the use of the framework.
- It has significant parallels with physical mapping process. The approach is ultimately open-ended. It requires informed decisions and the inclusion of value judgements on the part of project managers / partners. These are decisions over and above those informed by the practicalities of data availability and cost. It is about which aspects to focus upon, which to include and which to exclude.
- The limitations of digital mapping and GIS are dangerously hidden within this process. There are many non-spatial components to any urban system

that can remain unexplored unless those applying the framework of indicators are alert to their presence. There are also dangers in the persuasive nature of any digital output that is given considerable weight within decision support systems as a result of the high level graphic output and the 'blinding' nature of the technology. Thus, care is required in communicating the metadata with any spatial output, particularly where spatial referencing can be too precise.

While the technological support of GIS is useful in providing a digital structure to the conceptual approach of the 'multi-layered city', it is not a necessity in the use of spatial indicators. GIS remains foremost, a tool to express the complex structure of a spatial urban system. There should be an awareness of current and emerging technological support packages and a willingness to use different tools as and when they become more appropriate to the tasks of inquiry and understanding.

Most significantly, the role of building up an adaptive framework of spatial indicators within the 'digitally mapped' case-studies, has underlined the truism that action-research and intuitive learning is an interactive process. What was initially a framework for a multi-dimensional model has tended towards a multi-dimensional process. A process where the actual aims of the project can and do change through the course of the work and the spatial framework has to maintain the inherent flexibility to provide utility throughout the process.

Chapter 10

Total Urbanism - Overview and Conclusions

Planning and managing soft systems – the post-positivist position versus reductionism

Pragmatism and integration of qualitative attributes into decision-making frameworks

Systems and values – mapping better decision making, links to theory and the idea of urbanism as a value system or lifestyle

Mapping Cyberspace

Community 'technopoles'

Map-makers and map readers

“In the bars there is a place and a time for each man to recount his fragments as though they are just about to become wholes. ... I have begun to realize that here, in the stream of bland voices and unfocussed words, as the light fades outside the front windows, we are truly within the city’s grid. These are emblematic New Yorkers, men and women whose lives are endlessly pregnant with meaning and yet to whom nothing ever happens. Their lives are afflicted with that peculiar lack of concreteness, that endless becoming, which marks the space of the city.” (Sennett 1990)

“Each of us is bombarded by potential information from all manner of sources, from which we accept only what the current set of our attention and the current setting of our appreciative system allows us to notice and interpret” (Vickers 1970 p213).

This study has been concerned with the convergence and interplay of the ‘hard’ and ‘soft’ urban systems of substantive physical constructs and the analytical and procedural aspects of decision-making. This convergence of concern is the chaos and anarchy portrayed by Sennett (1990) combined with the inability of our decision support systems to cope with urban complexity.

Planning and managing soft systems – the post-positivist position versus reductionism

Throughout the course of this research work I was struck at the mismatch between epistemology and the peculiarities of how we professionally plan and manage our urban area on the basis of a number of expert professionals, both practitioners and academics, who continually reduce the reality of *total urbanism* to simpler and more manageable thematic domains. The justifications for this tendency towards expert domains and professional specialists is a combination of inherited institutional structures within local municipalities (as the principal agent for strategic urban management) and academic disciplines. This specialisation is extended into the techniques used to assist understanding of urban systems (Vickers 1983) which themselves have tended to be empirical and mathematical.

There appears to be a reluctance to break out of these confines in spite of the fact that they have resulted in a bias towards empirical understanding and it’s consequential sub-optimal approaches to urban planning and management.

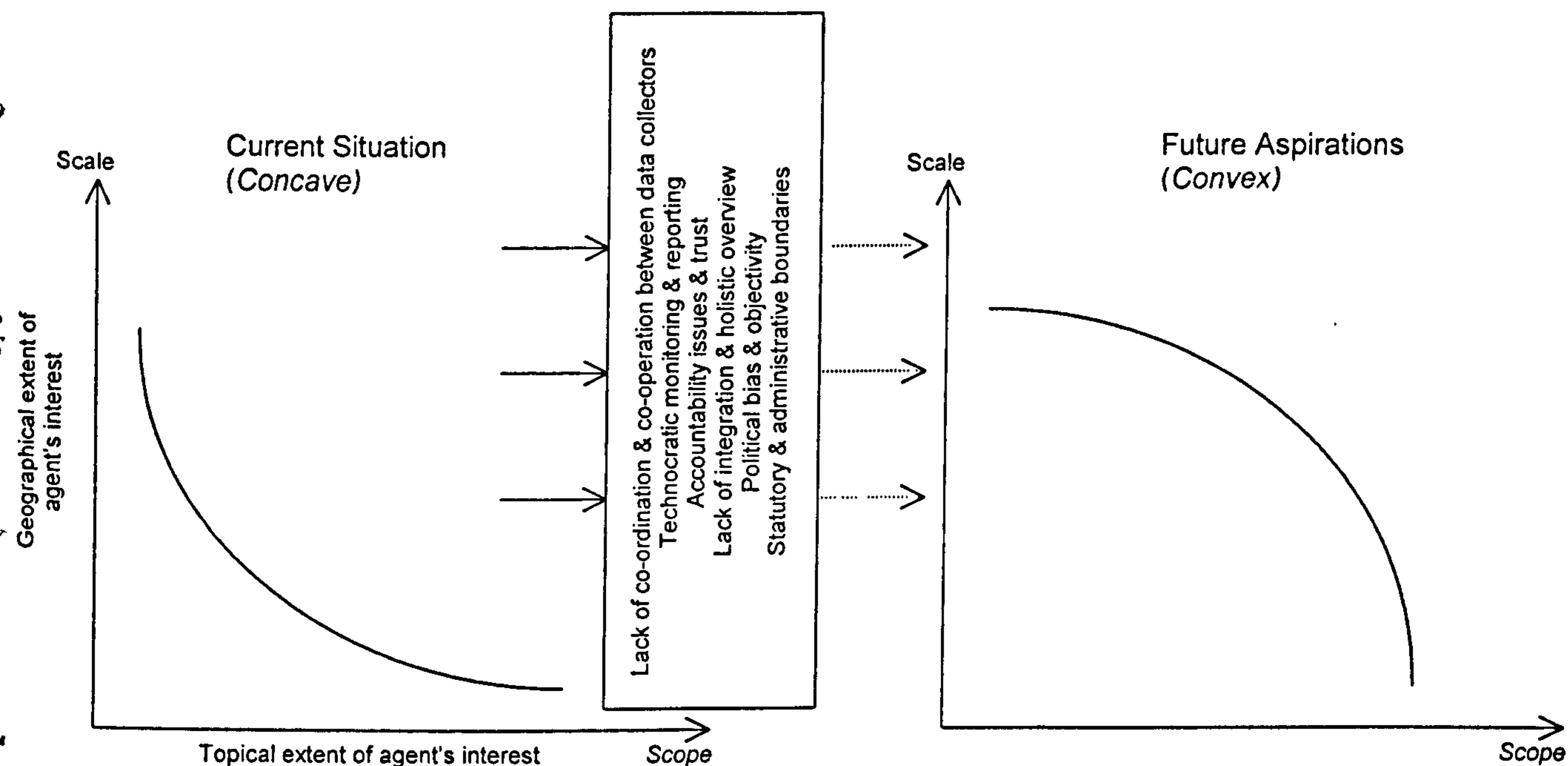
Yet the nature of complex urban systems compels decision-makers to think and work holistically. There is more to urban knowledge and understanding than the measurable. There is much to suggest that most decision-makers already have an intuitive understanding of their urban area, and that the limitations of thematic expert advice are compensated for on an individual level. Every level of agent decision-making make judgements based on comparison, self-set standards, emotional or anecdotal material. This may take the form of weighting to reflect personal or political values and preferences where qualitative data gaps can cause expert advice to be dismissed, justifiably

or otherwise. Dismissal of research can also be due to a lack of the technical knowledge and the skills required to interpret the information.

While there is consensus on the need for holism and integrated thinking there are several ways in which this principle has been misunderstood. Many agents (strategic, community or individual) maintain a limited thematic or scalar view of human systems. And earlier chapters have exposed the particular bias(s) of different agents based upon their policy context, scale and sector of operation. This is particularly apparent whenever the agent is also responsible for data collection, analysis or modelling – resulting in sub-optimal approaches to total urbanism. It is sub-optimal because it reduces the practicality and the utility of information when it appears technocratic and expert based. Ultimately there is a lack of credibility and trust because all of the factors that result in sub-optimal approaches are based upon political values that conflict between agents. Any reductionist process to understanding urban areas will be political.

This study has been working within the political process where the collection, presentation and feedback of information is an open reflection of agent values. There are also issues of equity and imbalance within information systems that appear to place a bias, in the form of a relative weighting within decision support frameworks, upon technical, empirical and computerised approaches. The lack of technical resources or expert knowledge can be overcome by the appropriation and adaptation of the indicator framework and the supporting methodological toolkit. This study advocates the use of low cost, non expert spatial indicators arranged within a loose framework; with the possibilities of digitisation on GIS for enhanced utility and functionality. It does not seek to introduce value(s) for agents but rather to provide an equitable and simple framework for working in a more holistic manner – not claiming to provide a total understanding of an urban system merely one that is less sub-optimal and that helps to overcome the transitional barriers to this new understanding. The eventual use of information, spatial and digital, will remain a political issue. '*Political*' being more than the constraints and context of a policy framework – it will be dependent upon the agents' value systems. However, the politicisation of GIS projects raises exactly the same issues of any mapping exercise (For example: the green mapping project, Fletcher 1999) in the choices of what to include / exclude, weighting, notation and visual imagery, technical level and analysis.

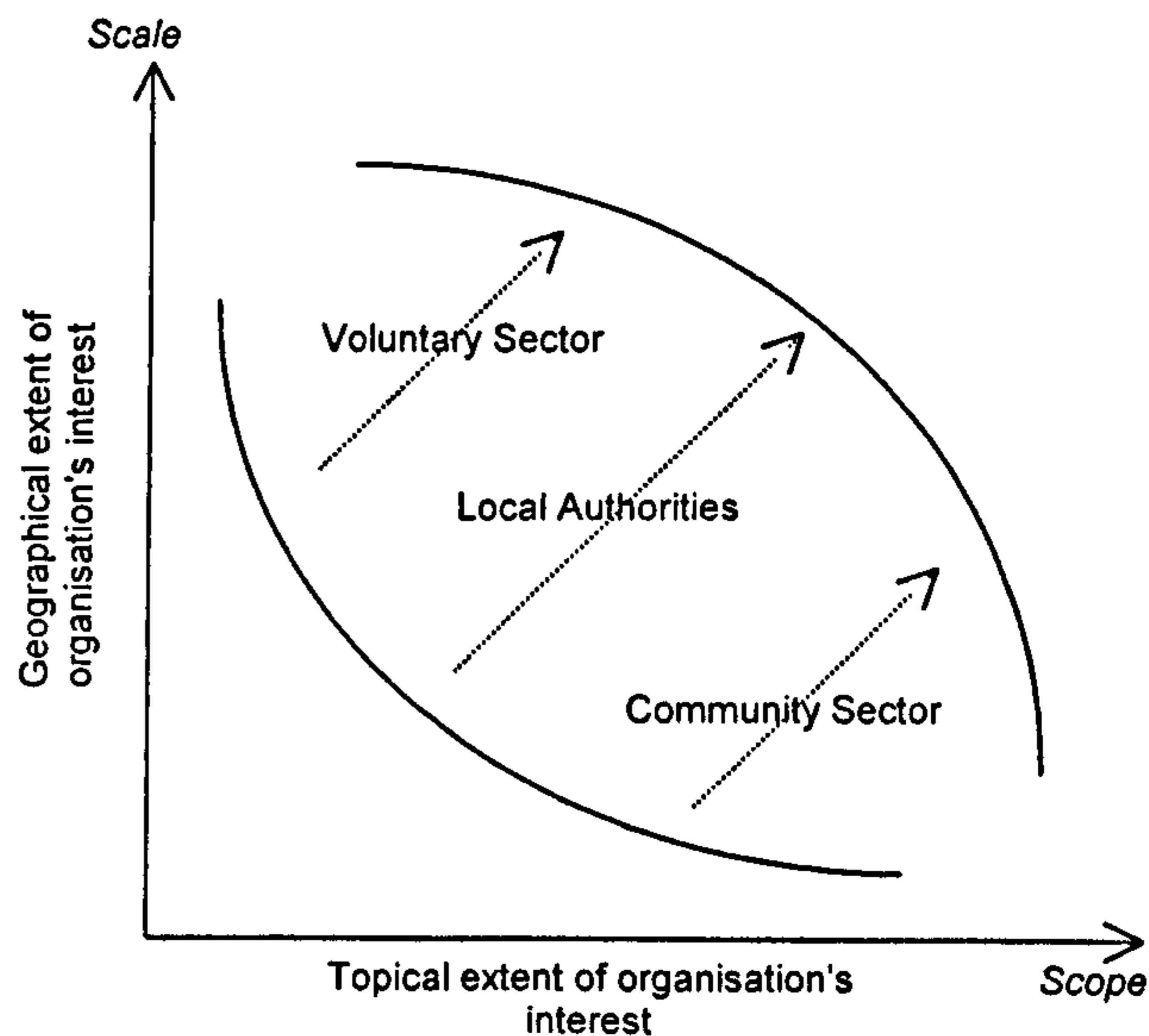
Transitional Barriers



The link between the use of environmental and socio-economic information and the relationship between the scale of the agent and the range of agent concerns. The *concave* graph shows the current situation and the *convex* graph illustrates the aspirations of a number of sample organisations. To achieve this, different barriers and constraints have to be addressed by the various groups. Regional organisations to become aware of the linkages between issues. Local authorities to be less restricted by both their boundaries and statutory functions. Community groups and residents' associations to have the ability to converse on and contribute to strategic and policy issues.

Concave to Convex shift in agent use of environmental and socio-economic information.

(adapted from Crilly *et al* 1999)



Pragmatism and integration of qualitative attributes into decision-making frameworks

The dynamic nature of the physical and value systems of urban areas places an immense weight on the attributes of diversity, flexibility and adaptation to react to changing analytical and substantive goals. Thus, the recognised need for a multiplicity (Breheny and Rookwood 1993) of substantive approaches to urbanism remains (Williams *et al* 2000) - approaches appropriate to the agent or decision-makers interest and as a reflection of the policy framework within which decisions are made. This multiplicity and need for adaptation is as appropriate to the framework used as a method of

understanding as it is to the physical and social constructs of the city. It has been achieved to some extent by: (i) adapting qualitative data into measurable components where empirical results are more easily incorporated into decision-support frameworks; and (ii) adapting decision-support frameworks.

This reductionism is within a circular argument that goes – policy relevant models of understanding (compared to predictive or end-state planning) should reflect the complexity of the real world, but emergent models need to be communicated in a simplified reductionist form to allow functionality within current decision-making framework. Thus, any framework or urban model will by default be reductionist.

This study advocates the linking of qualitative data collection methods with the end-use and the possibilities over the use of information, in the form of indicators, to empower all levels of decision-makers within any urban system, with a requirement for feedback over the scope, metadata and interpretation skills, presentational format etc. However, this should be an aid rather than a sole basis for decision-making, being aware of the dangers of simplifying a complex system.

Systems and values – mapping better decision making, links to theory and the idea of urbanism as a value system or lifestyle

“... it (*urbanism*) is a distinction between places driven by values and lifestyle ... often the distinction is all in the mind.” (Margetts 1999)

Urbanism	Ruralism
Dynamic	Static
Complex	Simplicity
Disorder / Chaos	Security / Certainty
Communal / Collective	Individualistic
Reliance	Self-sufficiency
Diversity	Homogeneity
Young	Old
Secular / Corruption	Spiritual / Innocence

Analytically, urbanism and community are a tautology – both have shared values and attributes concerning the interaction between place and people. These value ‘attributes’ will vary over time, between cities and between communities within cities. Yet, this multiplicity of dynamic values is the most significant ‘missing’ element in qualitatively understanding urban systems.

The adaptive framework is practical in procedurally helping agents to make decisions that are better informed and integrated with analytical values. It also helps to explain the evidence, rationale and reasons that informed these decisions. Thus, it has broader applications beyond informing policy-decisions. It becomes a communication tool to exercise control within urban systems that exhibit a multitude of value systems.

This will have increasing relevance if the decline of geophysical communities and shared community values is as stark a future prospect as

predicted (Pawley 1998 and 1974, Toffler 1970) and a private and individualistic world dominates.

The concept of the city as a shared value system or as a diversity of competing value systems has certain synergy with the inherent nature of sustainability. As sustainable development incorporates qualitative and subjective aspects, it suggests that one route to a more sustainable urban future is about altering these qualitative attributes, attitudes and perceptions that are formed by imperfect knowledge and ultimately the underlying values. Improving knowledge and understanding, values and ideas does not require physical intervention but can contribute to sustainable urbanism.

It may be both obvious and illuminating that physical or virtual intervention can contribute to urban sustainability. In this analysis, it is suggested that working with the 'software' of the city in combination with its' physical 'hardware' (structures and infrastructure) is a prerequisite for sustainable urbanism.

Mapping Cyberspace

"Virtuality now vies with materiality " (Mitchell 1999 p147)

In a world where the ephemeral and 'dematerial' is an alternative to the physical for increasing numbers of agents – cyberspace (Gibson 1984), the addition of high-powered information technology tools such as GIS and VR linked to the toolkit simply emphasises the need to be able to include ideas and values explicitly into decision-making. They remain the means to an agent-defined outcome that will be influenced by the tools and methods utilised.

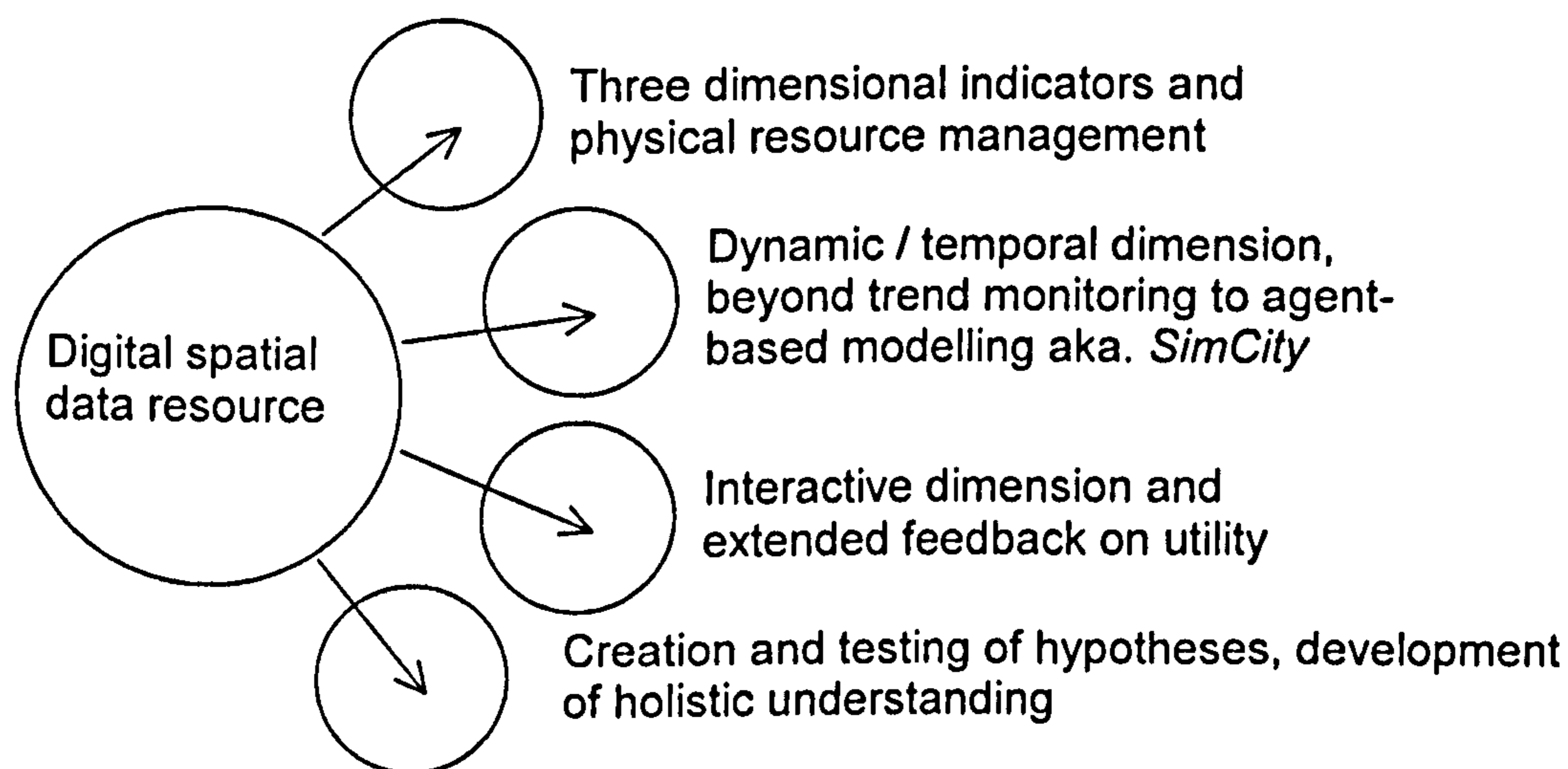
"VR represents a new kind of contract between humans and computers, an arrangement that could grant us great power, and perhaps change us irrevocably in the process" (Rheingold 1992 p387)

Historically spatial systems have been explored and expressed in terms of data. "Imagine a city that is only described by data. A city that wants to be explored only as information" (MVRDV 1999 p226). IT has the potential to reverse this conceptual pole and improve the structuring of spatial ideas or even use qualitative spatial interfaces to improve the ordering of information. Some demonstration work suggests that "... a website should be more like a city" (Burgoyne and Faber 1999 p127) where the potential solution to "... information overload is to be found in visual representations of data" (p17) assuming that the future data delivery mechanism for urban information is digital and web based. Examples show the potential for visually mapping layers of images ([//awmap.vevo.com/toplevel.html](http://awmap.vevo.com/toplevel.html)), ideas, data structures ([//cyberatlas.guggenheim.org](http://cyberatlas.guggenheim.org) and www.newnet.org.uk/atlas/), networks or cyber communities (www.cybergeography.org) or even virtual cities (www.icontown.de) with online citizens.

Community 'technopoles'

Yet these IT tools could provide a shared and openly accessible "citizens data bank" (Castells 1989 p353) resource base for geophysical communities to reinvent themselves. These would be communities based upon quality and character of place and fine-grained behavioural patterns (Mitchell 1999, Rodgers 1998), where IT's role is in increasing choice and time for agents to locate using criterion closer to their own value-system. Additionally, geophysical communities can also become better defined through the medium and realm of electronic citizenship. This study asserts that citizenship and community require connection to place and thus have to contain a spatial dimension. *Total urbanism* requires geophysical communities based upon place and diversity – diversity in social relationships and not just interest groups. So-called on-line communities, that are really self-selected interest groups, cannot compete with the complexity of values that cities provide.

These potential 'technopoles', that utilise the data resource, are only one manner in which spatial information can become operationalised by a variety of urban agents. The data resource itself becomes the starting point for analysis and exploration in a variety of different facets. (Crilly and Wren 2000).



This suggests a number of possible future directions for the research where the interactive dimension of a community spatial database can be complimented with further three dimensional visualisation work (as both model and interface), exploration of the temporal dimension (possibly with spatial indicators becoming inputs into agent based modelling) and supporting analytical work. The combined potential, if recognised in the design of the spatial indicators, shows a significant contribution to understanding *total urbanism*.

Map makers and map readers

“A map is and must be highly selective. It cannot include ‘everything’; and even ‘everything’ would only be ‘everything which that map-maker’s repertory of schemata could distinguish’. ... it remains true that the values of map-makers are simpler, less conflicting, more amenable to test, and more widely held in common than are the multiple and conflicting values of all the diverse map-users.”

(Vickers 1970 p202 and p204)

The distinction between the analogous map *makers* and map *users* is a difference in values and control of knowledge. The map makers’ values; even within a framework of objectivity; have an editorial control over the map-users access and understanding of information.

The adaptive framework linked to a data collection, analytical and presentational toolkit suggests a developing role in removing this editorial control – providing the agent-users the skills and methods to become their own map-makers.

Upon reflection, the significance of the adaptive framework is how and where it fits into a much more significant learning process. The learning aspect of the framework and associated methodological toolkit is vital in building skills of understanding and adaptation (as an element of applied and tested learning) in urban decision-makers. In this role, the research findings stress the processes involved as the current ‘state of the art’ thinking.

There is an importance to both the technological interface and the spatial thinking. This is due to the systemic and intuitive nature of visualising information to provide fresh insights and aid understanding. Non-spatial maps can similarly be structured and linked with a powerful visual; and thus qualitative; emphasis that recognises the qualitative and intuitive means of decision-making from individual to municipal scales.

How the framework copes with apparently imposed policy solutions such as that of the Government’s anticipated *Urban Renaissance*, (albeit they are not prescriptive but largely procedural changes to urban management) poses an additional test as to the transferability of the adaptive framework and/or its elements of methodological toolkit and specific / generic findings. Yet this is proving in practice to be possible in diverse thematic policy areas. The framework is suitable for highlighting, investigating and ultimately understanding unexpected linkages to other emerging social policy levels; for example in the linking of mixed (qualitative and quantitative) and multi-method approaches to ‘mapping’ and understanding urban social situations and processes of social exclusion (Crilly and Wren 2000).

In developing the research, there was a significant and growing overlap between consultation, participation and the role of information in understanding of urban systems. The multi-functional role of an adaptive framework, with a loose structure for spatial information, then has a role in raising local capacity to understand and adapt its own processes of management, its physical environment or redirecting social and attitudinal intervention.

A consultative and participative role can be understood as another means of feedback. Ideally, there are open-ended ways of achieving the necessary feedback; to several iterations, on the significance (weighting) of individual indicators, the links between them and the utility of the structure to improve understanding and provide fresh, but valid, perspectives on the urban system. However, this public or consultative feedback also has to include a review of the technology (positive and negative aspects of digital mapping) and the dimensions (spatial, qualitative and perceptual representation) as an essential aspect of the adaptive framework. Put simply, this feedback has to be by the 'map-users'.

It is no simple question to actually identify the map-users within this system. It does require a detailed understanding of practical (distinct from simple hierarchial and representational structures and models) decision-making structures and cultures that tend to be unique to locality and the individuals actively involved in urban neighbourhood design and management. Those map users/makers in actuality, include a very broad range of 'community champions', social activists, elected members and even those 'partly mandated' (party political members who are seeking or have sought election). Each will have a unique response to the utility of the adaptive framework.

The utility of the framework relates, in part, to the capacity of 'map users'. Thus, there is a current potential to link digital and spatial data to a much wider range of users (both as source to interpret or as data sets to be directly manipulated and represented by the user). One clear opportunity is via the new national curriculum and the inclusion of citizenship on 5% of the school timetable – becoming a cross-cutting on subjects as diverse as ICT and geography. This is recognised as a potential area for future work for both formal and informal educational arrangements.

Throughout the research, my personal view is that weight is needed on process indicators that stress the importance of social change for a sustainable city, in itself and with its impact on the physical environment through changing demographics, attitudes and values – relating to place at urban and intra-urban / community scales. Process indicators will help us reflect upon the need for attitudinal change and intervention, where potentially, changing values as part of a learning process can influence urban sustainability.

As part of a developing process (utilising the adaptive framework and methodological toolkit as a learning tool), the need for extensive trust between map *makers* and map *users* has to be fully addressed. This trust also has to be through a learning process, in contrast to the common aspects of 'learnt mistrust' between many urban municipalities and communities.

A sustainable community is a resilient community based in a resilient environment that can adapt and change to new social circumstances, values and political context. An adaptive framework may not be able to anticipate the direction of change but it does prepare urban communities and decision-makers to make better, informed decisions within any changing context. This is not simply through the use of the information but through the use of the adaptive framework to assist a learning community. I still maintain an optimistic view, that as a society and multiplicity of communities, we can begin to learn our way out of an unsustainable

situation; by informing and shaping our values; towards a more sustainable future – whatever we define that future to be like.

This work began by stating that there is a significant distinction to be made between *knowledge* and *understanding* and that to operationalise the concept of sustainable urbanism, any process has to include the role of the urban decision-maker as a component. The nature and emphasis of this component is both didactic and heuristic. Intuition and learning are qualities that assist the adaptive framework, and will have impact upon those who undertake and engage with the work.

Learning to make and interpret maps, as an abstraction of a multi-dimensional urban system, is one means to understanding the multiplicity of *total urbanism*.

The possibility of multiple perspectives and dimensions to explain and describe the same urban system are illustrated by Calvino (1974) in his narrative description of Venice. This type of multiplicity should be considered a strength and a sign of individual values beginning to edit the various urban dimensions available. The urban designer's role, within the context of *total urbanism*, is to ensure the source material, or tools to appropriate this material, together with the editorial skills are available to all urban agents to provide their own views, make their own maps and define their own understanding of urbanism.

“And yet I have constructed in my mind a model city from which all possible cities can be deduced, ‘Kublai said. ‘It contains everything corresponding to the norm. Since cities that exist diverge in varying degree from the norm, I need only foresee the exceptions to the norm and calculate the most probable combinations.’

‘I have also thought of a model city from which I deduce all the others,’ Marco answered. ‘It is a city made only of exceptions, exclusions, incongruities, contradictions. If such a city is the most improbable, by reducing the number of abnormal elements, we increase the probability that the city really exists. So I have only to subtract exceptions from my model, and in whatever direction I proceed, I will arrive at one of the cities which, always as an exception, exist. But I cannot force my operation beyond a certain limit: I would achieve cities too probable to be real.’”

(Calvino 1974 p69)

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Appendices

Practitioner cognitive maps

Case study contextual and data collection agent interviews

Hulme, Manchester

George Mills
Joe Ravetz

Calmshill, Belfast

Contextual interviews

Jim Alexander and Margaret Wisner
Bill Morrison and Neil McKillen
Craig Sneddon

Household Survey

Questionnaire
Visual Response Cards

Community Planning Event

Public Inquiry Submissions

Proof of Evidence
Results of Community Questionnaire
Preliminary results of Community Planning Exercise
Closing Statement

Crown Street, Glasgow

Mike Galloway

Byker, Newcastle upon Tyne

Dale Bolland
Mike Turnbull
Roger Tillotson
Fiona Swindell
Carol Armstrong
Jimmy Johnson

Carrickfergus practice study

Introductory letter

Press publicity

Household Survey

Questionnaire
Response Cards
(Variations for alternative settlements within Borough)

**TEXT BOUND INTO
THE SPINE**

Map 1.

Evaluation of constraints & impacts

A client's 'lack of interest' is a constraint - there needs to be a clear commercial benefit for a good environment. Having a willing client who is interested in exploring ideas is important.

Commercial viability is on the agenda but it can conflict with the level of environmental impact.

Planning issues will relate to local opinions and impacts on residents as well as the impact to environmental systems. You have to deal with other concerns such as disabled access, the blind, commercial interests. Consultation can be a constraint.

Perceived public safety does influence design.

Sustainability is taking a negative impact and making it positive. It is a question of literally layering constraints and opportunities over each other and allowing them to work. It is a juggling act - trying to make sure there is equal acknowledgement of various constraints and opportunities. Deal with appropriate questions of scale and impact.

Making a proper provision and choice for places to meet and move around - considering semi-spiritual/environmental educational issues.

A site perspective, rather than a vision/image based approach.

It is difficult for a practitioner to break sustainable development into components. It is very much an integrated approach - from the scientific to the artistic. It is a reasoned approach, working through a process of analysis and integrating quantifiable physical measures such as site constraints and opportunities with social functions and interactions - bringing concepts together, so you are not doing fragmented actions. It is putting the pieces of the jigsaw together.

Integration

All the components have a fragility but maintenance needs to guide landscape spaces. They can be designed so they are not demanding on maintenance. Implied is a good natural fit with the landscape. Avoid alien elements or without continuing intervention it will revert to its natural state.

It is an environmental perspective and considering the landscape as a system.

Ecosystems

Methods of construction will have to be considered making the best use of site conditions.

A sustainable community is a dynamic system - having wind, irrigation, agricultural, permaculture subsystems. Landscape matures over time. It is dynamic and so you can influence the way in which it develops.

Locality.

An energy story, a water story and a topsoil story are all part of the same attraction and landscape system - any single item (in a design) is not only doing one job, it is part of a bigger picture of restoration, multiple use or resource conservation.

Where we could incorporate self-sufficiency and autonomy within systems, we would do it.

Positioning of the components of design for energy efficiency is important - trees provide shade and affect light, altering the microclimate.

Urban sites are always difficult - the challenge changes in that context, noise, dust, underground services, traffic, vandalism and crime constraints - but I like the idea of an urban revival and a whole new roof-top society of multi-use spaces.

The structure should be as simple and as straightforward as possible.

A literal reaction to the question of a sustainable community is one which is extremely 'hippy' and also a bit tatty.

Map 2.

In terms of cities - they have to have meaning for people, so they may have to be structured on some sort of smaller groups. There can be a danger in sentimentalising our idea of community and descending to a rural idealism.

There are basic human needs for identity which are probably best met in smaller groups - society tends to become unstable and alienating once you get beyond a certain point.

A sustainable community may be locality based - it may be that in such a society, mobility is limited. It might be better to think of communities of interest - communities are increasingly divorced from locality.

A sustainable community would be capable of self-replication - this suggests a balanced age structure. It would be a community which would restrict itself to its limits or have the means to moderate its own environmental impact - also to relate to global communities.

Sustainability is projecting in the long-term - where you can keep things going at a steady state level without long term damage to the environment. This is compatible with a high quality of life - but that quality of life might be expressed in different terms. Different civilisations through history have stressed different aspects of quality of life.

Economics tend to have more influence over global resource flows than democratic systems.

In terms of environmental damage - in the 'rich west', it is the business of daily living that gives rise to most of the impacts. We have to consider that through a changing culture and ethics.

The sustainability agenda is really the earth approaching its limits of and capabilities to absorb pollution, resulting in irrecoverable environmental damage. Our actions are irrational (eg: use of fossil fuels). It is not a new idea - historically, environmental limits have already led to the demise of civilisations. We have to become self-destructive and unsustainable.

The technology already exists to solve all our global environmental problems - the problem lies with where the power and knowledge are distributed in our society. We have the capability to build low energy housing - if we do not, it may be because the people who would benefit are technically under-resourced.

Technically, it is questionable whether or not we can go on as we are doing - limits will not be when all people find things unacceptable, they will be at the point beyond which things just will not work and systems will collapse. Systems tend to have a plasticity - this can give us a degree of complacency. Once the elastic breaks it is very difficult to fix it, a.k.a. the effects of environmental damage. The limit to fossil fuels is not the physical resource but the effects of its use. The danger is if we proceed the way we are we will exceed natural limits and have runaway damage.

There are political limits - environmental effects are often remote from humans and distanced from the political debate. These limits are reflected in society - we may underestimate people's capacity to tolerate environmental damage without action. Often those most affected by environmental degradation are in a very weak political situation.

Social Limits

We have to respect the means by which we get our information and communicate and fit some sort of environmental feedback onto that information flow - feedback about the state of our environment and the impacts/consequences. Without a feedback loop it is difficult to determine consequences - cause and effect. Control and feedback should be part of the democratic system - our problem is a lack of knowledge concerning environmental impacts. People need expert and technical advice to influence their physical environment. Communities who suffer from environmental impact are technically under-resourced.

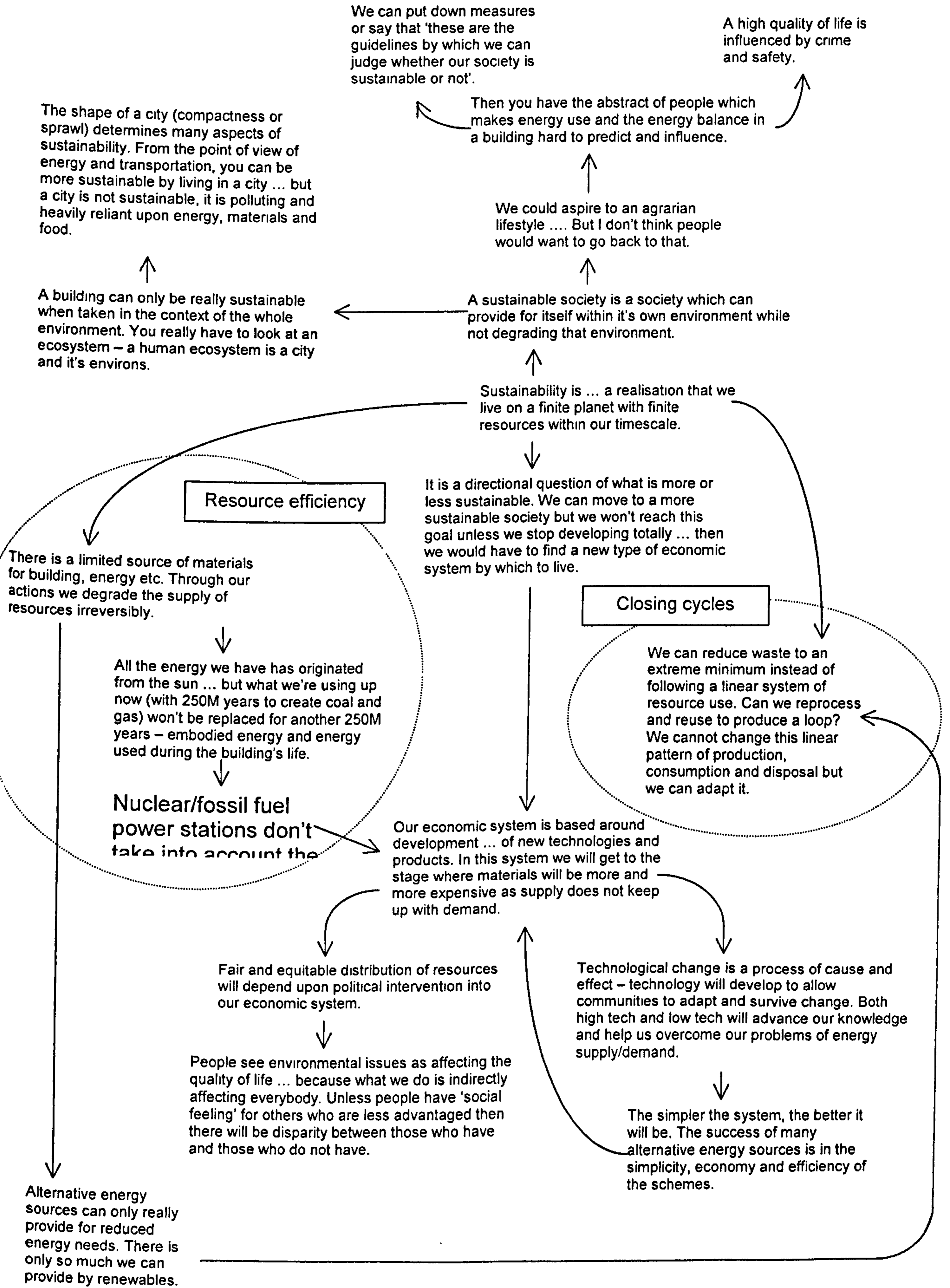
Information Flows & Feedback

A sustainable society is about replication and inclusion. People need to be connected - in terms of their education and their micro-experience - to natural and living systems. Membership of communities is important, as is gaining links with the use of resources - including the land resource.

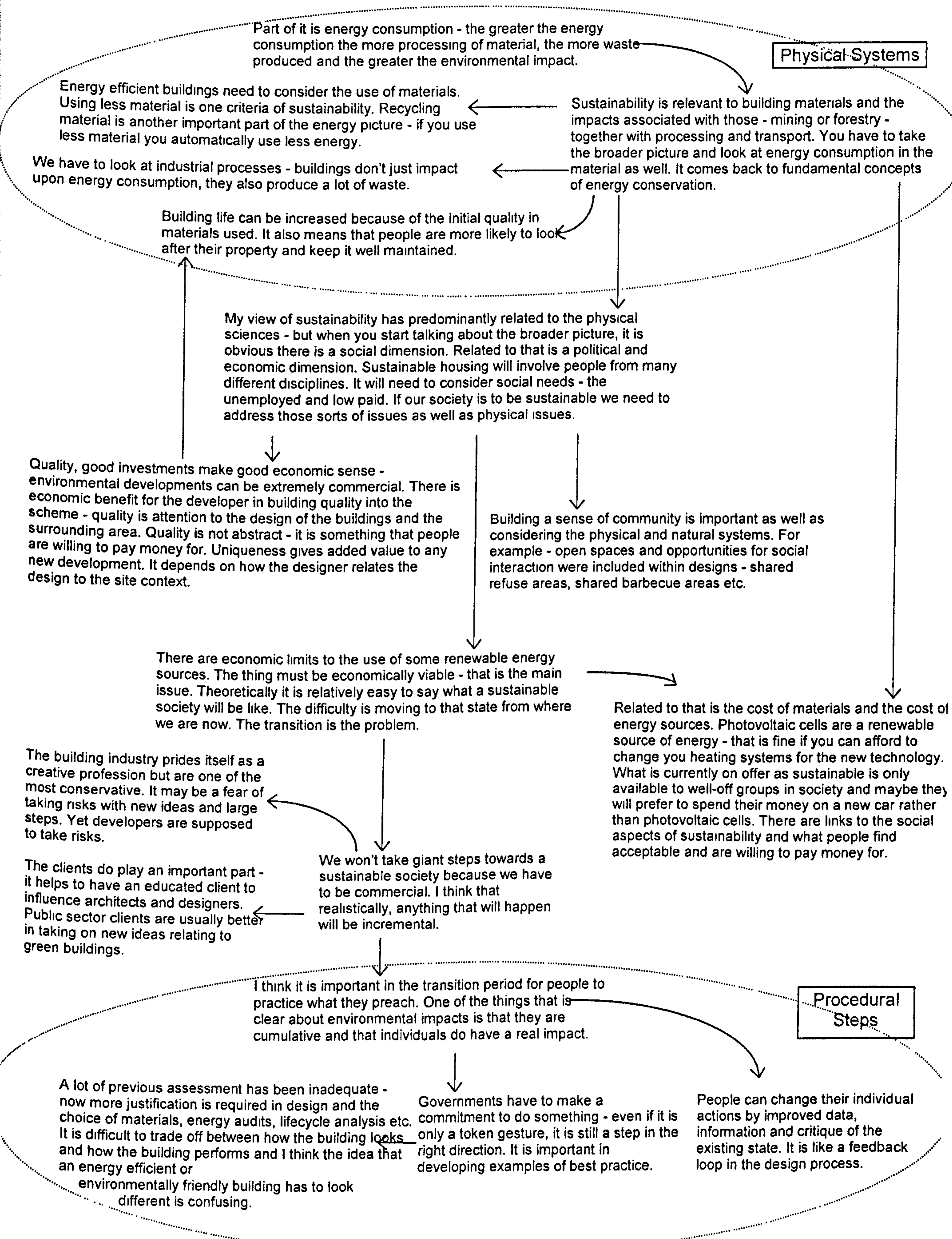
It may be possible to integrate the management of resources at a personal level into ethics - 'green' ethics are becoming increasingly more important.

Integration

Map 3.



Map 4.



Map 5.

Husbandry of resources covers the area of subsistence - providing for local needs and reducing the dependency upon fossil fuels.

The subsistence level is the basic limit for human needs and requirements. You could look at an ideal community and draw on some historical concepts - like a fudal society, with local production and the sharing of goods.

Subsistence economies and support systems are those based locally - often dependent upon extended families. I think you would have to start with redefining something locally and then look at the resource inputs.

In our society, this ideal does exist in some villages and in a crofting lifestyle - a sustainable lifestyle.

It is feasible to encourage a sense of community identity with our urban areas by providing opportunities for local production and self-sufficiency. I don't think we will achieve a sustainable level with large urban communities.

Community

Sustainable communities may be like existing village and rural communities. In urban areas it is similar but the question is 'an you actually raise awareness and make people think at a community level?' Village elements need to be reproduced on the larger urban scale - communities based on localities. You can help create sub-communities - through urban villages. Not just the physical elements but having a range and mix of places for all sorts of activities. It should not be just monocultural.

Community is ... a 'sense of place' and identifying with a particular characteristic of an area. Local shops, pubs etc. - all the elements of a village.

They would need some kind of identity to the physical place where they live ... some interaction with their neighbours. You have to allow and encourage people to interact more - by bringing activities closer together. Minimising distances between households and services. It would be tightly defined - using local and renewable resources. This could apply today if there was the political will and popular support.

Locality

For a certain section of society, an experimental return to the land may be an option. It is important to give people a sense of self-worth if they want to follow this sort of lifestyle. We should encourage those who live like this and are outside our human economic system.

People's modern aspirations are very different. We have to have reduced expectations (not a reduced quality of life) regarding privileges and material goods. We need to understand the trade-offs for a cleaner, healthier environment.

To achieve any meaningful change in the future we will need to provide a political commitment - at national and local government levels - and provide sufficient resources to undertake radical change.

Time is and always will be a constraint for achieving meaningful change.

There is a need for intervention and a guiding mechanism if you are to build sustainable communities. Although it sounds like an oxymoron, we need a type of non-prescriptive 'planned organic growth' - setting out the principles that have been identified as sustainable and help create community.

Map 6.

We regard ourselves as independent of the world and natural systems, manipulating the environment for our own ends. We are a dependent member of this global system. We are the species which have created this ecological imbalance - threatening our own existence and the sustainability of the global system.

The human world has its own system and it has to interact with natural and semi-natural systems - each with its own hierarchy to give order and structure. So total equality is never feasible but we could have a greater sense of co-operation between people within nations or between nations and communities - a greater sense of the collective identity. People have lost sight of that community - especially in urban society.

Native/indigenous peoples had sophisticated civilizations without destroying their natural habitat. They lived in harmony with nature - placing greater value on their physical environment and having a sense of place in the world. They didn't have the technology for destruction.

Western philosophy is highly individualistic and regards itself as in control of the environment - it is commercial and economically driven. This is non-sustainable. Individualistic thinking and apathy prevents individual action - it seeks to service selfish demands eg: the whole car-culture is a symbol of our individualistic society.

Reappraisal our goals and rethink our philosophy in order to achieve sustainability. Sustainability requires a change of our mindset and attitudes to the environment. The law is an end-stage discipline. Education is the first thing - new generations should be instilled with a different value system from a very early age and economic values have to take the environmental impact into account - the polluter has to pay.

A sustainability future where the planet can survive in economic, social and resource terms to a level of equal satisfaction - peaceful cohabitation without scarcity of resources, conflict, warfare, deprivation. We will become economically divided and ultimately socially divided with less interaction between nations as parts of the world become despoiled and international inequalities become deeper.

Value Systems

We should move away from individualistic desires and change our selfish patterns of consumption. If we move towards a more sustainable future then more people can enjoy the world we live in - a more collective way of living.

Built development can suggest a community - human scale encouraging contact.

The individual needs to have a sense of identity, community and place. If you live in a homogenous environment you do not have this. Active involvement gives people a sense of community. We need communities which place greater value on giving people physical space.

People will gather together based on natural community areas depending on how the area is planned.

Equality is difficult - there will always be people who are more affluent than others - there will always be different levels of power within a community but the ordinary person needs to be able to live a purposeful and meaningful life in their own community.

In structural terms a sustainable environment would be where people have a greater say in planning control - greater level of democracy or consensus building within the development process. Unaccountability and governmental inactivity are problems in the way cities are developed. Formalised resident and community groups would probably become more effective and have a greater voice in determining their own futures.

I can say what an ideal built form is not - it is not a huge monotonous housing estate. The worst parts of cities are inevitably the poorest areas. Affluent areas are very leafy and green.

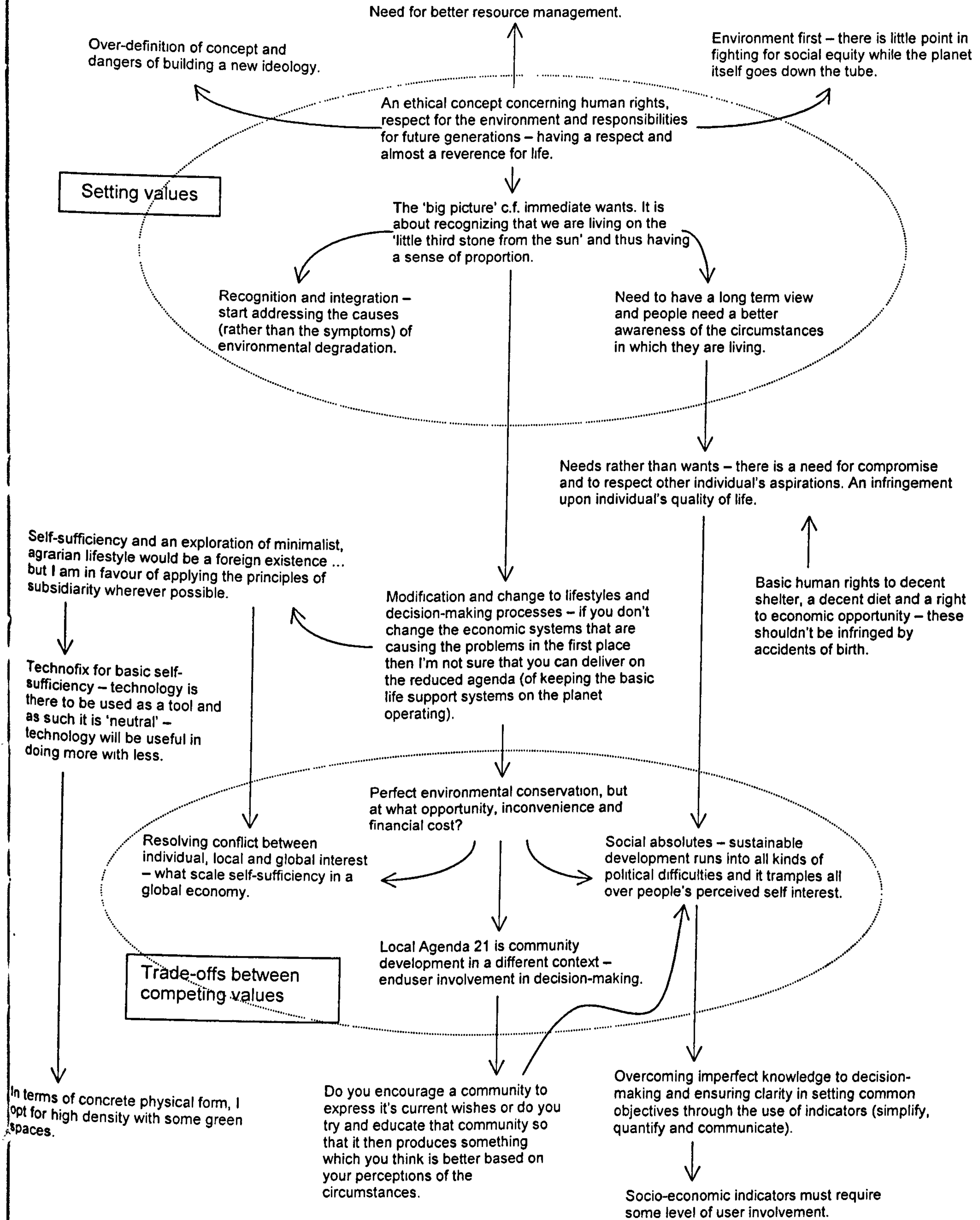
More resources need to be put into building in a way that brings people together and allows them to have more control over it.

Community Control

Resources are managed sustainably in a way that all nations can cohabit peacefully and also that the planet is allowed to develop naturally. Countries could fight over mismanagement of say the water resource.

Social Inequality

Map 7.



Hulme, Manchester

Interview with George Mills, Mills Beaumont Leavey Architects, Manchester 8th August 1996

Architects and urbanists responsible of the Hulme Design Guide and a number of physical schemes, including the *Homes for Change*.

- Role of the Design Guide was in bringing together social and economic aspects of regeneration with the physical environment. It integrates management proposals in the form of a local interpretation of Urban Village proposals. The essential holistic approach is more than just a design guide, it sets aspirations and vision.
- Community building addressed the issue of class structure – deliberate mix for post-industrial city / diversity. Neighbourhoods within Hulme were 8/9 the basis for phasing of redevelopment.
- Hulme regeneration is set within the context of *City Challenge*, the need for 1000 social housing units and a revisiting of strategic planning and urban structure.
- The Design Code is considered liberating for architects and allows him to foster community within a context, or even to create the context for community. This context included the 'sense of Hulme' – defined in topography, the river, physical links and incremental growth within an industrial city. He is also inspired by the work of Leon Krier and the common dimensions (block sizes / depths) based on an analysis of successful places, the morphology (streets and squares) and the theoretical numbers involved in neighbourhood planning. The 1960's scheme ignored this context and some of the key density arguments of urban development, creating inefficient use of space and lack of human scale
- Anticipate change and the only certainty in design. Consider lifestyle and resilient design where there is potential conflict between the US model of a transient population and the European model of commitment to locality.
- Requirement to place faith in an urban future and communities and a development of a collective sense of lifestyle choice where we are creating environments where people will choose to live. Some of the potential urban *pull factors* include high quality, contemporary physical form. The redevelopment was a major Public Relations exercise.
- Mixing urban elements (public realm / squares, links / routes / streets and mix of uses and tenure / density) with procedural and analytical issues (stewardship, ownership and sense of place).

- Working as urbanists and not as commercial architects, with the implications for timescale, cost limits, capacity and approach. Together with a company philosophy that integrates art and scientific dictates for building. Thus, adopted a process of co-operative commissioning for collective area interests.
- Getting business from derelict blocks. Using radical approaches and developing a model for future regeneration – setting best practice for the City Region – a model that looks to Europe and allows for a new urban society and lifestyle.
- Design approaches that are most successful are those which possess quality – both site attributes and architectural design. Quality is not about style but feelings and emotions. Approach is to respond to site, its relationship with the City Centre, the site footprint (geometric form).
- Design process is collaborative based around this common central vision. This included a series of workshops with future owners. These began with people making statements about architecture and ended in modelling and testing ideas. It was a collaborative and educative process (fun but expensive) that helped in getting people involved. This was particularly important when addressing issues of stigma and image.
- The shared vision is one that changes the area's image and challenges preconceptions. Existing mental images of the area and of its physical form were all very negative and yet those who now look at the delivery of the vision express surprise and delight. This is the key role of architecture in challenging perceptions of the inner city.

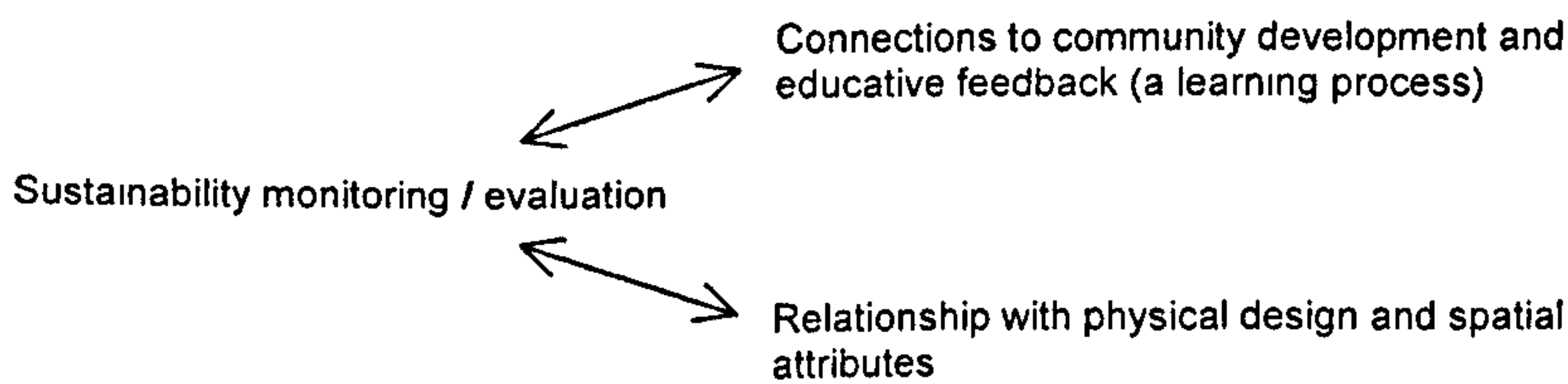
***Interview with Joe Ravetz, Manchester Metropolitan University,
Manchester 9th August 1996***

Difficulties of integrated working and recommendations

- Avoid aggregation where possible.
- Expect significant data problems and methodological difficulties relating to costs / benefits around economic and social values.
- Data availability is not always spatial and can create a tension with any scoping exercise.
- Biggest gaps are at the neighbourhood level and the relationships within spatial structures.
- Sustainable design equals and adaptive learning process, procedural and goal-setting linked to feedback. It does not equate to a rigid substantive deterministic theory.

Targets and limits

- These are inevitably socially based even when they relate to traffic levels or pollution levels
- Housing capacity issues are not just about projected levels of growth but the location and form of development
- Green belt is example of imposed limit upon densities and form
- Rational analysis does not lead directly to policy recommendation – ie: intuitive analysis and links between analysis and policy action
- Analysis of information is a learning process and requires no predefined positions



Links with Hulme redevelopment

- Involvement in the city Development Guide – focus to see how action at local level contributes to sustainability of the city region and how we can assess this.
- Community level is the level of local action and will use a range of spatial indicators. These could be used to provide the framework for local action.

Level	community	City region
data	Spatial and interactive, highly defined issues of perceptions and a particular urban design focus	Statistical and policy focus (essentially an aggregation of ward level data)

City-wide issues of area strategies suggested Hulme as a pilot for investigating spatial interactions, data limitations and the range of primary and secondary sources available.

Cairnshill Estate, Belfast

Meeting with Jim Alexander and Margaret Wisner - Chairman and Secretary of Cairnshill Residents' Association, Belfast, 26th July 1996

The Cairnshill Residents' Association was formed approximately five years ago in reaction to a threat to playing fields in the local area. Castlereagh Council (the local authority responsible for leisure services) were looking at the option of closing the public fields; the only open space in the area; because of high maintenance costs and some complaints relating to anti-social behaviour and teenage drinking. A large number of residents were alarmed enough to organise themselves into a successful campaign against the closure. Thus the group had its origins in the single issue of inadequate public open space in the Cairnshill area. This shortage has been compounded as more peripheral development has increased the local population without any significant contribution to local facilities, especially public open space. Since its formation, the group has been active in responding to major planning applications which affect Cairnshill. Through this experience of dealing with housing developers and the local planning system, they have become skeptical of the willingness or goodwill of house builders and planning officials to address local needs. Their current position is one of 'them' and 'us' - where both the Planning Service and the potential developers are seen as their adversaries.

Our common interest is the way the Department of the Environment (Northern Ireland) is trying to introduce sustainable development and design into statutory planning for the first time. They are initially addressing these issues in the review of the housing strategy and the implications that it will have for new development - especially the explorations of the idea of the urban or suburban village in Cairnshill. During a site visit to view the urban edge site which was highlighted in the BUAP (alterations no.2) review document, I had the opportunity to speak about the issues which were concerning the Association. Below are issues of specific relevance to the current proposals for the area.

- There is a local plan being prepared for the Castlereagh area and the Residents' Association argued that because there is also a wider review of the Belfast City Region that there shouldn't be any housing built until that is carried out as new construction will preempt it. They also thought there were further arguments in the preparation of the Castlereagh plan to wait before releasing land for development.
- The Association were happy with the bulk of the urban design document but as it applied to Cairnshill they had reservations with it because Cairnshill is referred to as rounding off the development and one of the reasons given as to why it was selected is that there has already been significant investment in infrastructure for the area - roads that were built by developers. *"It sounded to me almost like there was a deal being done where roads were provided and improved on by the same developer finances but when it*

comes to the whiteland, these roads would then be used to service it at the time of the release of housing in the brown land."

- An existing area can be enhanced by adding new development over a 15-20 year period. The problem in Cairnshill is that it is almost at the end of the development (up to the Greenbelt) - *"if you were starting from scratch at this stage with the brownland and the whiteland (a considerable size of site) you wouldn't start by building houses the way they have been building them"*. The economical viability may now be the real problem, in trying to introduce sufficient quality in the new site to compensate for the lack of quality in the existing development
- The DOE is going to treat their urban design supplement as a material consideration for any planning applications for development in the whiteland. The minister's statement (14 January 1996) is also a material consideration and if it refers to the wider UK policy then it brings in some of that conceptual thinking at a national level.
- The different planning legislation which covers Northern Ireland is an important factor and not everything learnt in Great Britain is transferable to here. In England and Wales, we are beginning to see 'Urban Villages' referred to in policy (Draft PPG1 July 1996) for the first time this year. It is becoming an accepted notion within public policy and this is where Malcolm Moss is getting his notions from - quality and sustainability within a long-term masterplan based on a strong emphasis on public participation.
- Urban Villages is a concept which can be applied to existing as well as new developments - the argument was (in the post alteration document) that a number of sites were identified for Urban Villages because they were large areas but in our case it was a lot smaller and it was just to finish off the development which is here already in Cairnshill.
- The identified site added on to the rest of the existing built-up area should create an urban village - that may be why it was added on as an appendix rather than a principle site. The other sites are significant and have a major masterplan, this one added together should complement the existing site.
- The urban villages code has a 25-35% public open space standard - including formal and informal spaces, even shared surface streets. This is not being met by the proposals and there is nothing within the proposals to compensate for the lack of amenities in the existing housing areas.
- To compensate for the existing family houses - if you were trying to get a balanced community- there may be an emphasis on higher densities, smaller dwellings and town houses in the new development but even along the most accessible areas (along the Saintfield Road) there are few sites available.

- An umbrella group called the Newtownbreda Forum has previously worked with the Residents' Association and other local groups - they employed consultants to identify the need for a community hall or community centre and to look at possible sites for it. At that time it put out a questionnaire where it suggested that the 'white land' was used as a park and that the community centre is part of that. The problem with the approach was that people at the other side of the 'village' were also pushing for a community centre (in the Newtownbreda area) and this site was too far away.
- There is National Trust land in the surrounding greenbelt and there is already some public access - you can go out and walk around in it. The problem is that it is not accessible to the people in the housing - it is not accessible enough. Part of the provision of open space (25-35%) could include this greenbelt land and open space within the whiteland could be important routes to this site
- The current shift in transport policy and investment is now moving away from the private car onto public transport. If new bus services or facilities are provided throughout the area then it will be a material consideration in the same way as road infrastructure provision - the same way as the provision of open space.
- It has only been recently that a bus route has been added and the buses come along the Cairnshill Road. There is also a terminus at the Four Winds. The new developments have now got a bus route operating.
- It would take some time to wean local people off using cars and get them to transfer back to using the bus from this area to employment sites in the City centre. It should be addresses and other transport options should be investigated - safe cycle route may be such an option.

A community led approach would help deliver all of the aspirations which were contained in the document (urban design supplement) and we would like to think that these considerations will be made in the determination of planning permission. It would be valuable to explore the possibility of producing a community led plan, based on community values, to demonstrate how local needs can be met by a comprehensive approach to the development of the Cairnshill site. *"The DOE always seems to be running scared from the developer because of the legal clout that they have, it is always easier for them to pass over people like us - pat us on the head and say 'here is a bit of open space'. If we are prepared to be pro-active, they might sit up and take notice of us."*

Meeting with Bill Morrison and Neil McKillen - Department of the Environment (Northern Ireland), Belfast Divisional Planning Office, 29th July 1996

Following the abandonment of a public inquiry into the alteration of the Belfast Urban Area Plan 2001 (Housing Policies) due to wrong procedures in the consultation process, the DOE have been considering interim steps for housing land release prior to the preparation of a regional strategy for the Belfast City Region. Since the public inquiry was called off, a number of outline planning applications have been submitted for whiteland housing sites on the urban periphery - Cairnshill is one of the most recent applications (July 1996). It is the wish of the DOE to ensure that the detailed scheme for the site meets standards for quality and sustainability in design.

Any major applications will be likely to go to public inquiry (under article 31) and will be judged against the existing BUAP policies and a number of additional material considerations including;

- Ministerial speech by Malcolm Moss on 14 January which introduced the quality initiative to Northern Ireland;
- the alterations no.2 urban design technical supplement and the Cairnshill masterplan -consultants prepared the indicative masterplan for the site with the quality and sustainability criteria and objectives in mind but they had a fairly free rein on how to interpret sustainability principles into physical design;
- the Belfast City Region plan review, especially as it relates to housing and population estimates. The housing strategy which has a priority for inner/middle city sites may be weakened due to recent civil unrest. Many of these anticipated sites are at interface areas in the inner City and may be subject to changes in commercial viability.

The outline application for Cairnshill covers an area greater than that proposed in the alterations no. 2 and thus there may be more potential for achieving community facilities and open space provision for the area as a whole than if the site was considered in isolation. It has been the case that incremental growth through small scale extensions to the urban area has left an under-provision of open space and community facilities in the Cairnshill area. There is scope to rectify this and to achieve a more balanced and sustainable community through a more comprehensive look at the whiteland.

Factors which the DOE would wish to be considered in relation to the masterplanning of the Cairnshill whiteland include;

- freedom of choice in the housing market;
- the level of housing provision which can be reached at Cairnshill as part of the contribution to the urban area total;
- commitment to public transport;
- the site should be designed for public transport penetration;
- after discussions with the Northern Ireland Transport Holding Company (responsible for the running of bus and rail services in the

province) the Department are investigating the feasibility of a park and ride scheme convenient to Cairnshill together with a dedicated bus route leading to the City centre;

- traffic impact due to new housing and as a result of any park and ride facilities;
- the level of open space provision;
- urban village criteria - where the entire whiteland is considered as a whole together with the existing development;
- capacity for the whiteland to provide for community needs;
- Green Belt land being used to supplement open space provision by compatible informal recreational uses.

In addition to statutory plans and supplementary guidance (in the form of the urban design masterplan) the proposed development for the site will be subject to provision of on-site infrastructure as required by PPS3 (Planning Policy Statement on 'Planning and Roads Considerations) Unfortunately this is restricted to 'hardware' such as roads rather than 'software' such as open space.

The Department is supportive of any pro-active approach by local resident groups and recommends that any aspirations are discussed with potential developers currently looking at the Cairnshill whiteland.

Discussion with Mr Craig Sneddon - Director of Technical & Leisure Services, Castlereagh Borough Council, 3rd September 1996

The Borough Council has the responsibility for formal and informal leisure provision in the Cairnshill area. Thus, they have an interest in any mixed use proposals for the 'whiteland' which would include an element of public open space - especially regarding the long term maintenance and ownership of the area.

Prior meetings between the Cairnshill Residents' Association and Castlereagh Borough Council (CBC) have confirmed this interest and the Council's preference for a site along the Saintfield Road which forms the beginnings of a linear park following the river course. CBC are trying to identify land for a linear park which could remain in public ownership rather than draw up specific detailed proposals for the park - this land would likely be retained as open space as part of the development of the site

A report is being prepared for a CBC meeting later in the month - he would be willing to discuss this report with the Residents' Association after it has been presented to the Council and the Councilors have made their views known. He was personally reluctant to speak on behalf of CBC or to get drawn into any details concerning the likely views.

He was informed of the activities of the Residents' Association in preparing a plan based on community values - expressing interest and no objections to this.

He may include a note to this effect within his report to CBC, that the local residents' group is pro-active in looking at a mixed use development for the 'whiteland'. His view was that consultation with local residents would not be useful at this early stage (drafting the initial report for the Council). If the proposals for Cairnshill ultimately go to a public inquiry, CBC may have its own specific reasons for being represented there - independently or sharing the concerns of the Residents' Association.

He had experienced a NIMBY attitude from some new residents objecting to the building of what they considered to be 'lower cost' housing as well as the act of peripheral development in itself.

While the CBC may be interested in the wider issues of mixed use development which brought local retailing and employment into the area, their prime consideration would remain the provision of public open space. However, he suggested that mixed uses which included local facilities, office space and a diversity of housing types could be the most appropriate use for the site. The initial thoughts;

- initially 10-12 acres close to access from the Saintfield Road
- a linear park along the river, somewhere between 30-40 meters wide
- up to 10 acres at the top end of the park as it opens out into the Greenbelt
- a total of 30-50 acres is envisaged
- this would be kept as open semi-informal recreational space - it would not be a site for organised or formal recreational use of any type, except for a children's play area
- a low maintenance area with a planting plan looking to the next twenty years

Cairnshill Residents' Association - Household Survey

This questionnaire is to help assess current perceptions of the local community and the state of the environment. It seeks your views and your comments on the changes desired, hopefully having an influence over the level and design of anticipated new development in the Cairnshill area. Thank you for agreeing to take part in this survey.

Q1. How long have you lived at this address ?

	Year(s)	Month(s)
--	---------	----------

Q2. Why did you move to this area ?
If more than one reason given, which was the most important factor ?

Reason	Rank (1 = most important)

Q3. What do you like about living in Cairnshill ?
If more than one answer, which is the most important ?

Reason	Rank (1 = most important)

Q4. What do you dislike about living in Cairnshill ?
If more than one answer, which is the most important ?

Reason	Rank (1 = most important)

Q5. What features of the local area do you think should be preserved ? Why are they important to you ?

Feature	Reason

Q6. Show map 1. New development is currently being proposed for the Cairnshill area (planning applications cover the White Land bounded by Saintfield Road, Knockbracken Road and Ballymaconaghy Road). What would you most like this land to be used for ? What are your reasons for this ?

Preference	Reason

Q7. Show card 1. If open space were to be a part of any new development, can you tell me which of these four types of open spaces or green areas you would prefer ? Why does this one appeal to you the most ?

Preference	Reason

Q8. Can you tell me which you like the least and why ?

Preference	Reason

Q9. Show card 2. Can you tell me which type and quality of building you would find the most attractive and acceptable in any development? Why does this one appeal to you the most?

Preference	Reason

Q10. Can you tell me which you like the least and why?

Preference	Reason

Q11. Show card 3. Can you tell me which of these street layouts you prefer? Why does this one appeal to you the most?

Preference	Reason

Q12. Can you tell me which you like the least and why?

Preference	Reason

Q13. Show card 4. How satisfied are you with the current range of local services and amenities?
(circle appropriate answer)

very satisfied
 fairly satisfied
 fairly unsatisfied
 very unsatisfied
 no view / response

Q14. What improvements would you most like to see to amenities in the local area?
If more than one answer, which is the most important?

Desired change	Rank (1 = most important)

Q15. Are there any additional comments you wish to make about living in Cairnshill?

Q16. sex M F

Q18. household size

Q17. age group (circle appropriate group)

16-24
25-34
35-44
45-60
over 60
undisclosed

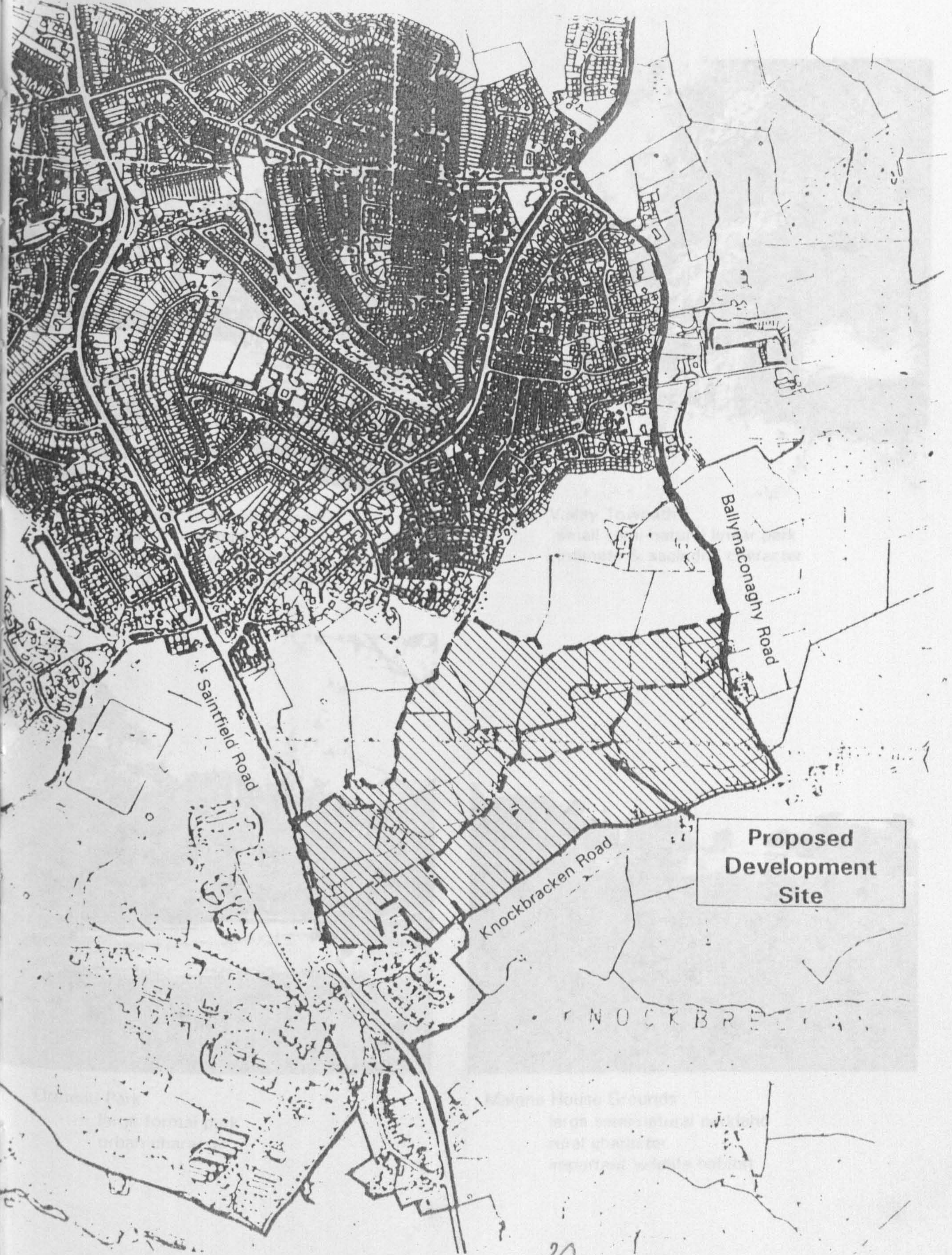
Q19. number of cars in household

Q20. employment and distance to work (if appropriate)

town/district	distance
---------------	----------

Thank you for taking part in this questionnaire. Your views will be useful in ensuring that any new development is sustainable, provides for the needs of local people and reflects residents' aspirations.

Map 1 - Land proposed for new development at Cairnshill

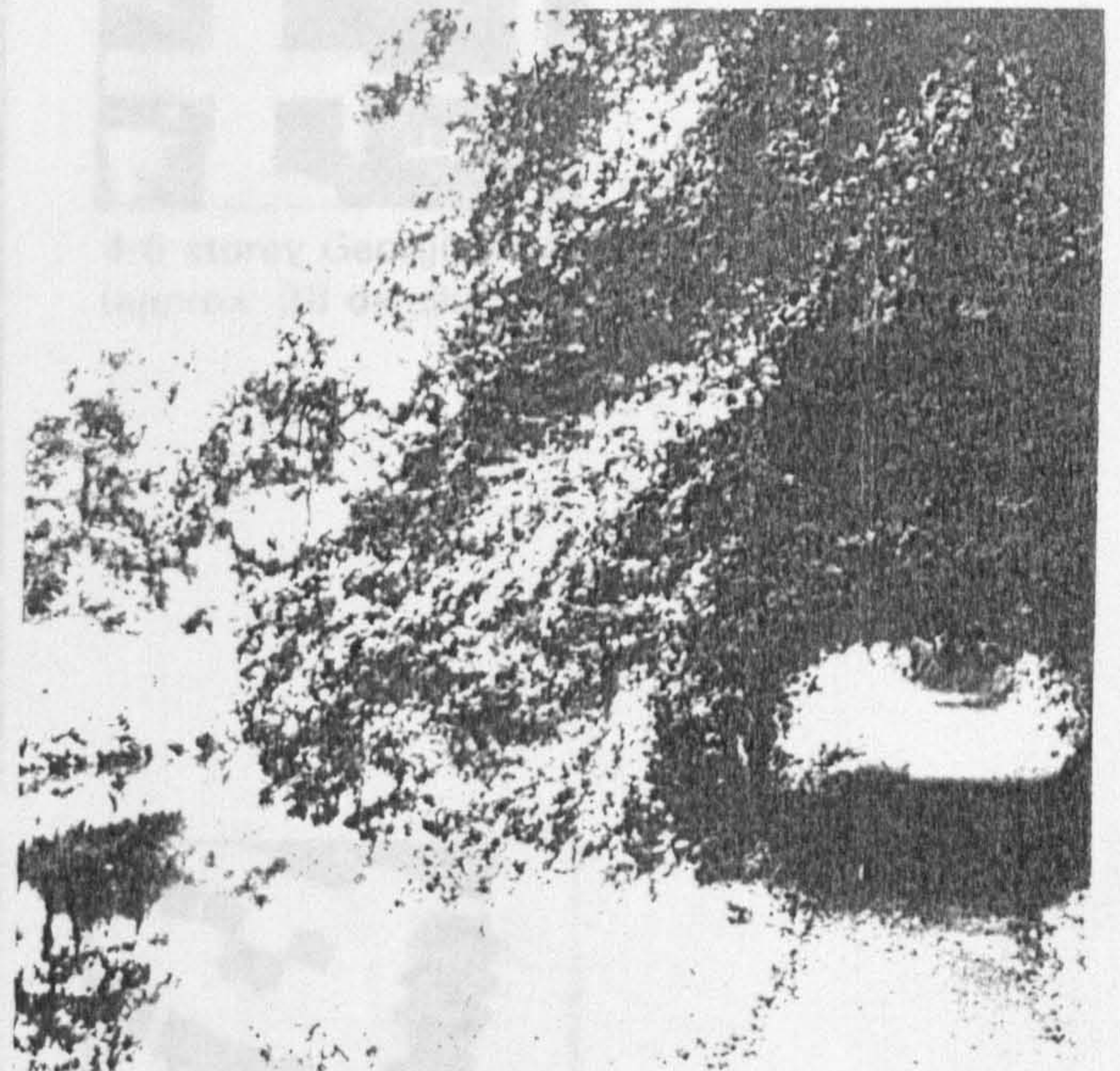


Proposed
Development
Site

Card 2 - Scale and Density of Development
Card 1 - Public Open Space and Green Areas



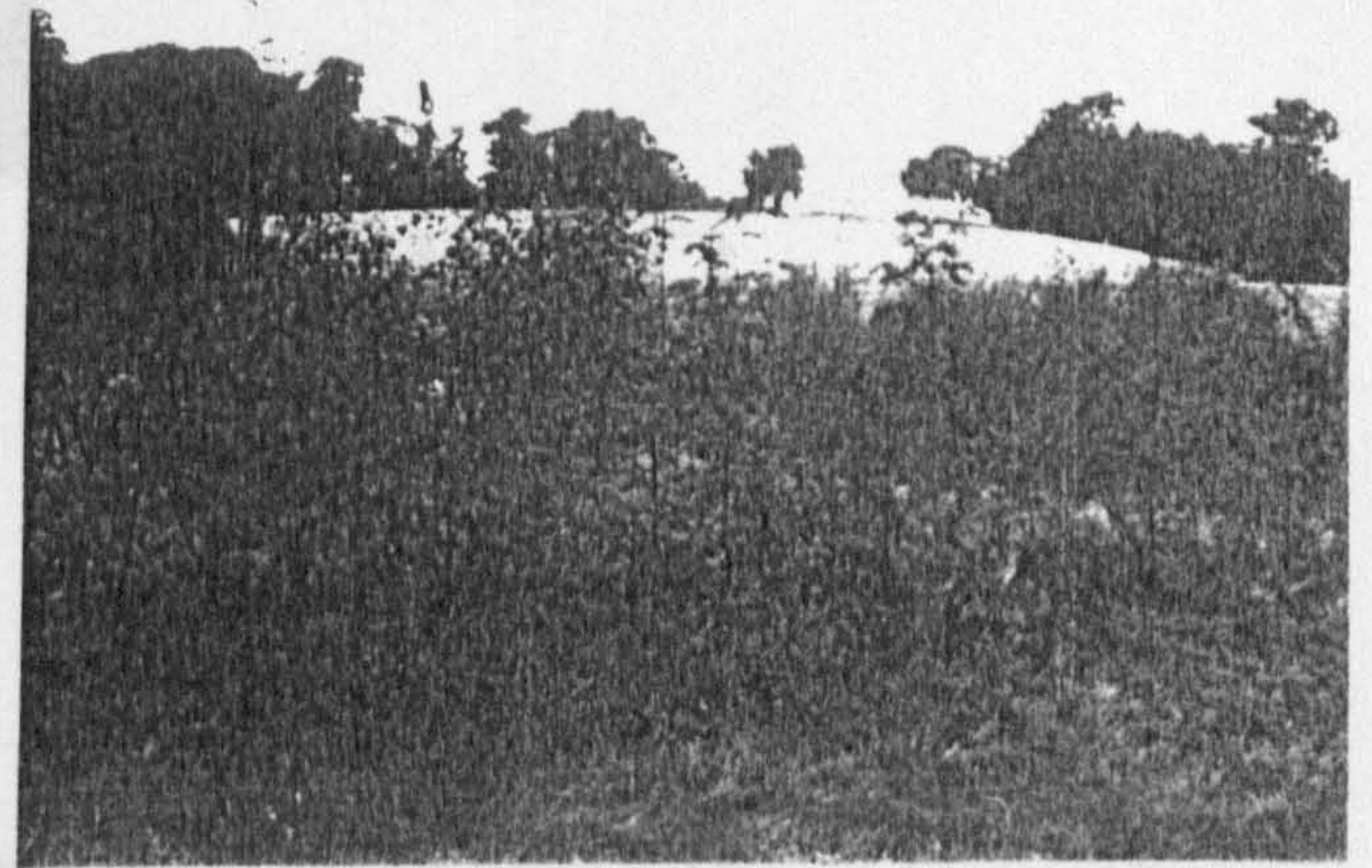
Lower Crescent, University Street
small formal park
properties overlooking space
footpaths, seating & lights



Lagan Valley Towpath
small semi-natural linear park
intimate & secluded character

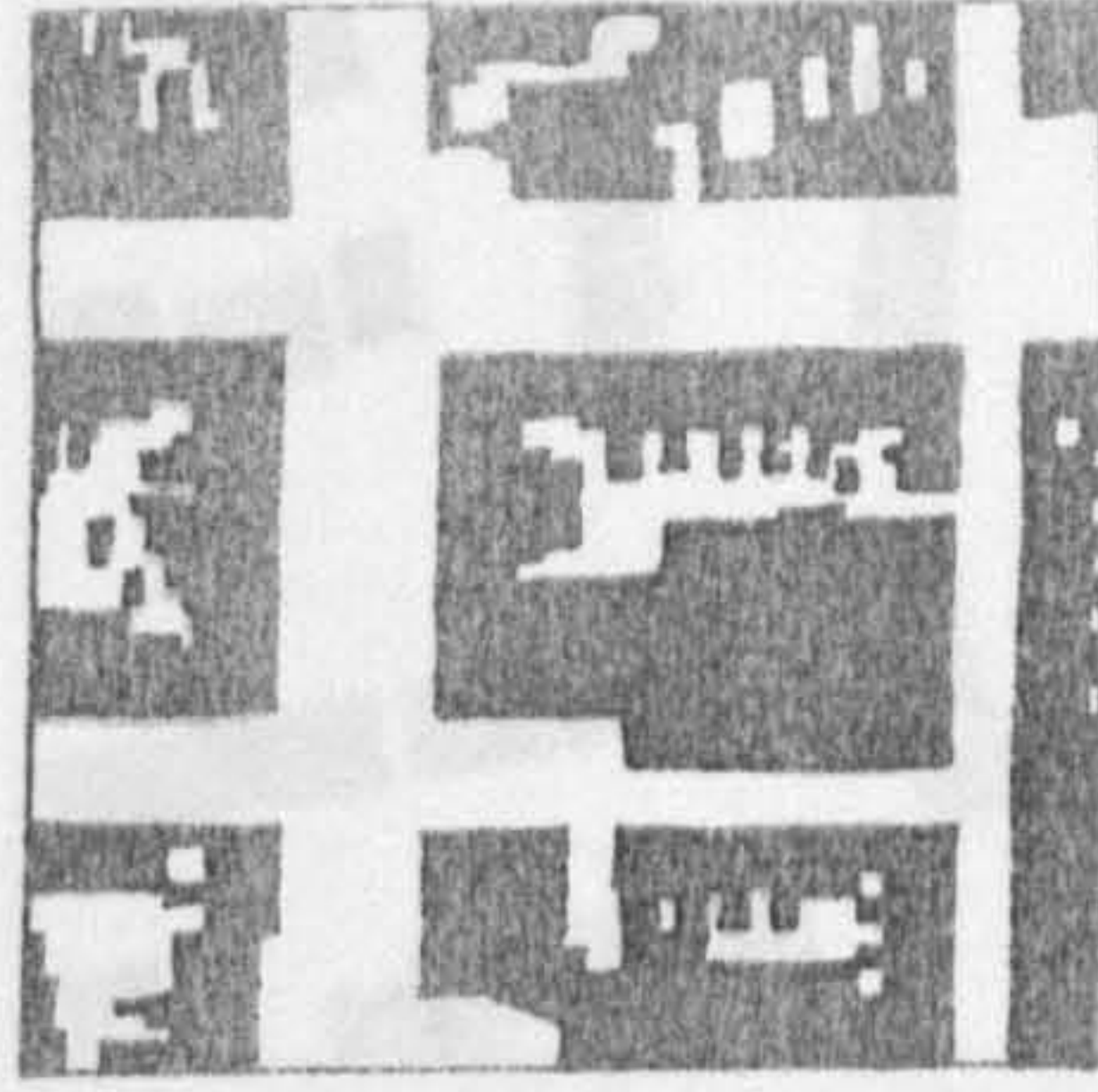


Ormeau Park
large formal park
urban character

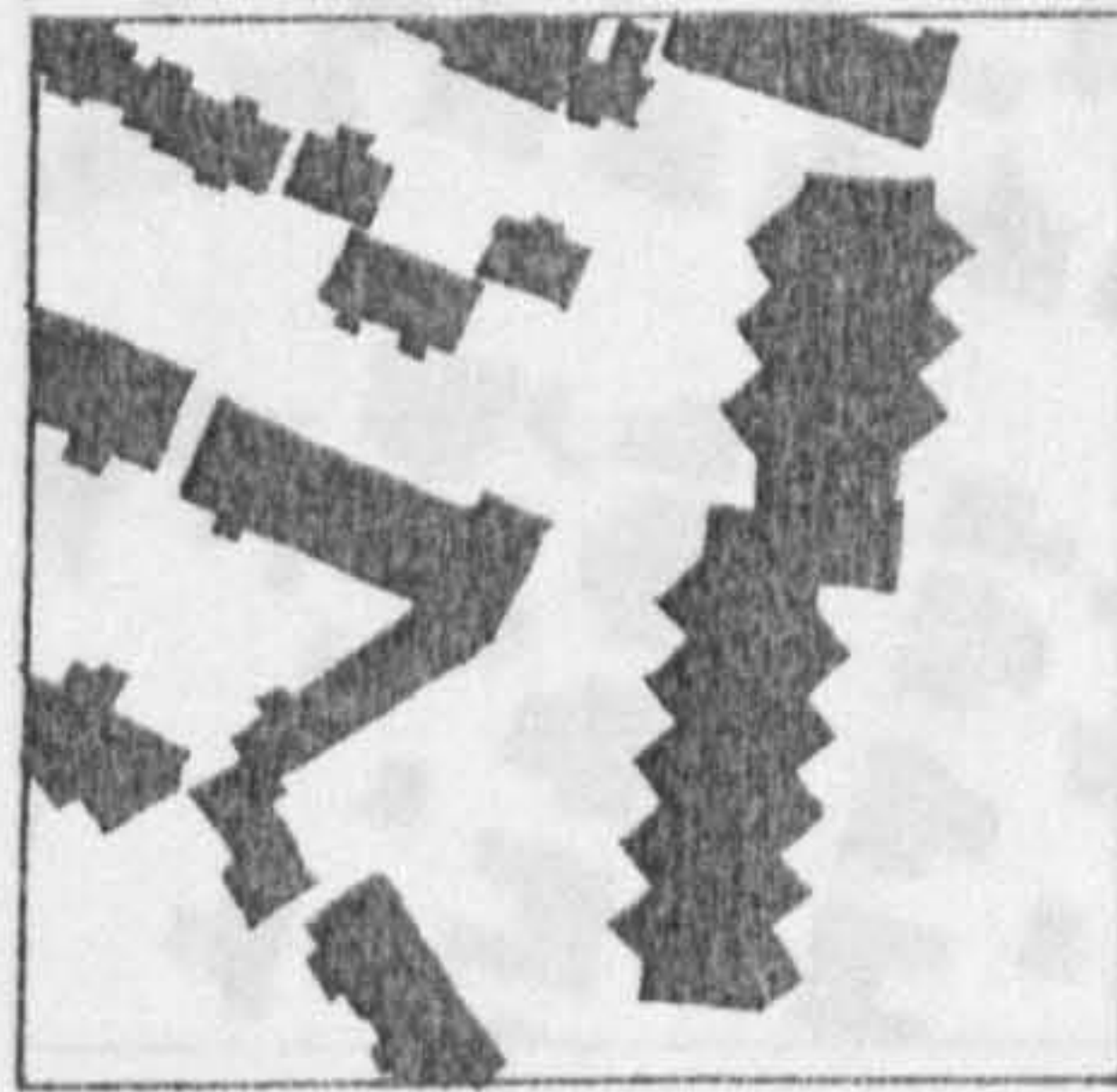
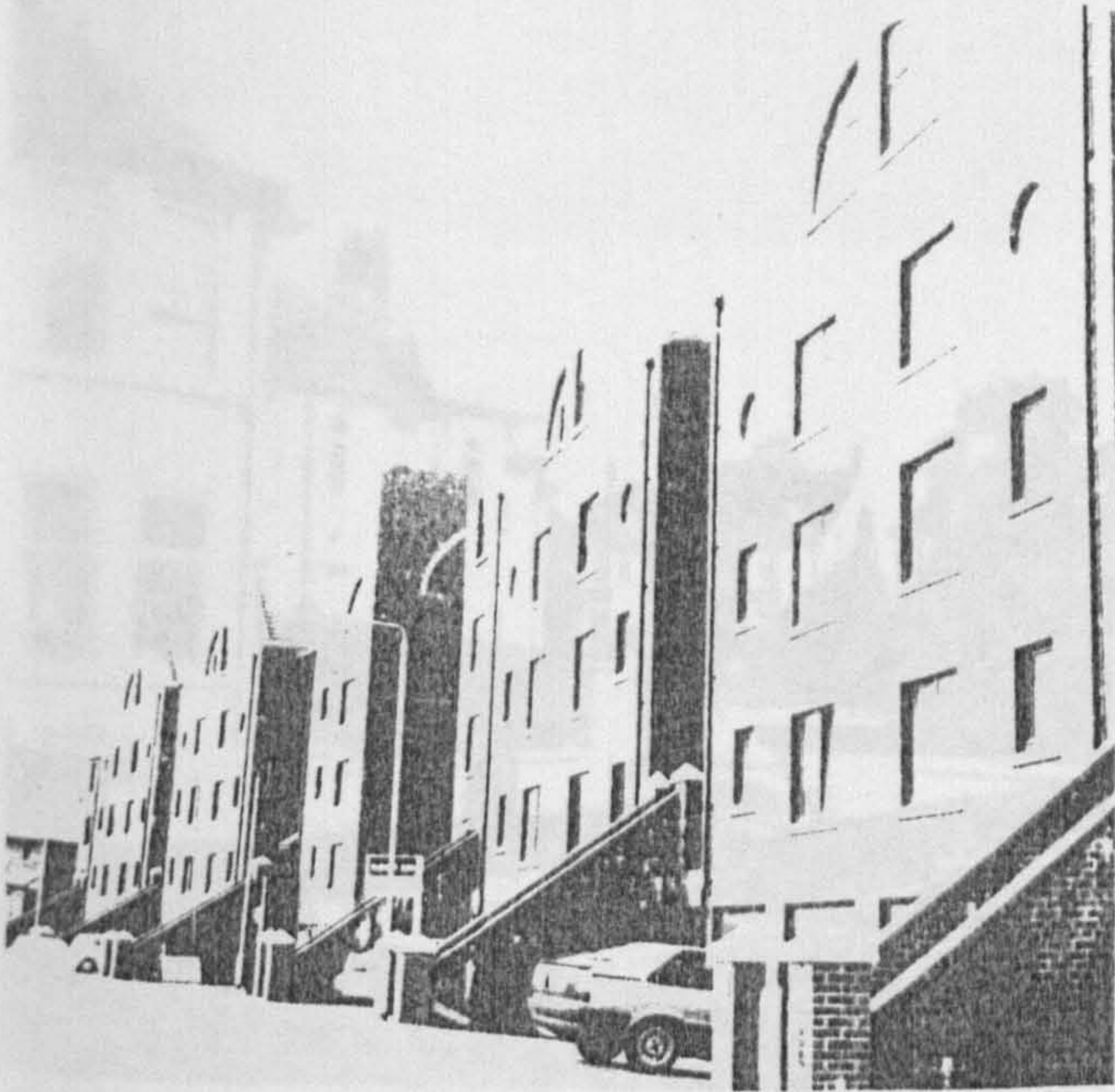


Malone House Grounds
large semi-natural parkland
rural character
important wildlife habitat

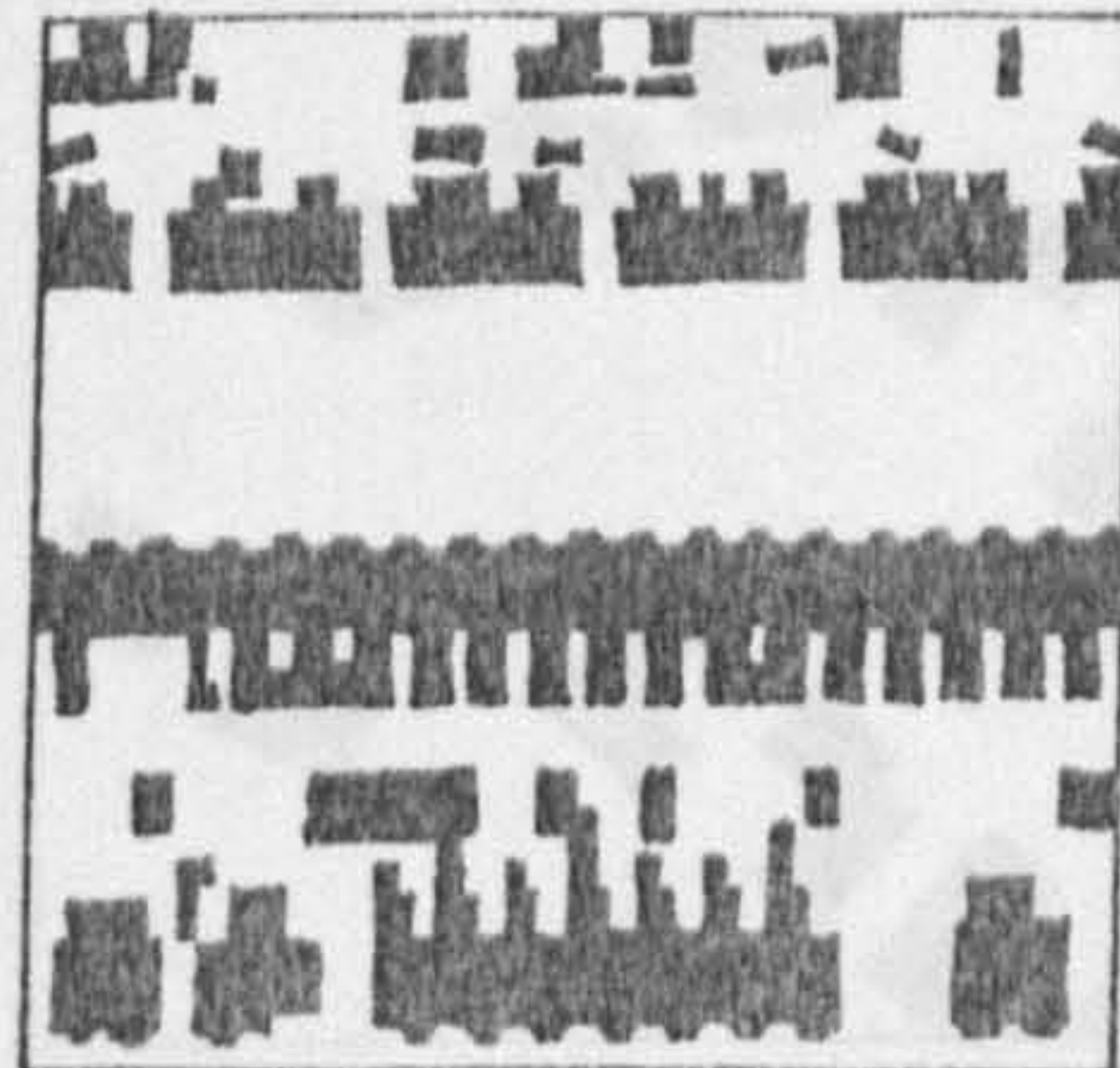
Card 2 - Scale and Density of Development



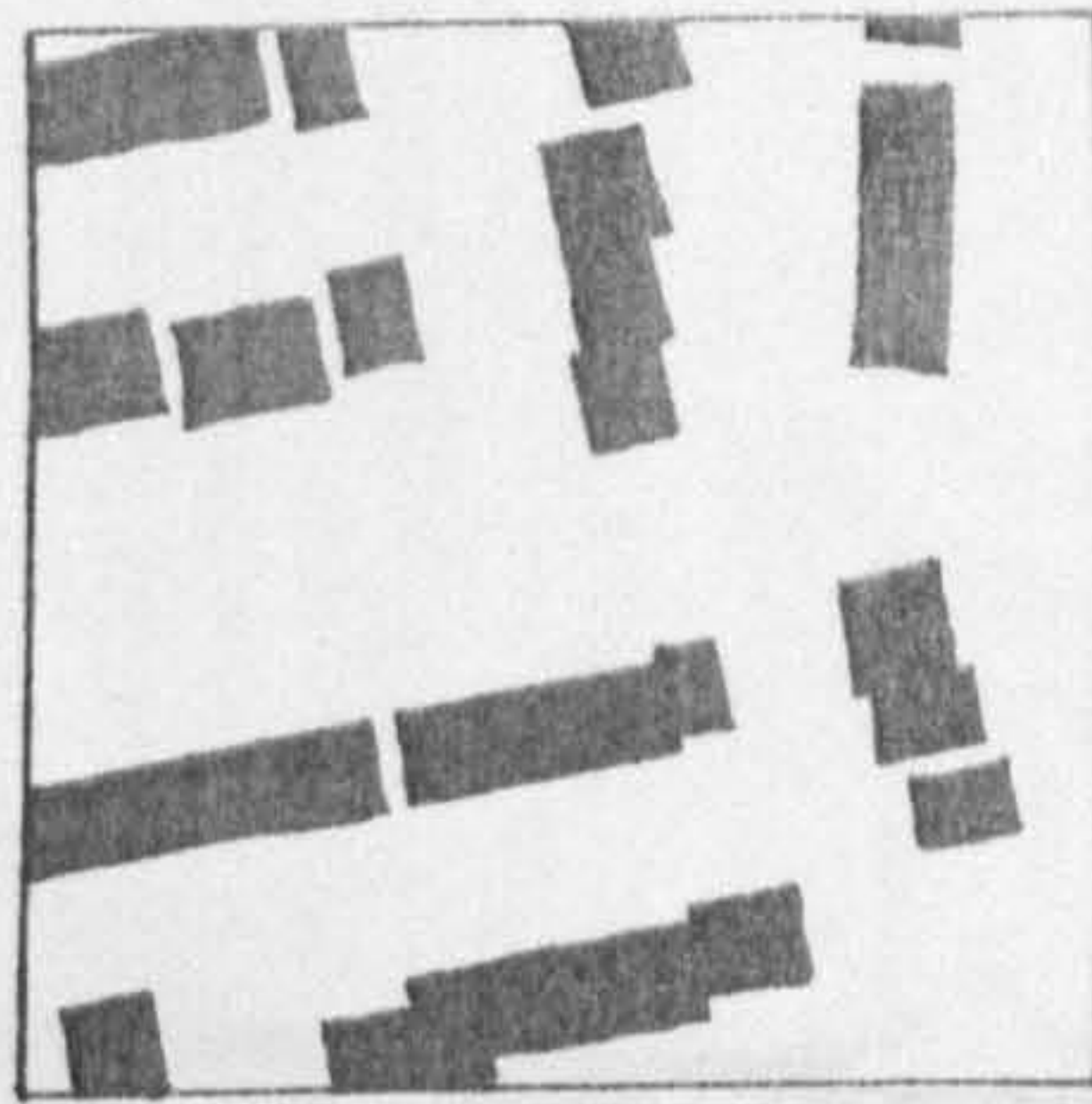
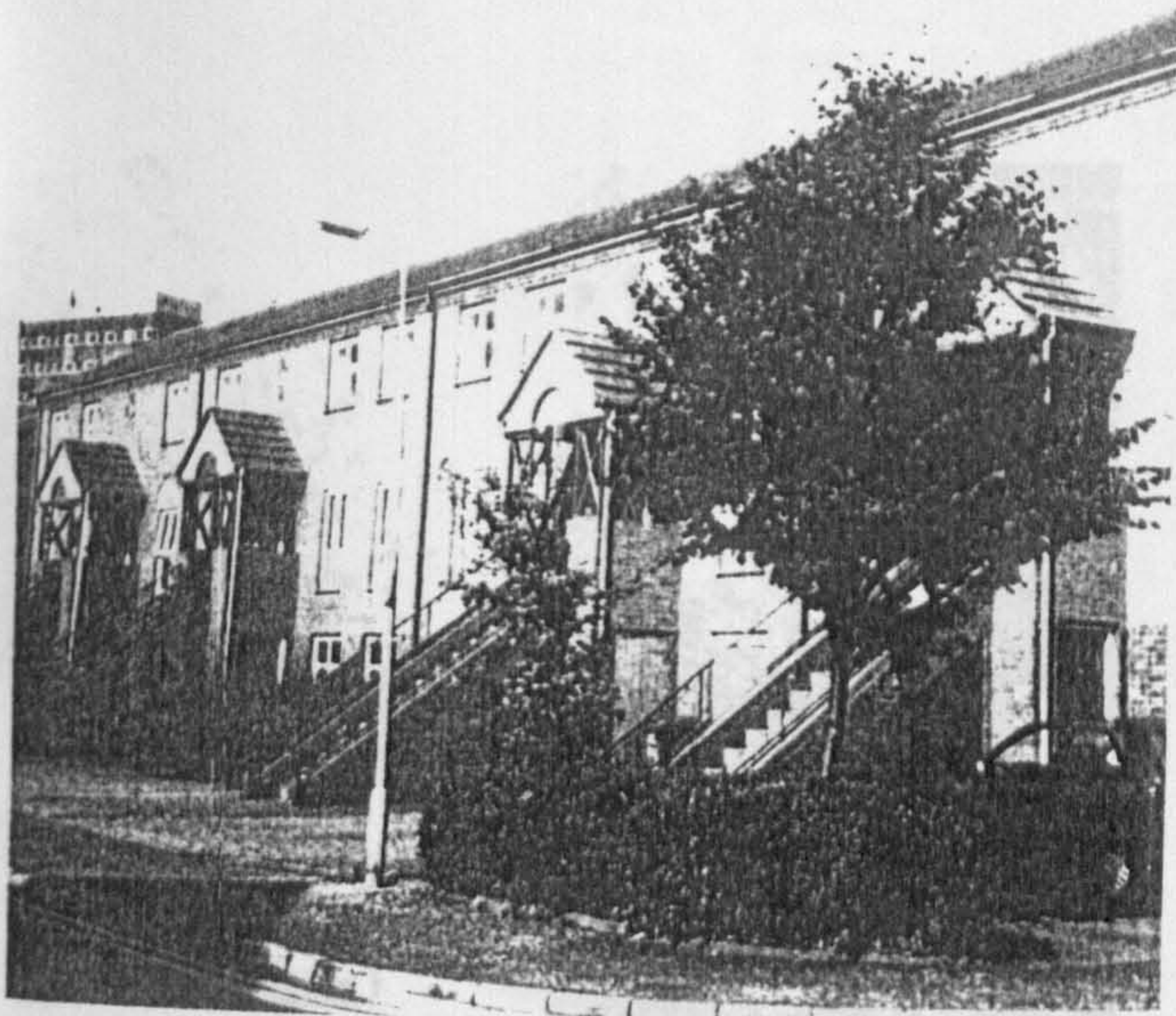
4-5 storey Georgian terrace
(approx. 28 dwelling per acre)



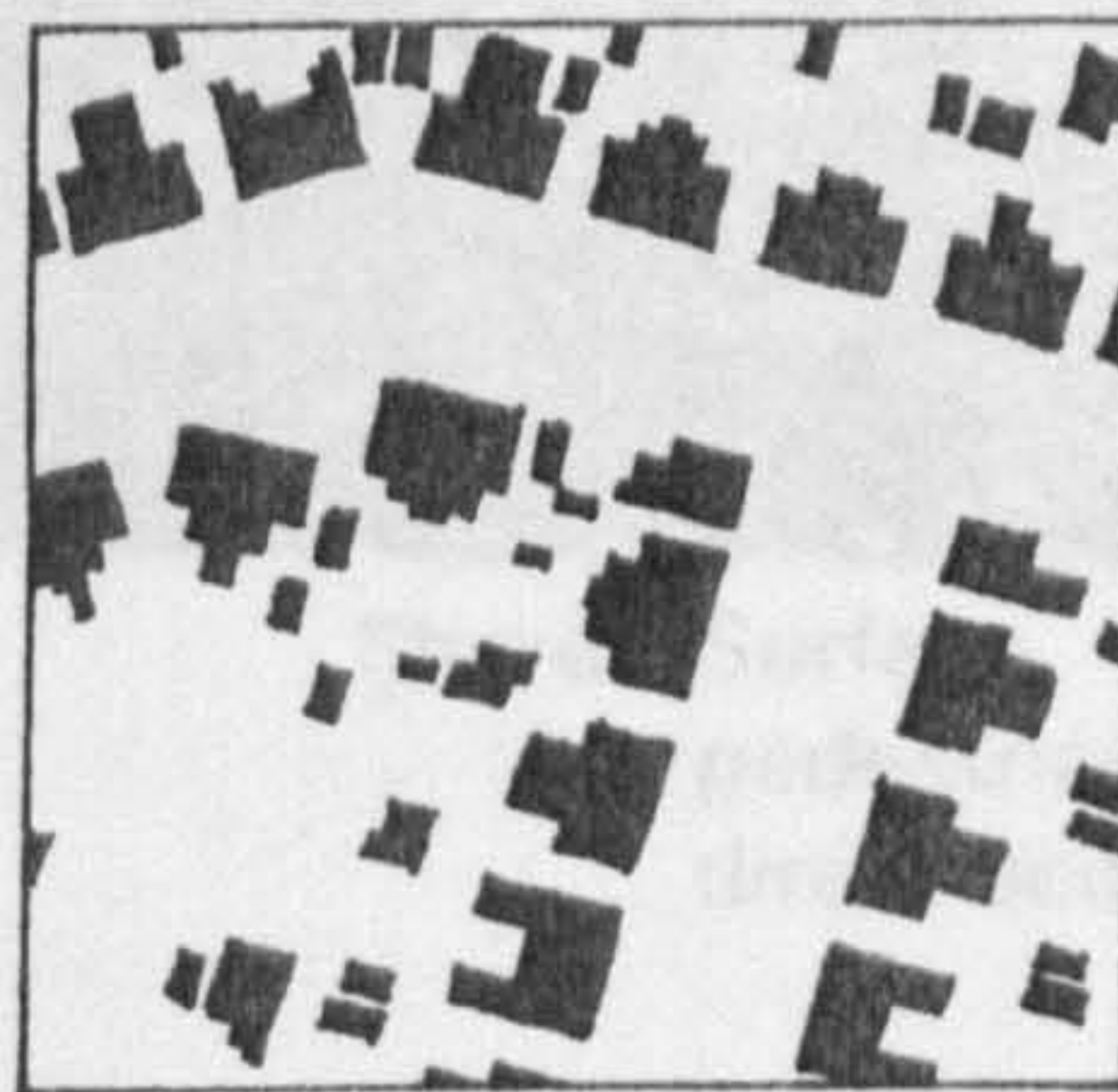
4 storey modern townhouses
(25 - 28 dwellings per acre)



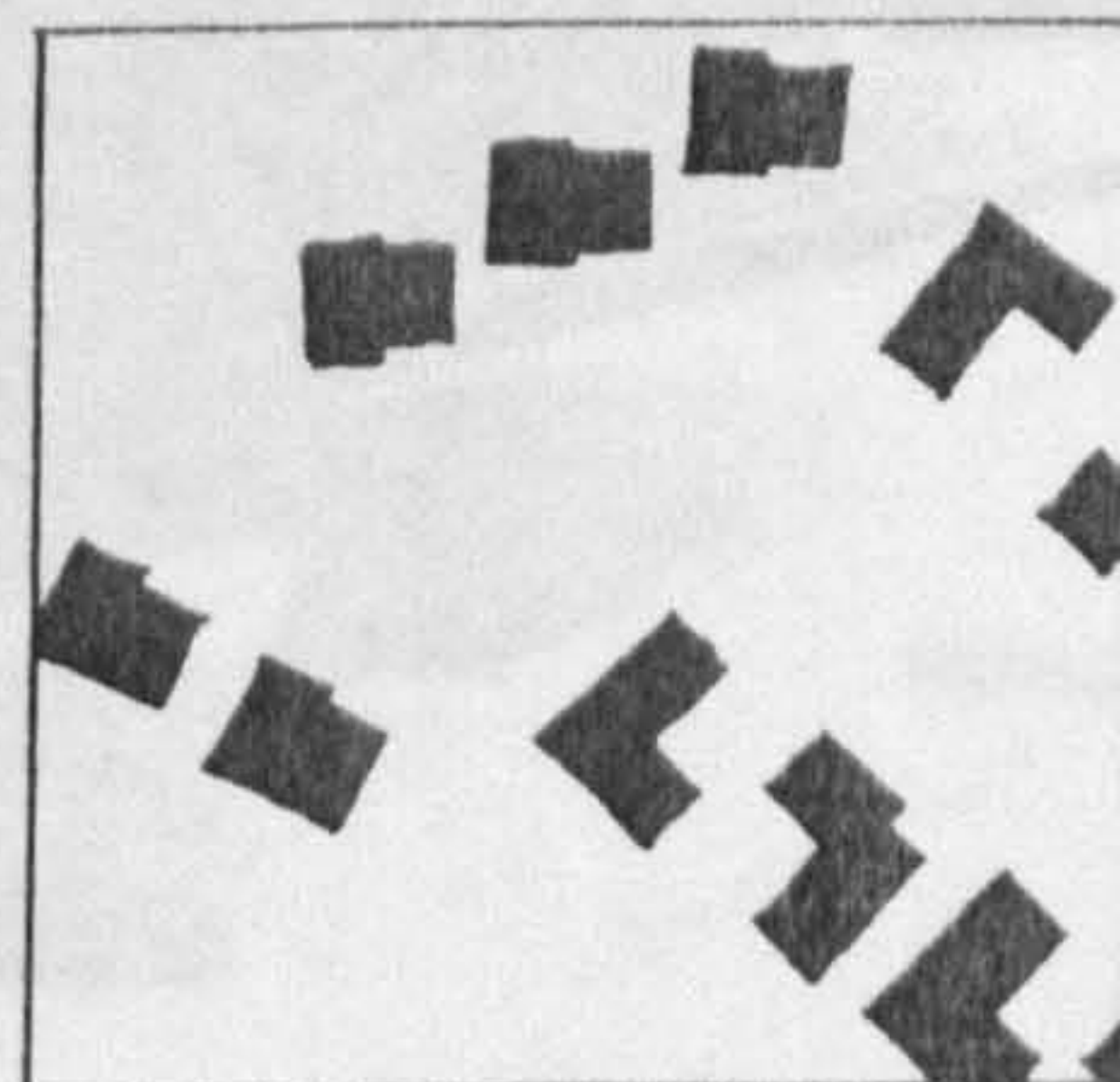
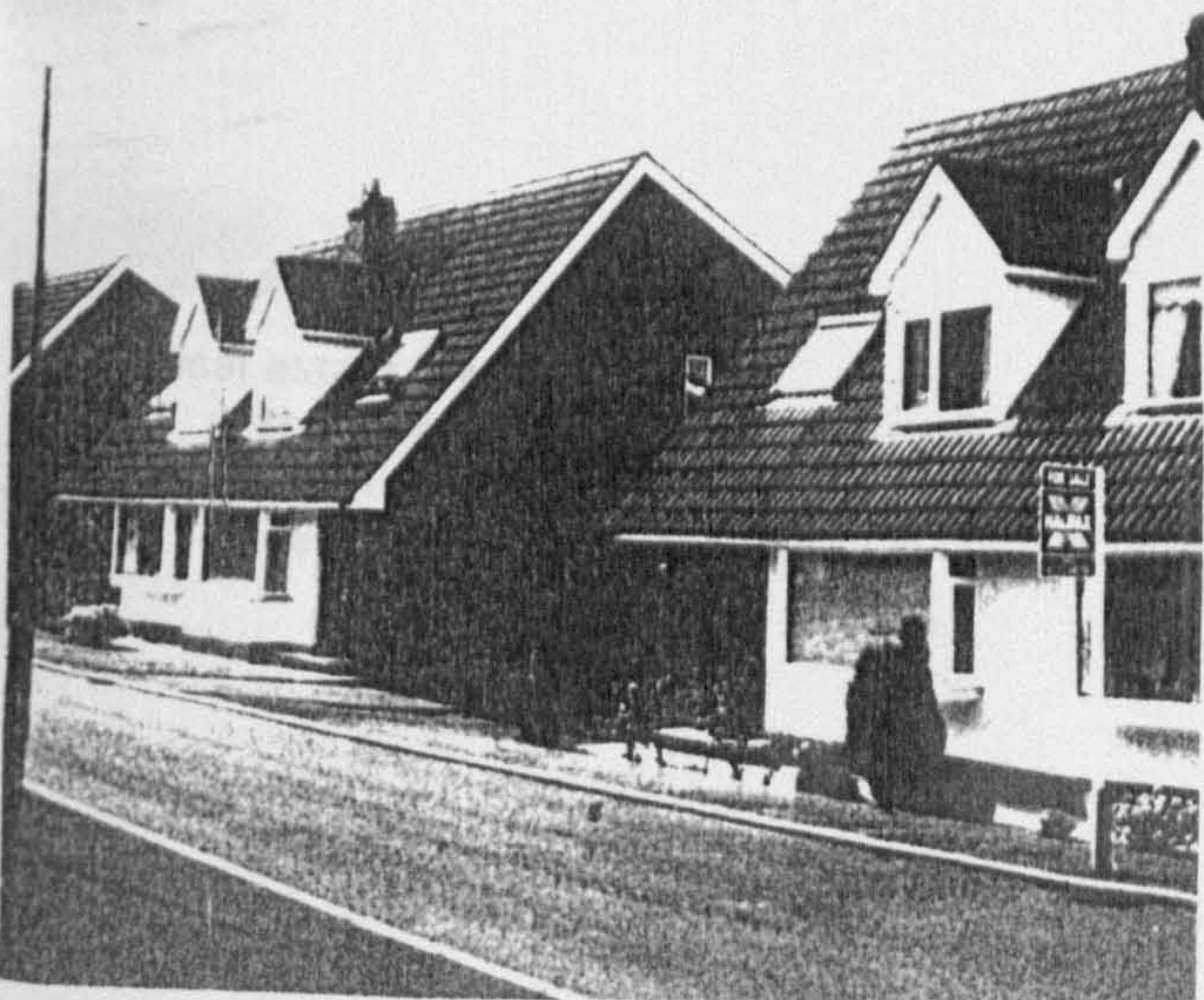
3-4 storey Victorian terrace
(16 - 18 dwellings per acre)



3-4 storey modern terrace
(16 - 18 dwellings per acre)



Inter-war 2 storey semi-detached housing
(12 - 14 dwellings per acre)



Modern 2 storey semi-detached housing
(8 - 10 dwellings per acre)

Card 3 - Street Layout and Design

CAMBRIDGESHIRE
RESIDENTS
ASSOCIATION



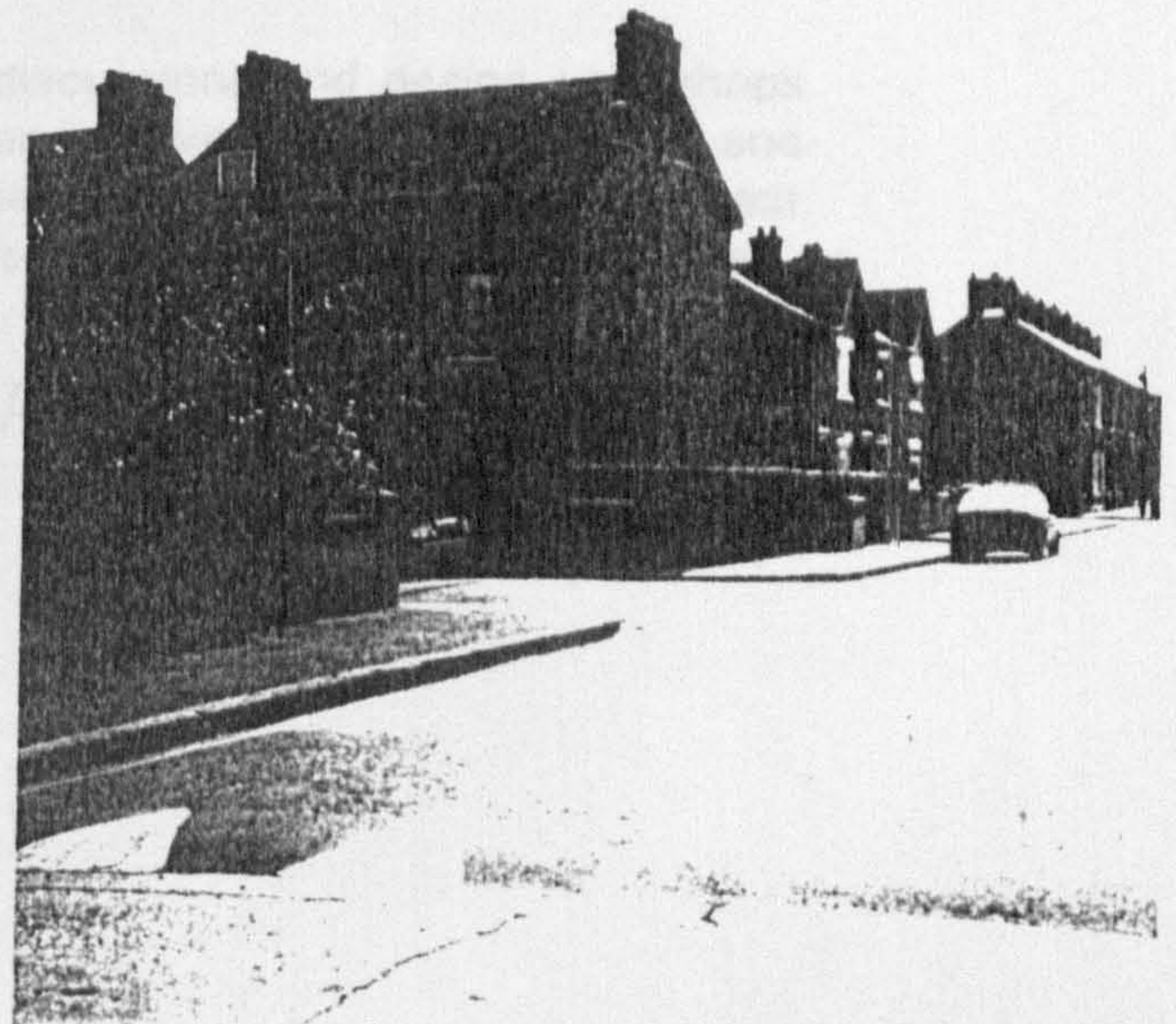
Tree-lined Avenue
private gardens
on-street parking



Shared Surface
pedestrian priority surface
direct access from property



Typical estate layout
road hierarchy (through routes & cul-de-sacs)
off-street parking
designed for drivers



Traffic Calming
both on and off street parking
20 mph design speed
designed for pedestrians

CAIRNSHILL RESIDENTS' ASSOCIATION

INVITES YOU TO A
COMMUNITY PLANNING
EVENT

Questions

Do you want to have a say in the future development of your area? Are you prepared to become involved in discussions and put forward ideas? Are you willing to try a new approach to community participation in the local planning process?

Answers

The Cairnshill Residents' Association is holding a Community Planning event at;

***Cairnshill Primary School, Cairnshill Drive
Friday 17th January 1997
(7.30pm - 10.30pm).***

This event will include a series of discussions and design workshops looking at local environmental and development problems and solutions. It is your opportunity to say what you think and to suggest an alternative to yet more housing development in the Cairnshill area.

We need your help to provide the answers.

The 'White Land' at Cairnshill is the subject of a major planning inquiry during February this year. The Cairnshill Residents' Association is appearing at this inquiry and objecting to proposals for more housing in the area. The Association is also looking at alternative options for the 'White Land' and ways in which the local amenity can be enhanced. This **Community Planning Event** will look at the issues involved in any new development and put forward a **Community Vision** for the area at the public inquiry.

This is an exciting opportunity to put forward your ideas for a potential new mixed use development in the Cairnshill area. We aim to produce proposals for the area which will look at issues such as :

**OPEN SPACE - COMMUNITY FACILITIES - HOUSING
ECOLOGY - GREEN BELT - LANDSCAPING
SUSTAINABLE DEVELOPMENT - TRANSPORT**

This event is being organised *independently* by your local Residents' Association and is not being promoted by Castlereagh Borough Council or the DOE Planning Service. We need your support to make this event a success and to help influence any future development. The evening will be *informal, fun, exciting* and provide an opportunity to meet other concerned residents.

Refreshments will be provided.

**OPEN TO EVERYONE !
COME ALONG AND GET INVOLVED**

Cairnshill Community Planning Event

design workshop 17th January 1997

worksheet

This worksheet is structured as a series of prompts to help your group start the design process. It is only a guide to one possible way in which your group could start planning - you are encouraged to use your own particular skills, imagination and creativity to produce ideas for the local area. We would like each group to report back to the main meeting with (i) a sketch map of their proposals and (ii) a list of the most important features of their proposals. Please feel free to present your ideas in other ways such as drawings or sketches. Help will be provided by a number of 'floating professionals' moving between the different groups - they can be identified by their name badges.

1. You will need to nominate a member of your group to take notes of your discussions and to report back to the full meeting at the end of the evening. You also need to nominate a 'mapper' who will sketch your proposals onto the site plan. Start your discussions by allowing each member of your group to introduce themselves and to give their top three priorities for new development in Cairnshill - you should identify the overlap between your priorities.

2. By reference to the site plan and photographs, decide as a group which elements of the area are worth preserving - important buildings, trees & hedgerows, views into or out of the site; access to the stream, areas of greenspace etc. - then map these features onto your design.

You may wish to make a feature of one or more of these elements and they might also help to inspire ideas for the area. They should provide a starting point for 'mapping' the rest of your ideas.

3. Does the area need some sort of focal point or something to give some local character? As a group decide what sort of community facilities would be suitable as a focal point.

- should any landmark be highly visual
- could you make use of any existing buildings/landscape
- how should any new public buildings appear and where should they be located for the best use of the entire local area
- are there any wild & wacky ideas which your group has for making any new development in Cairnshill different or special

individual land uses

You should combine your local knowledge with the results of the questionnaire to decide the range of appropriate uses for the development site. Ideally your group should be thinking about mixing various different land-uses to keep as many local facilities as possible within walking distance.

4. Do you want a public park incorporated into the design? If so decide the best location for this by considering;

- what sort of park is required (refer to the questionnaire results)
- is the park just for the use of the local residents
- how people will gain access to the park (walk, cycle, public transport or car - will parking be required)

- does all the land have to be concentrated in the same place
- can the park make use of any physical features (stream, slope, vegetation)
- what size should the park be (cut-outs are available of some suggested standards)
- how would the park be managed and maintained
- how do you ensure the park will be safe for all age groups
- can the greenspace become an important wildlife habitat

5. What sort of housing do you want incorporated into the design? Factors which you might want to consider;

- a mix of housing will help achieve a social mix in the area (a variety of housing sizes, types and tenure)
- are gardens essential for every property
- the range of housing density will influence the amount of land available for community uses and/or greenspace
- does every home need off-street parking
- street layout and design will help determine the location and shape of any new housing
- are there opportunities to make new housing more energy efficient

6. Are there any possibilities for local employment? Your group should consider a range of possibilities for appropriate employment uses;

- the opportunity for home-working or teleworking (should there be local support for those needing computing, fax, secretarial services)
- local retailing, education facilities and recreational land use often help to create some local employment

7. How will people gain access to the area and how will they travel within the site? Decide as a group, the most appropriate routes through the site (will this be suitable for public transport, is it too steep) then map these main routes onto your design. Other considerations might be;

- are there any obvious points where paths cross and people might congregate - should this be encouraged
- will pedestrian and cyclists be segregated from vehicular traffic - will this encourage people to use their cars less
- is there a potential role for a park 'n' ride scheme
- can the streets be used as children's play areas
- how fast should cars be allowed to go through the area - should safety features be incorporated into your design

You will be given a fifteen minute warning before the end of the design workshops and your group should use this time to ensure your sketch map, list and sketches are ready for presenting. The range of ideas and maps will be collected and used as the basis for a community design for the area. The final scheme will be used at the forthcoming public inquiry and then put on display at a local venue - watch the local press for details.



Public Local Inquiry (Article 31)
Proposals for Suburban Housing Development on
'White Lands' contained in the Belfast Urban Area
Plan 2001

Cairnshill Residents' Association - Proof of Evidence

January 1997

References	Y/96/0233	1996/C024/CRA/1
	Y/96/0258	1996/C025/CRA/1
	Y/96/0281	1996/C034/CRA/1
	Y/96/0295	1996/C036/CRA/1
	Y/96/0301	1996/C039/CRA/1

1. *Introduction*

This proof of evidence relates to specific applications for the Cairnshill area. Since the publication of the Department's proposed 'BUAP 2001 Alteration no 2' (February 1996), the CRA have been proactive in seeking a sustainable and community-led approach to the development of 'white land' in the Cairnshill area. The detailed comments in this proof of evidence are made without prejudice to the joint submission relating to strategic concerns and overall housing need.

2. *Strategic Concerns relating to Housing Need*

The CRA have made a joint submission with other special interest groups, concerning the overall housing need for the city. We argue that there is sufficient development capacity in the inner & middle city for housing provision to meet the needs of the city as a whole. This capacity can be extended by a review of the Department's guide for housing layouts, the introduction of minimum density standards and maximum off-road parking standards. The effect of peripheral restraint will also have the effect of bringing forward a higher number of smaller 'windfall' sites through increasing economic viability. At the inquiry, the CRA hope to have the opportunity to fully discuss the implications of housing need for the city and the unsuitability of 'white land' in Cairnshill for meeting this need within the changing policy context and in light of the ministerial statement by Malcolm Moss on 14 January 1996.

The CRA have included a criticism of the adopted BUAP 2001 in its' joint submission. In this context and in the absence of any local plan for Castlereagh (the only area in the UK without any local plan coverage) there is a lack of any development plan policy "... material to the application" (section 25(1) the Planning (NI) Order 1991). The CRA support the Department in the application and enforcement of governmental policy in as far as it is material to the planning application under consideration. Recent governmental policy statements, primarily the ministerial statement of 14 January 1996 which was included within the Departmental 'Development Control Guidance Note No 2' November 1996, have been inconsistent with the adopted BUAP 2001. We believe that at this inquiry the most recent statements of governmental policy (where they can be considered material considerations) should have precedent in the determining of the applications regarding development in the Cairnshill area.

3. *Policy Inconsistencies*

The CRA object to the Department's assumption that Cairnshill 'White land' is a special case for 'rounding off' (the 'justification' given in proposed policy HR3 of the 'BUAP 2001 alteration No 2' February 1996) with development due to its size and higher demand location in South-East Belfast. The site should be subject to the same strategic considerations concerning criteria for selection as a sustainable housing site and in the production of an indicative masterplan for the area. If the area is unsuitable for comprehensive mixed-use development and ill-served by public transport services then it is not a justification for ignoring the Minister's requirements for quality and sustainability.

"... we should limit new development on the edge of the urban area to those locations where sustainability and quality objectives can be achieved" (Annex B, Development Control Guidance Note 2, November 1996)

The CRA believe that the new 'sustainability and quality' initiative is to be strongly supported. The concept of sustainable development is a change in governmental policy (as already acknowledged by the Department, "... the underlying concept affecting the change in government thinking is 'sustainability'" p3 DOE(NI) February 1996) which was not incorporated into the production of the BUAP 2001 during the late 1980's. This change is of a radical nature and has implications for the selection of strategic sites for development as well as the design and layout of any new development. For the Department to be internally consistent in their documents and proposals, any criteria used for the selection of sites should be applied to all housing sites under consideration. To date the Department has not been explicit with any of its' site selection criteria and as such is not allowing any criticism (or support) of its' criteria and site justification.

The CRA believe that the Department's commitment to sustainable development and the case for the selected sites could have been strengthened by an environmental appraisal of the proposed change in housing strategy (BUAP 2001 alterations no 2, February 1996) or of the advice provided in Annex C of 'Development Control Guidance Note No 2, November 1996'. Best practice is increasingly to include an environmental appraisal (or strategic environmental assessment) when considering major development issues - in this instance the selection and release of suburban housing sites. There is scope for the Department to do this under the Planning (Assessment of Environmental Effects) Regulations (NI) 1989. However, while it is not legally required, the Department has itself made reference to the advantages of the appraisal process in 'A Planning Strategy for Rural Northern Ireland' (1993) and more recently in the October 1995 'draft Planning Policy Statement on Planning and Nature Conservation (Northern Ireland) which stated that the Planning system "... has a key role to play in achieving this goal (sustainable development) and environmental appraisal will be an essential tool". (p4) The CRA find it hard to believe that the appraisal process, which the department refers to as an 'essential tool' has been omitted from both the proposed alteration to the BUAP and the Development Control Guidance Note No 2. If this is the case then it shows there is still a gulf between the rhetoric of the department and its everyday practice - it is another example of the internal inconsistencies of the Planning Service.

4. *Planning History*

The CRA believe that poor enforcement by the Department over adjacent development sites in relation to the former Development Control Guidance note (June 1991) has resulted in a lack of public confidence concerning the current application. The public perception of harm (re: West Midlands Probation Committee v Secretary of State) and the planning history of the area (re: Thallon v DOE) have both previously been considered as material in the determining of individual applications. The CRA believe that the historic lack of community facilities and services in the Cairnshill area have led to a real local fear over future provision - these public views and the planning history of permissions and enforcement are of a level significance to warrant their consideration as material to the planning applications under scrutiny at this public inquiry.

As stated earlier in this submission, the absence of an area plan for Castlereagh and the current review of the City Region (in practice replacing the BUAP 2001 with a revised planning area) provide a poor policy context for the determination of any applications locally. The CRA argue that current Ministerial statements and national policy concerning sustainable development and land-use planning will take precedent over the adopted BUAP 2001, but that national policy needs to be considered as 'material' together with the planning history of the Cairnshill area and local residents' fears.

5. *Capacity for Growth*

Built development is limited by the fixed capacity of the highway system and physical infrastructure. These physical limitations in themselves suggest that new development is best located in areas where excess capacity already exists in the highway and sewage systems. Similarly, in accordance with the Minister's statement on quality, social and community infrastructure (open space, shops, community facilities, churches, schools etc) will exert a limitation on any new development. The immediate area (south of Cairnshill Road) lacks any social infrastructure and accessible open space, and the wider area also suffers from an under provision - priority should be given to a future land use which provides minimum standards of social provision for the existing residential community. While the Department has in the past made reference to the National Playing Fields Association standards for open space and recreation provision (it should be noted that these standards have recently been revised and republished in 1996), the CRA wish to draw to the attention of the Department, the various space standards recommended by the Urban Villages Forum in their 'Urban Villages' reports (1992 & 1995) which recommend 25-35% of the total area is set aside for accessible and safe public open space.

The CRA believe that the lack of any accessible community facilities, services and public open space should exert as much influence over the outcome of this inquiry as the limited capacity of the highway and sewage system. Planning permission should be refused for the plethora of individual applications which relate to housing use only - any successful application needs to demonstrate how it will alleviate the under provision or limited capacity for growth exerted by the lack of the social and community infrastructure. The only viable method of achieving this is by a mixed use scheme which has a particular emphasis on community facilities.

6. Consultation

The CRA object to the lack of Departmental and developer consultation with the public and argue for the consideration of local residents' views in any future use of the area. The CRA has carried out a social survey of local views concerning planning and environmental issues in the Cairnshill area. The findings of this questionnaire and a subsequent community planning event are set out in appendices and are presented without prejudice. The CRA believe the finding of the community survey and the planning event should be taken into account in any approach to the development of the area which wishes to take account of local residents' views.

7. Design Considerations

The CRA argue that the applications do not include a "... clear overall design concept for the site, based on an analysis of the surrounding context" (Development Control Guidance Note 2, November 1996). The physical context of the site, including the topography, landscape features, important buildings etc, and the visual impact of any new development from the rural surroundings has been largely ignored. The CRA believe that any appropriate use for the site should seek to effect a gradual transition between urban and rural.

In the absence of detailed schemes or any illustrative material; with the exception of application Y/96/0295 by Moore Homes; it is difficult for the CRA to make any significant contribution to the design and layout of any new development except to make a number of general comments relating to the sustainability & quality initiative and to repeat a number of comments made in earlier submissions.

The Department has used the Urban Design Technical Supplement to elaborate upon its "... thinking and broad requirements in relation to the white lands." (statement on behalf of the Department of the Environment by James H Allister BL, 21 June 1996) Thus, the Department's technical supplement is being taken as a material consideration; in as far as it reflects changes in governmental thinking on planning policy and urban design (dispite the fact that due to the abandonment of the Public Inquiry into the Proposed Alterations, the public has not yet had an opportunity to make representations). We trust this issue will not be ignored at the forthcoming Public Inquiry and that changes in Departmental thinking and policy, particularly in connection with 'urban villages', will be open to challenge, cross-examination and/or expressed support.

Dispite the lack of opportunity to publicly discuss the contents of the Urban Design Technical Supplement, the CRA strongly support this policy stance by the Department - that the potential to deliver a comprehensive form of 'urban village' development is a key *criteria in the selection of sites as well as a requirement for those sites released for development. Failure by any potential developer to demonstrate satisfactorily how a comprehensive 'urban village' proposal can be achieved in the 'white land' sites under consideration at these inquiries should result in refusal of planning permission.*

At the collapse of the public inquiry into the proposed alterations to the BUAP 2001, the Department indicated it's intention to publish new Development Control Guidance setting out it's policy in relation to urban design (statement by James H Allister BL, 21 June 1996). In practice, the Department has simply reiterated the same stance (Annex C of Development Control Guidance Note No 2, November 1992) regarding the use of the illustrative masterplans. This does not address the same range of issues covered by the terminology of 'urban villages'. It is also disappointing that the Department has failed to make public the replacement/review of

the 'Layout of Housing Roads - Design Guide'. In both these regards, there is a clear policy void in relation to the application of sustainability and quality principles in new developments. The CRA trust that the Department will look favorably upon national best practice - which has been published and can be debated in the public arena

Prior to the publication of new guidance, it is relevant and a material consideration to look at national UK planning policy in the form of Policy Planning Guidance notes in as far as they give an indication in government policy of guidance relating to the concept of 'urban villages'. A precedent was set last year prior to the publication by the Department of PPS5 'Retailing and Town Centres' - where the PAC thought it useful to consider UK guidance in the form of PPG6 to help in the determination of an application for a supermarket at 160-182 Castlereagh Road (PAC ref: c10/1995, DOE ref: z/94/0771). Similarly, in relation to the applications relating to the BUAP White Land, it is useful to be aware of PPG1 'General Policy and Principles' (Consultation Draft 9 July 1996, Department of the Environment) even in draft form (see section 50 of the guidance which states that "... draft Departmental Circulars ... are capable of being regarded as material considerations ..."). Of particular interest are the references to 'urban villages' (section 8) which are defined as "... high-quality mixed use developments ..." and can be characterised by "... compactness; mixture of uses and dwelling types including affordable housing; range of employment and community facilities; high standards of urban design; and ready access to public transport." Although PPG1 does not apply to Northern Ireland, it is a useful indicator of government thinking in the absence of any local guidance relating to urban villages.

As previously referenced, the Urban Villages Forum has published two reports which set out the design principles for creating mixed-use urban developments on a sustainable. These reports formed the basis of the definition contained within PPG1 and so themselves are useful in providing guidance, substantive and procedural, as to the requirements for a mixed-use comprehensive development.

These broad principles are transferable to the Belfast context and the CRA believe they should be included in the revised Design Guide. These design principles are also a material consideration for the major planning applications currently under consideration and accordingly, any application which fails to meet these design criteria should be refused planning permission.

8. *Assessment of Individual Applications*

The CRA believe that the applications under consideration at this inquiry all fail to meet the sustainability and quality criteria of the Department and all fail to demonstrate a commitment to achieving a mixed use 'urban village'.

In the absence of detailed criteria specific to the Belfast context, we have assessed these applications against the broad principles below (taken from the definition of 'urban villages' within PPG1) in the knowledge that some have already been referred to in DOE(NI) policy statements. Ideally, similar criteria should be set out by the Department in the new Design Guide.

Compactness

The benefits of a compact development are the opportunities for walking or cycling as an alternative to car use - in the detailed application, these benefits are not achieved due to a blanket density. The outline applications are at a similar residential density (Following BUAP density guidelines Policy H4 which suggests 350 dwellings per hectare for 6,600 dwellings = approx. 19 dwellings per hectare which if applied as a blanket figure is too low to attain the accessibility benefits of a compact urban form. This density level is almost half that used by English local authorities for example in the Essex Design Guide.) and thus unlikely to provide the necessary compactness.

Mixture of uses

The applications fail to acknowledge the need for a mix of uses locally

to provide for a balanced 'village development' - no indication is made of any development suitable for any use other than housing and the housing units themselves are not resilient to allow for any future change of use.

Mixture of dwelling types including affordable housing

While the detailed site plan does contain over a dozen different housing types, the variations between these appears to be stylistic rather than substantive.

There is no indication whether any of the units are designed to need the need for affordable housing - in this context, a proportion of the houses should be priced below £45,000 (as a maximum figure) to qualify for co-ownership.

Range of employment

While the scale and nature of the site on the urban fringe might make it difficult to achieve a significant level of local employment, there are opportunities for some office and/or commercial use to provide for local needs.

Strategic links to important employment areas, such as the city centre, would help to alleviate local underprovision. This could be met by providing dedicated public transport routes to the centre, perhaps combined with a park & ride facility for people commuting from beyond the city limit.

None of the applications under consideration have sought to refer to on-site or strategic employment considerations.

Community facilities

The only reference to community provision is a linear park (20 metres wide) indicated on the detailed planning application. This level of open space provision is inadequate for site under consideration and does not alleviate the underprovision of open space for adjacent development (constructed by the same developer).

No provision is made for local retail (as distinct from a district centre which would be provided by the Sainsbury's supermarket complex at the bottom of the Saintfield Road), education or community needs.

Ready access to public transport

No provision is made or referred to for strategic public transport links to centres of employment, entertainment, education or shopping.

No provision for the penetration of public transport routes onto the site itself and the road layout based upon the Department's Guidance for the layout of residential roads (despite being under current review) does not allow for any adequate through routes.

The inadequacies of the applications when assessed against each of the above criteria is clear and provides a succinct case for refusal of planning permission in all cases.

However, the failure of these speculative applications to demonstrate how a comprehensive development scheme would be attained, does not necessarily imply that this area is unsuitable for a mixed use scheme. Indeed, there would be clear benefits for the existing community if a mixed-use scheme proved viable and helped to ensure local provision of retailing, education and community facilities; an enhanced public transport service; and sufficient recreational space for both formal and informal activities. The urgent provision of urban design guidance by the Department following the 'urban villages' principles would help ensure such comprehensive development would be a realistic option.

Appendix 1 - Results of Community Questionnaire

This appendix contains a copy of the community questionnaire used in the survey, the relevant cards which were presented for comments and the key findings from an initial analysis of the questionnaires returned.

The design of the survey was largely based upon a study of community values and perceptions of open space in Greenwich (Burgess, J. et al. 1988. 'People, Parks and the Urban Green: A Study of Popular Meaning and Values for Open Spaces in the City'. *Urban Studies* 25: pp 455-473.) . This study used images of well known public spaces in the Greenwich area in a household questionnaire, where residents were asked to express particular preferences for a diversity of public open spaces and then asked for a reason for this preference. The use of open ended questions allowed for people to express a number of reasons, include a ranking of reasons and thus provide an indication of implied values used in making their personal choices.

This survey was taken as a model for the Cairnshill study because it provided both quantitative data; relating to the local need for open space; and qualitative data, relating to the potential level of use and design of open space. Thus yielding useful information for the designer in the elements of any new development and the detailed design which would meet local community needs. The structure was expanded to incorporate additional questions on the density & form of development and street layout & design. Questions were kept as open ended as possible to avoid any prejudice in the range of answers due to the particular agenda of the CRA.

The explicit aims of the survey were to obtain quantitative data and qualitative information relating to local community attitudes and values concerning the existing environment and possible future changes. A random sample of households within the Cairnshill area were selected and volunteers collected residents' views. The survey was carried out during November and December 1996 and a total sample of 62 were collected.

A preliminary analysis of the survey findings is presented in this appendix as an indication of community values and aspirations for the area under consideration at this inquiry. The CRA hopes to carry out a more comprehensive analysis of the survey findings and are very willing to make these known to the PAC, the Planning Service or to any developer interest.

The results confirm many of the long held views of the CRA, that previous development in the area has left a significant under-provision of accessible open space and recreational resources. The preference for new development is not a 'do nothing - Not In My Back Yard' scenario, but a plea to compensate the area for a severe under-provision of open space, recreational and community facilities. The CRA present the findings of the survey in good faith and without prejudice. The community views expressed through this survey and the earlier submissions by the CRA should be taken into account as material considerations (there is precedent for the views and fears of local residents being considered material and affecting the outcome of individual applications) in the determining of the specific applications for the Cairnshill area.

Appendix 2 - Preliminary Results of Community Planning Exercise

The CRA organised a community planning event to provide an opportunity for local residents to have their say in the production of a community led plan for the area as an alternative to developer led schemes and the inadequate indicative layout suggested by the Department and their consultants.

The aim of the event was to articulate a 'community vision' based on local residents' views and values. The event built upon the findings of the community questionnaire (which were taken as a draft brief for the area) and allowed residents an opportunity for 'hands-on' involvement in putting forward creative and imaginary ideas for the sustainable use of 'whiteland'.

The event was held at Cairnshill Primary School on Friday 17 January, between 7.30pm - 10.30pm. The local area was leafleted to publicise the event and this encouraged over 40 people to attend. While the event was organised independently by the CRA, representatives of the Department and members of Castlereagh Borough Council were contacted and encouraged to attend.

The event was an experiment in direct community involvement and participation. While the CRA recognise that limited time and resources prevented a more comprehensive participation programme, we believe that the exercise in combination with the community survey are far in excess of any consultation carried out by either the Department or developer interests.

This appendix contains a copy of the worksheet used by local residents during the event and a summary of the proposals made by three of the four groups involved in the design workshops. Work is still in progress on the community plan and during the course of this public inquiry, the CRA hopes to present a full report of the event and a final scheme based on the outcome of the design workshops. Interested parties are welcome to make informal contact with representatives of the CRA to obtain further information prior to the start of the inquiry.

Public Local Inquiry (Article 31) - Proposals for Suburban Housing Development on 'White Lands' contained in the Belfast Urban Area Plan 2001

Reference (Y/96/0233, Y/96/0258, Y/96/0281, Y/96/0295, Y/96/0301) 1996/C039/CRA/2

This proof of evidence relates to the specific applications for the Cairnshill area and presents the results of the Community Planning Exercise held by the Cairnshill Residents' Association on Friday 17 January 1997. This proof of evidence presents the results of the Planning Event as a series of four individual schemes suggested by the various participants in the exercise and a composite scheme which draws together the common ideas into a community masterplan for the 'whiteland'.

Only one of the four groups at the event suggested the inclusion of any housing on the site. However after discussions among the Residents' Association committee members it was felt that support could be given to limited residential development where it clearly resulted in community benefit and helped to make viable a range of social, educational and recreational resources for the use of the wider existing community. The masterplan presented is a pragmatic approach by local residents to put forward a viable alternative to developer led schemes and the inadequate indicative layout suggested by the Department and their consultants.

While all the applications under consideration at this inquiry are now only outline applications, the sensitive nature of this location at the edge of the urban area requires a consideration of how any development would have a visual impact. Thus, this submission contains a short visual assessment of the existing building stock and suggests a number of design points drawn from local vernacular building forms which could help enhance local character and distinctiveness. This assessment is presented after the 'community masterplan' as the next stage in any design process.

The comments in this proof of evidence are made without prejudice to the wider issue of overall housing need in Belfast and particularly the east of the city. However, the CRA are aware that beyond the issue of housing need there is a local need for substantial public open space and community facilities. The Association remains adamant that the primary use of the 'whiteland' should be to rectify this local underprovision of open space and community facilities. The Association is willing to meet with the Department or potential developers to explore opportunities for how any new development in this area could help meet this local need.

Public Local Inquiry (Article 31) - Proposals for Suburban Housing Development on 'White Lands' contained in the Belfast Urban Area Plan 2001

Closing Statement on behalf of the Cairnshill Residents' Association

Reference (Y/96/0233, Y/96/0295) 1996/C039/CRA/3

This closing statement relates to the specific applications for the Cairnshill area and is in addition to a joint closing statement on overall housing need which was submitted by the CRA and a number of other third party objectors. It only relates to the two larger 'linked schemes' proposed by Moore Homes and Premier Design as the smaller applications by Mrs E Jackson and Merit Homes (references Y/96/0301 Y/96/0281) have not yet been considered by the inquiry.

Site Selection

The CRA remain unconvinced by the arguments of the applicants and of the Department that any release of land is required on the periphery of the city. This view has been reinforced by the various schemes proposed for the Cairnshill area which do not relate the range and mix of housing types to the changing demographic context. We do not accept that the identified housing need necessarily equates to a need for land being released. There is little relationship between the schemes proposed and the actual housing need identified. Indeed, it was the expressed view of one of the applicants (Mr Fraser of Premier Design) that they intend to provide housing for consumer demand and so it will be market forces determining the range and type of housing in any peripheral development schemes - particularly in the scope of semi-detached 'starter homes'. The CRA feel that in the changing policy context which is placing more emphasis on sustainable development, there has to be a clear distinction between 'need' and 'demand'. All of the definitions of sustainable development as used by the government relate to 'meeting needs' and not demands - this is adopted policy and must be the key factor in determining the release of any peripheral development sites.

The CRA believe that the emphasis for new development should be consistent with national land-use policies and best practice and focus on inner city sites and in locations which are well served by public transport. In this context we agree with Mr Burroughs view that 'imperfect data is folly' and that any decision regarding the release of any 'whiteland' is made only after a full assessment of the potential capacity of inner and middle city locations. Yet during the course of questioning by the CRA, the Department and Mr Burroughs (acting on behalf of a range of applicants) admitted that no regard was made to (i) unidentifiable 'windfall' sites, (ii) small scale infill or intensification of use, (iii) subdivision of larger dwelling units, (iv) change of use from office/industrial to residential (particularly in the light of the recent re-rating of commercial properties), and (v) development of surface car parks. These points are reiterated because they are key factors in the determination of any peripheral release, including whiteland at Cairnshill, and until a full assessment of the capacity of existing inner and middle city communities to meet the identified housing need has been carried out by the Department no whiteland should be released. The CRA remain extremely critical of the Department and it's failure to undertake a full assessment of development capacity - this failure has directly resulted in the proposed release of the Cairnshill whiteland.

The CRA remains consistent in it's view that the primary use of the 'whiteland' should be to rectify the local underprovision of open space and community facilities in the Cairnshill area. Thus, without prejudice to the wider issue of overall housing need in Belfast and particularly the east of the city, the Association has been willing to explore with developers and the Department ways in which a limited release could assist in meeting this local need for open space, neighbourhood retailing, community uses and recreation facilities. In this regard, the Association remains willing to meet with the Department or potential developers to explore such opportunities which may arise after the determination of the outline applications. This is a

pragmatic view based upon the experience of the public inquiry and the discussions which have occurred with the agents for Moore Homes outside of the public debate.

The Department's justification for releasing land on the basis of 'rounding off' development in the Cairnshill was discussed widely at the inquiry. The CRA remain of the view that this alone is insufficient for the selection of Cairnshill as a sustainable location for development which will meet the identified housing need. During the inquiry Mr Boal speaking on behalf of the applicants stated that 'if a site cannot attain sustainability and quality standards it should be ruled out'. The CRA share this view that the whiteland at Cairnshill should be considered on the same basis as alternative peripheral locations. There is no justification for the Department to invent specific criteria to supposedly justify the release of land in this area. The CRA expect the PAC to ensure that sustainability and quality standards for applications in the Cairnshill area are the same as other sites under consideration at the linked inquiries. We believe that the only way these criteria could be met under the specific circumstances of the Cairnshill whiteland is if the development of the smaller site were to contribute to the sustainability of the wider community by complementing the existing built developments - for example by open space provision, local retailing and community facilities.

Community Facilities and Open Space

The objectives of the BUAP 2001 include the 'allocation of sufficient land for recreation' (p53) and ensuring 'the provision of shopping facilities convenient to all sections of the urban population' (p75 - which clearly relates to those sections of the population which do not have access to cars). Thus, the deficiencies of both local shopping and open space in the surrounding Cairnshill area must be a material consideration in the determination of the applications where permission would prevent these BUAP objectives being met and result in a permanent lack of facilities. The PAC or the Department clearly cannot require the applicants to remedy this historical underprovision (dispite the fact that the current applicants are the same developers of the adjacent built areas) but the PAC and the Department do have to ensure that sufficient and accessible land is available for essential facilities. This is particularly important in Cairnshill because it has been the consistent view of the Department that any scheme given permission will effectively be used to define the inner edge of the Greenbelt and be the limit for built development in this area of East Belfast. The CRA view the current expressed Departmental position for the Cairnshill area as inconsistent with the BUAP regarding the provision of facilities and open space, particularly with regard to the wider community.

Urban Village Approach

The CRA support the general principles exposed by the Urban Villages Forum and would expect any comprehensive scheme to incorporate these principles. During the course of the inquiry, the new PPG1 (March 1997) was published in England and Wales and this new guidance note provides a useful definition of 'urban villages' and the appropriate application of the urban village principles. As in previous public inquiries where there has been a PPG published but no local guidance covering Northern Ireland, the PAC should take the PPG as an indication of changing government policy and as a material consideration in the determination of these applications. Indeed, the definition contained in PPG1 could be a useful means of assessing the individual applications. In the longer term, the CRA would wish to see similar advice provided by the Department in the form of a PPS on urban villages and comprehensive mixed use developments in Northern Ireland. The CRA strongly support the new government advice and feel that the appropriate application for Cairnshill is the '... improvement of an existing residential area ... through the gradual introduction of some or all of the urban village characteristics' (PPG1 para.8). Yet in each of the individual applications, the developer has made little effort to connect their scheme to the surrounding built development or to ensure their proposals enhance the viability and sustainability of the wider urban village community. The CRA have attempted through their own proposals to put forward a scheme which does contribute to the wider community (we suggest to be consistent with the Urban Village Forum position regarding physical size and threshold populations, an urban village for Cairnshill would extend to all development south of the Cairnshill Road). As a community led scheme and an

expression of community views, the Association fully expect the PAC to regard their own proposals as a material consideration. This is particularly important as the Urban Villages Forum's two reports place community consultation and procedural matters as central to the deliverability and design of a successful scheme.

Allied to this, the CRA are extremely critical of the Department's inadequate public consultation procedures, their clear lack of commitment to the consultation process and their disregard for valid community views. We believe that the CRA's randomly sampled questionnaire and the open community planning event go beyond any work by the Department in assessing local community views and as such should be regarded as the best available assessment of community needs and aspirations. The Association would wish to have an on-going involvement in any detailed matters if a scheme were to obtain outline permission. It would not be unreasonable for the Department to include community consultation as part of a planning agreement or as an aspect of determining reserve matters - the CRA request that any planning agreement includes such an undertaking.

Detailed Design

During the course of the inquiry, the CRA made a number of detailed comments on the design of the individual applications and wish to draw to the attention of the PAC and the applicants, the views expressed through the community questionnaire. This could be a useful source of information for any detailed layout and design - particularly regarding inclusion of community facilities, educational provision, street layout, open space design and density issues.

The CRA would also like to see an improvement in the consideration and treatment of (i) ecological green corridors and how they might fit into a future country park, (ii) pedestrian links to the wider area especially to the length of Ballymaconaghy Road which has a footpath provided, (iii) tenure and housing type mix which would include an element of affordable housing, (iv) the central siting of any community facilities, (v) variety in the design and layout of open spaces and (vi) the implications of a major park 'n' ride site in the locality.

Deliverability

The CRA have viewed the proposals as a means of building sustainable communities and wish to see any shared community facilities as central to the success of any future development. We are disappointed to note that the applicants do not share this view and have no intention of actually building any facilities. This may be one of the key factors in the determination of the individual schemes and the CRA call on the PAC and the Department to ensure that any agreed masterplan does not only include community facilities, local retailing and substantial open space provision but that adequate mechanisms are put in place to ensure these are fully completed. Given the planning history of the adjacent developments and the broken promises of the developers, we wish to see legal planning agreements properly enforced by the Department in the event of any proposal being given permission.

Summary

The CRA believe that a strategic need for the release of peripheral housing land has not been clearly demonstrated and that an inadequate assessment of alternative and clearly more sustainable locations has not been carried out. The CRA also remain unconvinced that any of the applications adequately demonstrates an understanding of sustainable design and the mixed use, pedestrian scale principles exposed by the Urban Village Forum and PPG1. The Association are skeptical of the deliverability of any of the aspects included in the illustrative material but not considered as fundamental by the various applicants. Thus, we urge the PAC to recommend refusal for both of the larger proposals on these grounds and to call for higher standards of sustainable design, community consultation and Departmental guidance. We look forward to the PAC elevating the sustainability agenda in the local planning system - encouraging a higher standard of planning applications on the part of the development industry and a more consistent and professional planning approach by the Department.

Crown Street, Glasgow

Interview with Mike Galloway, Crown Street Regeneration Project, Glasgow 28th August 1996

Context setting for setting qualitative standards and potential indicators of physical development and processes. Asking 'how is quality defined and by whom? How is it delivered?'

- Adoption of the urban villages principles, basically 'how to make urban living attractive by choice and variety in the quality of place', promoting these principles at a master-plan scale and then at street, block and building scale. Quality – specifically built for 'city lovers' and the niche market for urban families. Thus the need to reflect issues of density and collective living in a way that appealed to families. This is necessary to achieve a balanced community, to break down segregation based on class and / or socio-economic position
- Process is defined by participation and by long-term management with implied devolution of responsibility and linked resources – based upon 'feu' principles, distinct to Scottish Law.
- Participation is expressly seeking the views of developers, architects, local authority planners and residents as sources of information. Many of the residents' meetings have been progressing the idea of a *social code* and taking responsibility for its implementation.
- Awareness of an exit strategy implies passing responsibility to local communities. This has involved the establishment of a charitable trust with responsibility for neighbourhood management. Each street / block has representation.
- Links to wider urban context and to provide an impetus for changes locally being aware of the impact of regeneration and institutional changes. Need for a 'blurring' the edges of the scheme and hoping for a rippling out effect due to the level of physical investment and the changing image and linked economic prospects.
- Masterplan (inspired by Rob Krier and established in 1987 by the Scottish Development Agency) sets out the levels of quality and helped to avoid any stylistic arguments at a building level. The masterplan was the basis for assessment of competition entries – each submission being judged upon quality as the land value is fixed in advance. There was an Independent assessment of principles / quality and the transferability of the project measured against criteria and objectives. Explicitly, quality in materials is the need for longevity (at least proven 100 years, implying no new experimental building techniques and materials), simplicity of construction methods and the inclusion of a clerk of works.

- The ultimate decision is made by a steering group that has local representation and decisions are informed by feedback from public viewing of options and expressed public opinions.
- Masterplan included generic principles on management / process and mixed uses. Density is seen as a tool and with barriers within the local authority (a fear of 4 storey development as too high), thus as only a short-hand indicator. Block size, set by communal garden size and area (generally for 100 units). Distribution of space is considered as more important than the absolute level – mix of public (Gorbals Park adopted by the local authority), communal and private
- Overall requirement to balance community and individual interests and to challenge and change City Council view and attitudes, where the previous problems were caused by these views.

Byker, Newcastle upon Tyne

Interview with Dale Bolland - Senior Planning Officer with Newcastle upon Tyne City Council , 23rd April 1996

I am interested in understanding the design and participation process connected with the Byker redevelopment – how effective was it?

I think what Erskine was about, had very commendable ideas about participation but as they got into actually designing up schemes and getting development on site, the participation became less and less important. The time that they spend on the participation was considerable and as they went on they became less and less interested in it. I can remember the actual financing of the scheme - the money that the City Council paid Erskine was fees for designing but also for participation and that fee went up and up as they felt they didn't have enough time and thus needed more money to hire more staff. I think eventually, they became bored with the scheme.

There was one example where landscapes were proposed for the early low-rise phases. They guy was designing the landscape, he used to go along to the tenants who were going to move into that particular part of Byker and he explain to them and how they could look after the landscaping. Today, if you look at that particular phase the landscaping is still really good because they spent a lot of time on consultation and participation - but as he went on he was working on three or four phases at the same time and he didn't have time to carry out any consultation. If you look at the landscaping of the later low-rise phases, it is terrible. The residents didn't care about it and didn't feel they had ownership of it. The residents were saying 'well I've got my flat' and as soon as I go out of the front door, it has got nothing to do with me and I don't care what the hell happens there'. That's the thing about sustainability and participation - you've got to make sure that they actually have ownership.

It seems very labour intensive and costly but if the maintenance was taken into consideration at the beginning and there were greater feelings of ownership, things might have been different?

The way the finances worked at the time was very short term. You have to get a return in five years time or whatever. What happened with the landscaping in Byker is that eventually they put in fast growing plants that made an impact very quickly - the idea was that after two or three years those plants would be taken out and replaced. But of course after two years there wasn't any money for maintenance and so people were left with these huge bushes growing over the footpaths and residents were saying they were scared to walk down these paths because there was a fear that someone might be hiding. After saying how fantastic it was to live in a green environment they actually started saying they wanted it all open with tarmac everywhere - take the trees down and give us some hard landscaping. It was a funny sort of kickback.

A lot of the early reviews of the scheme were very positive. Do you think this is misleading and that views have changed since the 1970's? For example, some of the novel construction techniques that were used are now creating major problems.

That's the thing, you can participate as much as you want but if you don't get the technical aspects right then eventually everything falls apart. That's what happened in Byker to some extent where timber framed houses have problems which didn't come out until the residents had settled. The district heating was a problem - you couldn't actually turn it off. You paid a flat rate with your rent and that posed problems for many elderly residents. Also, the contractors didn't install it properly and ever since then they have been taking bits out and replacing them. As it pumped round, the ends of the housing runs weren't getting any heating. In Byker Crescent, they never got hot water for years because they were too far away from the pumping station.

I don't think it was design so much as construction problems and poor supervision - Erskines didn't actually undertake the supervision. This was partly because the architects who should have been standing over the workers were actually away talking to the residents.

I am interested in understanding the level of participation and whether any groups were marginalised and has there been any adaptations and personalisation initiated by the residents? How have perceptions and the sense of ownership, place and community been affected?

If you speak to some of the other people involved and the residents' groups involved you would get a much better idea of the issues and problems. Ralph Erskine flew in, presented his report and went away leaving his team to deal with the outcomes. He was brilliant at the PR for the scheme. Vernon Gracey was the guy in charge of the Byker office – he was also a concept guy. Roger Tillotson was called the 'hit man'. He did all the negotiations and solved all the niggly problems.

As far as I can remember, the actual transformation wasn't so much in terms of the built form. Erskine went in at the beginning, did some hanging around and talking to people and decided on the initial concept. But after that, there wasn't as much consultation. He didn't present phased layouts to the residents and ask what they thought. Although, there was a lot of participation and freedom for the residents on where they could move to – they had a free choice as to where they went. They were shown the next phase of the housing and were explained what would go in there and they could get together with their friends and relatives and all decide to move into a terrace together. I think people could refuse as many offers of houses as they wanted but once they which one they wanted they had to stick with it. There were some internal changes within certain parameters – for example; interiors, floors, kitchens, colours, surfaces etc. they had a choice of location and control over their internal environments.

But there was of course a finite number of houses and a time scale whereby one phase was being built while they were trying to empty out the next

phase of older houses. You got a situation where there was an entire terrace of older houses with only one person left who was holding out for a flat in a part of Byker which might be two years hence. So it became really complicated. The problem was due to the delays. The younger people stopped hanging around in semi-derelict streets and tried for a housing transfer elsewhere in the city or they went to buy a house. So a lot of the younger families moved out and it was mainly the older people who stayed.

So you began to get a situation where you had to design for short-term older people – a demand for certain sorts of housing. Family houses weren't in such a demand as small flats.

Was there a conscious attempt to mix different housing types so you didn't get family ghettos and pensioner ghettos – homogenous groups?

When the architects were coming up to designing the next phase they asked us to help get this sort of mix. We had to try and guess the sort of mix for that next phase. They designed it and there was a sort of feedback phase where they checked the scheme against the people who wanted the houses.

But that was short term. We had to think about whom we wanted there in 10-15 years into the future when the older people had gone on. It was quite difficult as it went on because only older people wanted to move, there were only older people left for the later phases. So if you wanted a mix of families, you had to bring in people and families from outside the Byker area. And just as we began the last three phases, we ran out of money as the whole government thing changed and private house building took over.

Is there a percentage of private house building in the area?

There are three phases of private housing. What they were doing was working from the outside into the middle and so the last three phases in the middle are all private and we found it impossible to force them to adopt the Erskine style and landscaping. They stuck out like a sort thumb.

Has it been successful in integrating public and private housing?

There was a problem with actually selling the private housing at one stage. Estate agents had a red line around the place because no-one wanted to move in next to a council estate. The other problem was that at least one of the private schemes is next to the district-heating scheme at the bottom of the hill where they incinerate waste pellets. This has created smell problems next to that particular phase of private housing.

Top of the hill was the top spot. The lower down the hill the lower the status and it has a bad reputation. The community building thing was quite different because in judged the area the same way.

There was a wish from Erskine and from the Planning and Housing departments to get the participation and the community involvement at a very high level. One way to do this was to set up this group called the Byker Liaison Committee. It was chaired by the residents and was a mixed group of residents,

officers and architects. They dealt with general problems. Sometimes there was up to 300 people at these groups. The residents chaired it themselves and the council took care of all the paperwork and administration etc. It was amazing to be there. Some of these residents who didn't even have any trade union experience, were organising involvement and opposition to aspects of the scheme. After a while, the local councillors discovered this was going on and they began to get involved because they wanted to ensure they had this level of popular support and they began to use the group to score political points. The residents stood up and highlighted drainage. The councillors responded by blaming the architects rather than co-operating on solving the problems. Eventually after 3-4 meetings like this, Erskines refused to come along to the meeting just to be slated by councillors. So the whole thing went down the tube after that. The democratic process does have problems, where councillors feel they don't want officers (and architects) or other people working for them to interfere between the councillors and the electors. Because in a cynical way, they wanted to get all the qudos for the work so they could get elected again. The officers were actually there to try and explain to the residents what was going on.

For the past 10-15 years, the City Council have had what are called 'Priority Area Teams' and now 'Community Liaison Teams'. Each ward has an officer (for every 3-4 councillors) and they formed a decision making body with a local budget. At one stage this was up to £40,000 per year. They met regularly and dished out money to local groups to help them get involved in influencing or commenting upon council policy or local environmental management. That went very slowly and was dominated by the local politicians. Sometimes it didn't work well because of personality clashes and it emerged that local people were unwilling to criticise the council in case they needed a grant sometime in the future.

Were they allowed to allocate these funds and set their own local priorities?

Yes. The idea was that councillors abdicated some responsibility for setting local priorities. And although it didn't work as planned, it did come out of the community aspects of Byker.

Are there any Local Agenda 21 groups set up in these areas to follow or build upon this model?

Funnily enough ... there have been staff going around these groups and giving presentations on Local Agenda 21. They gave one in Byker about 4 months ago and it went down like a lead balloon. The locals didn't know what was being talked about most of the time.

The thing about being self-sufficient and the mix of uses that Erskine was quite keen on – Byker has backfired a wee bit. At one stage on the plan Erskines were trying to bring in a lot of economic development – shops and small business units integrated with the houses. Some of the early sketches had quite a few of those but in the final scheme, only a small industrial area was included behind Raby Cross shopping centre.

They had a lot of flats above the shops, to provide extra security – almost a modern idea. But in Raby Cross, because of unemployment, there has been a gang of kids hanging around the shopping centre and causing problems with fires and burglaries. They also put people off coming to the shops, in particular, the doctor's surgery. So they are now in the process of moving out. As soon as they move, the chemist in the shopping centre says that he is going to close and he is also the post office. So the post office will also close. Basically the place will turn into a small corner shop compared to the original 12 unit shopping centre. The point is that 2-3 of the families who have recently moved in are not keeping an eye on the shops but rather acting as lookouts for burglars and vandals.

We have had to change a lot of things, ripping off Erskine's canopies because kids were gathering under the shelters. It seemed more important to keep the shopkeepers pleased; even if it is only psychological fear; than to preserve the original architecture. We are adapting things.

Part of the personalisation thing and changing the architecture is the changes to the periphery of the housing estate – in terms of fencing, gates, putting in sheds, painting. People have bought their homes and people were beginning to worry about the character being destroyed. Because Byker and Erskine were world famous – they wanted things kept the way he designed them. Original tenancy conditions prevented any change without permission. But what people have done is just change things. There were some moves by the Housing Office to clamp down on this sort of thing.

We were also talking about listing or Conservation Area designation for the scheme. But Erskine's architecture is so bitty and tacked on ... and in 90% of cases where people have tacked on extra bit ... well its suits the bloody architecture. That is how it was meant to be. Gone are the days when you want to build terrace houses which are identical, where there is no individual identity. Whereas Erskine made a point of having no rhyme or reason in his choice of external cladding and finishing – brick, timber mixed in with old building blocks and railway sleepers left over from the site clearance – to try and keep a sense of place. That was a good thing. A lot of the residents enjoy that.

You say he carried out some type of visual survey before the design work?

Yes. He carried out a photographic survey. Partly to do with the personalities involved; there was a very active residents' leader; there was a whole series of meetings to look at crime, landscaping and cyclical problems to do with site management. Byker housing guidelines originally came across as very 'big brother-ish'. We tried to get it to be more user friendly and ensure that it's not what you put up but the standard you put up – quality alternatives.

Have there been any steps to pass some of the design control onto the locals?
How could it become delegated?

I think that was the idea with the first set of guidelines – to get self policing by the residents. But it never got as far as that. The Housing

Department decided to be extra strict and keep it within the control of their department.

The main housing committee did delegate some decision making to a second tier of local housing committees —local housing managers, residents' representatives and councillors – and they have a small budget for repairs and things.

Interview with Mike Turnbull - Newcastle-upon-Tyne City Council Housing Manager during the Byker Redevelopment (until 1982), 23rd April 1996

I'm interested in Byker because of the strong emphasis on participation during the redevelopment which created an on-going dialogue with the tenants in the scheme. How effective was the participation and collaboration at the time and what actual influence did residents have in changing the shape of their built form?

In terms of what happened on the ground, I left in 1982 when the building work was close to completion but not finished. My involvement was during the redevelopment period - the demolition of the old and building of the new. In terms of the success of the participation through this period - giving the residents some actual power in decision making, which comes down to spending money, they did not have that. The City is divided into six housing areas, each with it's own housing manager and area housing sub-committee. There is and has been an area housing sub-committee, comprising the councillors from the Byker area, for almost 20 years. It is a more informal setting than a full housing committee. That is where tenants groups came along with initial ideas - but they have no voting rights as such. Each of the sub-area committees has a very small budget for minor capital schemes and they can take on board suggestions from tenants groups. But there isn't any delegated means for direct and meaningful involvement from tenants.

Was the tenant involvement a sort of trial and error approach - it wasn't formalised in any way until the housing liaison committee and so there wasn't any way of finding out the views of every household?

No, there wasn't and you are right it wasn't structured. What you did have - a pattern became established that, when you reached certain points in the redevelopment process, you would do certain things. Participation may be too strong a word - a lot of information was passed backwards and forwards which was a step forward in itself. You would hold your public meetings in advance of the next clearance area and because it was a self-contained development, those people who wished to remain in Byker, we would be able to explain to those people, 'the sites you can choose from are X, Y, and Z'. As and when the actual drawing board plans were taking shape, we would have meetings with residents' groups in the clearance areas. That was our formal contact and was open to anyone who wished to come along. Yes, suggestions were made by the residents, but Byker looks as it is because that's how the architects wanted it to look.

For someone who has gone through that pattern of meetings and discussions, can you give me some idea of the influence the residents actually had in terms of the physical shape or was it simply choosing from a limited choice and becoming involved in a flow of information? For example, I understand that during the pilot scheme there was some feedback into the later designs?

Yes, the pilot scheme was more formal and structured in reviewing the scheme's impact and finding out what was working. There was feedback into the next scheme but it would be best to illustrate by example - in terms of the people making the decisions - the influence was more on the periphery of things. Byker redevelopment looks as it is because that was the consultants' vision.

The approval of every stage of the scheme was given by the housing committee. Tenants came along with very specific questions in regard of how their house should be laid out and everything.

Once the residents had actually selected their house and had an agreement, they had some influence over the internal finishings and layout? How real was that influence?

Yes - there was some of that in a limited way in terms of the kitchen layout on one or maybe two sites.

We used to preallocate the properties up to six months, or even longer when sites were delayed, ahead of when they were due to be completed. People would know that far in advance where they would be living and we had preallocation meetings where we in the housing office would pick the people for the houses - we then had a programme of what we thought were expected hand-overs. Again, we gathered those people together and passed out information - they were all given individual house plans and talked through the site. They had some opportunity then to swap if they weren't quite where they wished to be. You had a situation where someone was saying 'I've lived next to that guy for the last six years, can you not get me somewhere else?'. On some sites the architects were able to offer a little more in the choice of layout you could have but I have to say that that didn't happen with every site.

People have other ways of controlling their environment - personalising their homes after the design stage?

I'll pick that up. The product of the individual small group of suggestions that came along were that the schemes at the end of the line were markedly different than those at the beginning. That does show some feedback into the later stages of the redevelopment.

In terms of the general concept of the scheme, the influences would have been marginal. It was decided from the outset that it would be traffic / pedestrian segregated. So that itself predetermines how things will be laid out and the reasons behind that idea were explained and accepted. I suspect now that if people were offered the choice of a vehicle segregated layout, they would

probably say 'we'd prefer something more traditional where we can park our cars in the street where we can see them'. So the influences would be on the edges and the fringes of things as opposed to the basic fundamentals of the design. We toyed with the small scale details rather than the grand scheme of things.

The forum we had knew the sort of layout we were proposing and it would be true to say that there wasn't a groundswell of objections against that but maybe that wouldn't surprise anyone because at that time people trusted the professional planners and architects.

I'm not being critical in looking back - but when you talk of participation, things have moved on since then and participation may not now be the right word to apply to what was happening in Byker then but the sort of things we were doing were a little bit innovative (if that isn't too big a word). Now there is a lot more real participation in terms of delegated tenant management boards and committees. In those arrangements, they do have a bit of spending power and they do have delegated powers to determine some local policies.

The original brief's' aim was to engender some sense of community and ownership and one way of doing this might be to give some of the responsibility over to locals - Do you know of any cases where residents were involved in the ongoing management of the scheme, even at an informal level?

I think that's right. You would have the residents groups formed and based upon the areas that were to be cleared and they would continue this new association. You would meet regularly with the tenants associations but there would also be forums where they were bringing problems to us to be resolved. If the local housing manager could resolve issues then we would do that, so it was a useful exercise. There were other occasions where, to resolve that particular issue, you might have to deal at a different level and require full Council approval - and that would be done. That still happens now- we know what delegated authority we have and we cannot step outside the approved housing Committee policies. This is all extremely beaurocratic but it is a fact and that is now it works.

The tenants are not denied access to the Housing Committee and they can bring forward their own issues.

So there are cases where residents committees were set up as single issue groups to look at the redevelopment and they have remained as a tenants association? Are the tenant associations more than that, are they similar to community groups or anything like that?

The feeling I had when I left Byker was that the redevelopment was of huge importance to a lot of people and people took part. The housing redevelopment had a honeymoon period where there were few problems and so I found that tenants associations would come together for 'an issue' and they would deal with that issue and they would go away and come back when there is another issue or concern. Some were very active and would play a much wider role in the community than just looking at housing management.

Is the level of participation activity a result of housing policy or is it down to individuals in these groups?

Again, our policy provides for a commitment to participation and to consult on significant housing matters. The policy in general is that it will seek to involve individuals and groups - and we do that, although there are always ways it can be done better and become more meaningful. The latest model along these lines is to develop estate housing management committees, where they do have a more specific brief for local management and resident liaison and so on.

The original brief looked beyond housing to wider issues of community service provision and community development - this is a different agenda to top-down Council control where individuals were expected to set the issues for development. Did the redevelopment agenda and consultation address wider community concerns?

The Public were probably reacting to more than setting the agenda. It wasn't as if the Council were clearing a large area of old housing contrary to the people's wishes. Essentially the Council was not setting the agenda for the redevelopment of Byker because the residents in Byker were quite happy and looking forward to that. But the details were different.

Tyneside flats were unique but difficult to adapt to family sizes. In determining the mix of housing sizes and types we worked with census information but also under the cost-yardstick - that predetermined the number of bed spaces on site. We did try to make more specific local predictions as we were dealing with quite an elderly population so there had to be a proportion of flats suitable for pensioners and older couples. The old layout didn't provide for adequate parking and play facilities. There was one development area which had slipped and what we were asking people to do was to delay their rehousing by a few months to allow another group of people to step into their place. We could have imposed that I suppose - but the people who saw themselves as first in the queue were adamant that they wanted their new housing first. There was a lot like this to do with the timing of the various stages and the developments at the bottom of the site tended to be less popular than those at the top of the hill.

In cases like this, we didn't get people to wait an extra six months. Previously we would have just announced our intentions - in this case we consulted and people had a say in the timing. There wasn't a consensus from the residents about the timing. Everyone would have preferred to be housed all at once but they recognised that some of the old Byker housing was in worse condition than others.

A lot of people moved from Byker prior to the redevelopment. 3,000 people had already been rehoused from earlier clearance areas and had gone to other parts of the city. So we had these tracts of land and part of that land was earmarked for the road (which subsequently was scaled down in size) so that had to be accommodated as well. You also had to take account of the condition of the housing and that helped in prioritizing as well. Newcastle's

political priority for many years was that they would get rid of poor housing in the city and so there was wholesale clearance going on elsewhere - generally the riverside sites where the oldest housing was next to the heavy industries, engineering and ship building. The Council engaged in the surveys about unfitness and set the agenda for that. That led to the sequence of redevelopment.

I want to ask about the range and mix of people becoming involved in the redevelopment process. There is a prevailing view of the 'politics of voice' where at the local level whoever shouts the loudest gets what they want - below that they may be an element of the population which is marginilised and loses control. Were there any groups being marginilised in this process and not given the same opportunity to participate?

I would say not but that might be a naive response. We invited everyone along to meetings and we visited every single individual. So that opportunity was there. But there were those who were more interested and more willing and able. There are good examples in Byker of people who remain involved in community actions through this housing association and there is no question that that led to other things. Their involvement in residents groups in the clearance areas continued with the new tenants associations and they found themselves becoming involved in things which prior to that they wouldn't have. For example, people were being invited to sit on the board of governors of the local school. There were also individuals who become involved in community work type activities. That would all be on an individual basis.

One thing I did notice about Byker was that we always seemed to have a lot more men involved than women - normally in other areas there would be very few men. I think that might have been because you had a lot more employment in the area. Most of these guys were involved in shipbuilding or engineering and would probably be a member of a union - so they would be quite used to and comfortable with going to meetings and speaking out. Indeed a lot of them were not frightened to do so. It can be true that he who shouts loudest gets listened to. The difference is that in Byker there were a lot of eloquent semi-skilled workers and a lot lower unemployment than many other areas in the north-east.

Were any records kept of the number and type of people involved in these meetings?

No. There weren't even any records of the number of meetings. For what it is worth, we met regularly and they became almost routine allocation meetings - held mostly in the architects' office. We were also called to attend more specific meetings to talk about the new redevelopment. We tried to bring along all the people who would be living there. Those meetings were well attended by our standards. But most of what was going on and what we were talking about would affect them at a personal level. When we contacted people and said we were offering them a certain property and that if they wished to talk about the allocation they should attend a meeting at the architects' office on Thursday evening, very few people did not attend.

When people decided they were satisfied they stopped attending. The fact that they went away meant that the plan could advance. So this meant that once you had accepted an offer that was fixed unless your circumstances changed. We always kept a few properties spare in case circumstances changed.

Were the residents satisfied with the final product and were they satisfied with the level of choice and information they were getting? Were there many complaints once they had moved in?

The problems being experienced were mostly routine housing matters. The major problem developing at that time was a major dissatisfaction with the heating system. It was a district heating system with a fixed charge for a certain type of property whatever the level of heating used. They felt there was a lack of control over the heating.

Initially there was this feeling of ownership. The evidence of that, in those early days, is we weren't getting very much in the way of abuse of facilities and so on. Recently I have the impression that Byker is still faring better than other areas - that shows some level of a sense of ownership and satisfaction.

Interview with Roger Tillotson - Project Architect on the Byker Redevelopment with Ralph Erskine & Associates, Sweden and UK, 24th April 1996

Can you tell me your views and experience of the participation process and whether you think it succeeded in producing a stronger feeling of community, a sense of place and a sense of ownership over the redevelopment than other housing schemes?

A few years ago I would have said yes to most of those things. I believe that the system we operated did achieve that. However, on recent visits to Byker (the last one being two weeks ago), I have become disappointed with what has been happening. The whole social structure has dramatically changed over the last 15 years and what was seen to be the successes of Byker are now dissipating.

With a lack of research, I don't know what the original tenants reactions have been to these changes. 'How they feel now?' or 'Have they moved out again?'. We tried to generate a sense of ownership and shared responsibility through the participation process but some of the things you see now; for example the bath house which we managed to retain is now closed. Most of the shops we put back into Byker, some individually and some in groups, are still operating but with their shutters down because of vandalism. You can walk along the parade of shops near commercial Road and think that they are all closed up until you try the doors and find there are people inside. It has an effect on me, a revisiting architect. It has a very depressing and defensive character which is quite the opposite to the effect you would expect in an area with a strong sense of community and identity within itself, which to some extent produces or should produce a self-policing attitude.

Is this vandalism an indicator of a declining community and a lack of identity?

Yes. Certainly there are other housing areas in Newcastle which were changed radically and which have far worse vandalism and are in worse condition. So, in that sense, how do you judge success? Byker has survived despite some of the vandalism, the children's play houses which we included have largely disappeared. You find that when certain things get damaged they are not always replaced. That is partly the government capping Labour controlled councils expenditure - Newcastle is a Labour Council and has had financial problems. So maintenance doesn't get done unless there is a desperate need for it.

I don't know how many of the tenants associations still exist. What is apparent, is the local residents meeting room which we helped to create from what was to be a little shop, next to St. Michael's Church, which was later extended because it was so popular, is now boarded up. And so the question is, does that mean another association has disappeared and what is happening to the community.

I have been told there are about six resident's associations still operating in the redevelopment area itself.

So much of assessing the success of the participation process is based on value judgments and perhaps the only way to see how successful it still is, is by taking to the residents and understanding their perceptions of change?

If you go back to the question of participation, we had the pilot scheme of 46 dwellings with, in our terms anyway, full participation with the future residents. That means we had meetings with them every two weeks over a nine month period. At these we discussed a whole range of things and people became very much involved with the redevelopment process. What then happen during that period was that the people who started out being very suspicious of what they saw as a government con-trick, began to understand that we were listening to them and making changes. Conversely, at the end, some of them were making demands as if they had rights that they didn't actually have. They were still only tenants.

Nevertheless, there was a community in existence almost before they moved in. They moved in during July 1971 and by Christmas of that year there were street parties and a lot of movement between houses in the area. That is a very short period for people to settle into a new area and make friends.

When we built the next phase, we started off with a control group which was taking a small number of people to represent different house and family size and a representative from the pilot scheme to bring forward their experience. What we discovered was a) the people were not able to rationalize their thoughts unless you were talking about something specifically related to their personal needs. They were not able to talk about the needs of a family size like mine for example. Perhaps that's a question of education - not being experts in planning or architecture. But the effect of the person within the group from the pilot scheme was actually a negative one. It turned out that the person

who was elected or self-selected was a strong union man and though that some of the things we were putting forward were eliminating jobs - by trying to involve residents in doing certain things. So he was very critical and began to destroy the atmosphere of the group.

What we subsequently decided to do was run a series of meetings at which the potential tenants (from other parts of Byker) were given details of the choice of housing types and information about the neighbourhood. The housing department was represented at these meetings. People didn't have to accept the house they were offered if they didn't want to. They were able to swap and change and neighbours could be put together. The City did a lot by not forcing people into accepting the first house that was offered to them. Of course, once they did accept they had an agreement. It was called forward allocation - it was usually made six months prior to the house being ready.

Can you tell me what you felt was the level of meaningful involvement was and the influence which was exerted?

If you mean what changes were made that made things very specific for them, I think there are some things in the pilot scheme which were discussed and that people accepted in principle. Things like house style (e.g.; two double bedrooms or a double and two singles, dining/kitchen or kitchen and a dining room, heights of worktops in the kitchen, the level of electricity and pipe provision) - it was at that sort of level of involvement. So the houses were still very much Erskine houses. The external elevations were not put forward for discussion - only for observation. The quality at the end of the day was decided by the architect.

You could say that the discussions we had involved the residents in a way you would get a private client involved. A client commissions an architect and doesn't expect to design the building but does expect to be consulted. That is the level at which the pilot scheme was done.

Subsequent to them taking possession, we did get more involved in more social things like helping to start a gardening club and building hobby rooms (where they could do things outside their houses when they didn't have a spare room). The hobby room is a Swedish idea where people could use this room in agreement with the residents around for whatever purposes they wanted to. Some of their uses were antisocial rather than social - but we do know that clubs were started. They actually ran the 'Byker Phoenix' (a local community newspaper) from one of those hobby rooms.

Who had management responsibility for the hobby rooms?

The residents in that particular group. The hobby rooms were attached to dwellings, they were not separate houses and the control of them was in the hands of the residents in that particular courtyard or terrace.

We got involved in a planting schemes because most of the people had never had gardens before. If they were lucky they may have had allotments but they didn't have gardens. So we said 'if they save the £50 which was in the contract for seeding their garden we would give them the grass seed and they

could do that themselves' but also the £50 could be spent on getting some wholesale priced plants of very good stock. We provided photographs and they made choices from a range of things. That enabled gardens to be mature very quickly and they were getting advice on how to cultivate their garden. We kept gardening equipment in our offices and they could borrow it.

So we got involved in quite a lot of communal things.

So following the process of forward allocation, all it does is involve people in the system at an early stage. It brings them in and informs them as opposed to allowing them to participate in the shaping of things. There were other meetings of a more general nature - called the Byker Forum - which was chaired by a resident at which the City Council officers (and sometimes members) and ourselves attended. There was a lot of discussion about problems and information of a general nature could be transmitted at those sort of meetings.

Later on in the programme, we had people coming from outside Byker to become residents and we didn't have the same access to these people prior to these meetings we had had with the people already resident in Byker. And what was interesting, for whatever reason (perhaps it was due to the lack of participation) was that vandalism seemed to increase. Prior to those particular parts of the redevelopment, none of the building contracts had had a fence around them - which is really quite unusual. But once we started bringing people in from outside Byker who didn't have this long-term involvement with the area, suddenly you got children hanging around and more vandalism. From that point on there seemed to be a deterioration in people's attitude to the housing redevelopment. This was in 1976 - about two thirds of the way through the redevelopment.

In the forum meetings did you get to a point where the residents were setting the agenda and start to demand things from the redevelopment and the future phases or was it a more reactive process?

No, not as such. We were employed by the City Council and so we produced the plans and reported to the City. The forum was still at a stage where they were being informed about what our programme was and what ideas we had about particular areas. We would make a presentation to them about the next phase. They also raised issues.

One of the big issues was 'what was happening in the areas that were being cleared?'. For example, houses that were being burnt by the demolition people and the increase in vandalism that happened when an area was going to be the next one cleared. Because there was a fast deterioration - vandals would move in and strip copper wiring, lead and slates. They would take anything they could if they could get money for it. This was at a time in the redevelopment when some people would still be living in the street - usually old people. So there was a lot of problems about that and we eventually got the City to come up with a set of demolition guidelines to show how that might be organised.

The residents themselves rejected the idea of transit houses - people would have been moved there while their old houses were demolished and new houses constructed. They didn't want to do that.

There were day to day things like this (buses not running, mud being everywhere because you were living in the middle of a building site) which were discussed.

So, in terms of actually changing or influencing the external environment, the appearance of buildings and the configuration of spaces - there was little effect. This was more a matter of information?

Yes. We did try participation as far as the external spaces were concerned and the first attempt early on in the project proved quite abortive. When it came to talking about areas outside their houses (within the pilot scheme) they were unable to contribute. They didn't have the skills to imagine the possibilities and so on.

But at one stage we redesigned the southern half of Byker and we created a park space and increased the density of the housing around it as an alternative to the more general landscaping. We decided then to set up a different exercise - we created a competition for the design of this landscaped area. We got different residents' associations and school children setting up groups to actually come forward with ideas for that. Our intent was certainly to go ahead with it. The sad thing was that we had earmarked a budget of £250,000 to do that work at the time and immediately after the competition was completed (there were no winners, everyone was given a prize of some sort - we were looking for ideas) the Council cut the budget in half, despite some Councillors taking quite a bit of PR credit over the competition. So we were left with not enough money to do what the residents had asked. We revised the scheme and it was very much a pale imitation or the sort of things that we had intended. But it was one occasion where residents got involved with something outside their dwelling. It proved a very good process - particularly when you got eight year old school children actually designing landscape.

If it was intended as a way of promoting ownership of external areas, what happened and who got the blame for the budget cuts?

It is hard to say. I guess the residents were critical that their ideas were not put into practice in any large amount. It became a large grassed area with a few trees and a bit of a mound, a water feature. The idea that they were going to walk through this lovely landscape and have picnics just disappeared.

Can I ask you about the other constraints (other than financial) which were placed on you?

Well it had to be made very clear at the beginning that we were not designing individual houses for individual people but that we were doing council housing which was fixed in relation to the Parker Morris Standards at the time and a budget (known as the Housing Cost Yardstick) which was simply a

calculation based on density. So that was a financial constraint. That did mean that there had to be a certain repetition in dwellings, repeating several house styles.

We tried in various ways to make them look different. If you go to Byker you would see some houses with timber cladding and some with brick cladding. Windows would be moved if possible at the end of terraces. Similar house types had different appearances and so there was a certain amount of individuality. One of the decisions - of using timber framed construction - allowed that to happen.

How have people personalized their properties since the redevelopment and taken control of their own environment?

I'm not sure that the control they have come through our participation. We put forward ideas which would have given them more control, but these were never taken up by the City. We wanted the residents to get involved in doing maintenance for themselves and thereby earning some equity - but those discussions came to nothing. What they have been allowed to do by the City Council is make changes to the dwellings - for example changing the door or in some cases changing the windows. That has a certain personalization about it.

We did play a financial game concerning the definition of the boundary of their property in order to get site development work outside the boundary of their gardens. Site development work allowed us to negotiate with the Department of the Environment for the funds to do the work. It didn't come through the costs from the Housing Cost Yardstick. That enabled us to put in planting of the sort of density and quality that Byker has and it broke new grounds as far as Newcastle is concerned. It made the area look far more settled, far more quickly than many council housing areas. Because we put a lot of planting in, it gave it a very soft feel compared to the hard surfaces of concrete and brick.

I'm interested in the choice of materials and whether there was a strategy, for example in using timber framing, to make the building more robust to changes - I know that some of the flats have been changed from 5 bedrooms to two individual 2 bedroom flats as family sizes had changed. And was there a decision to use natural and local materials - incorporating elements from the existing site into the external landscaping? Was the choice of materials an attempt to get some local distinctiveness?

That's a lot of questions rolled into one. I think the general appearance of Byker is that it is not a Newcastle interpretation. It is seen very much as an Erskine interpretation - people will look at it and say it is Swedish whereas in Sweden it is thought to look very English. You could look through many similar Erskine schemes and see similar elements.

The timber frame element - the idea is that it is a dry construction and so it can be prefabricated, it is quick to build on site, it can be highly insulated, there will be little or no shrinkage in the materials and generally it is more comfortable. A corollary to that is, because it supports the thing, the cladding

could then be varied (brickwork or timber) for purely elevational purposes so that in some case you have wooded clad houses (classified as wood houses) and you have brick clad houses (which were classified as brick houses). Certain residents made choices between those - it enabled us to introduce colour onto the timber staining. This gave a sort of joyful atmosphere as the colours were quite playful - it wasn't a typical drab northeast of England atmosphere. Other materials like the metal roofs were brought in as being a way of introducing colour and making it non-traditional. That is as far as the dwellings go. Internally there is nothing at all fancy in the materials - it is a plasterboard finish onto the timber framing and painted white. Some the details were very simple but spatially some of the properties had interesting relationships within them.

It created a new vernacular. Because of the success of Byker, even part of the way through, once the shock of the new had disappeared the residents were saying 'these are very nice, they are comfortable and nice and warm', then some of councilors sent the City Council architects down to Byker to see if they could pinch some of the better ideas. So you find that there are other housing areas in and around the city that were built towards the end of Byker that have some similarities to it. Particularly in the landscaping but also in the use of timber and balconies and pergolas and so on. This is true of other areas in England. What happened in Byker created a new approach to housing across the country.

In the landscaping details, we tried to use a lot of the local surfacing materials which were in Byker - natural stone pavements, granite kerbs and granite chips as the road surface. These had generally been brought in as ballast by the Scandinavian ships collecting coal from the Tyne. We reused these in many of the areas. This was seen to be cheaper but also more durable than precast concrete. We had quite a fight on our hands with the City engineers as they were clearing the site and dumping the material. They actually sent a bill to us for leaving the granite chips on site. Also there was criticism from one of the councilors about using 'old' materials, thinking they were less durable than new materials. So it was not totally accepted but once we started using these materials and had shown that they could be used properly, the City engineers started doing the same in lots of places throughout the city.

The clearance of sites was always done prior to the architects being involved and so we didn't have very much control over the materials and they were not always available. The brick houses were not of particularly good quality and would need to be cleaned even before being re-used for hard-core.

Perhaps one of the most distinctive features of the old Byker were the Tyneside flats and I've never come across that form of dwelling before. They were the first sort of Tyneside vernacular and we're not quite sure why they developed here. The redevelopment helped create a new Tyneside vernacular.

Did you perceive any group (age, sex, ethnic) being marginalised or excluded from the participation process?

Well one thing about Byker is that there wasn't any ethnic groups. If Ralph (Erskine) was given the west side of the city then it would have been a would different problem.

But no, I don't believe that anyone was marginalised. Certainly our intention was to involve anyone who wanted to get involved. We were involving all the residents and all the households. I suppose one of the groups that were left out were the husbands who tended not to come to the meetings. It was the wives who tended to come and who were more interested in what was happening then the working class men. We weren't excluding anyone.

Traditionally Byker was built to house shipyard workers and so there would also have been some union members becoming involved.

Everyone who came to the meetings was encouraged to talk and one of the things about our meetings was that we tried to make them informal. They were held in our office which was a converted shop. It was a small space and people were competing to get into a crowded meeting rather than standing on the edge of a vast hall. Ralph was very practiced in this sort of participation and he came to find that this was the way you get the best results. Keeping it informal was the purpose and from the beginning no formal recording of these meeting were made - there were no minutes and the press were excluded - so people didn't feel they were being put into a public situation and so they did begin to contribute.

One thing that struck me, particularly at the two meeting where we chose the kitchen colours in the pilot scheme, was how the residents were persuading themselves about the value of different issues. There was a lot of discussion - Vernon Gracy (project architect) threw a set of British Standard Colours (over 100) onto the table and said 'you can have any one of these'. I was horrified that we were offering this range for only 46 different dwellings but in fact we finished with only 6 different colours - with only one person selecting chocolate brown. It was interesting to see how they were sufficiently involved to discuss matters like this. Equally, there were similar discussions when we started naming the streets.

It came as a bit of a shock to me to find out that the architects would be responsible for naming all the streets. It was fairly late on in the redevelopment. As an on-going contract, we had already given each area a name and when it became necessary to give people addresses, because it was a pedestrianized area of courtyards and alleyways, it wasn't as straightforward as a set of streets. We tried to use names from the past if we could, so Kendal Street (which was existing) was used a name. Where that wasn't possible, we actually used a set of Northumbrian bird names to generate a theme. It our meeting we went beyond this name system to develop a colour system and tried to introduce a logo.

Kendal Street was red with a logo of a ladybird, Gracelee was orange with a logo of a bee. The idea was that all the street signs would have the street names and the logo in their particular colour. The logo would also appear on the resident's association letter heading the doors of the houses. For children and for visitors that would have been a good system. The residents' thought it was a terrific idea and they got really enchanted with the idea that someone lived in a

ladybird area. I remember the sort of jingle 'I'm a little busy bee, I live in Gracelee'. At the council committee the logos got cut off as a budget saving. So what you get now in Byker is a colour system with a name and it looks like another set of Erskine colours.

The residents got involved in that and also made comments about some of the names. For instance; the name for a hill in Byker is 'bank', so we used it in Shipley Bank where the street went up a hill. We then discover that socially the name 'bank' was bad. 'Bank' was socially at the bottom of things - we changed the name to Shipley Rise. That came out of tenant participation. It might seem a minor thing but where you lived in Byker was really quite important. Notionally people wanted to be at the top and the name Shipley Rise made them feel that they were rising to the top of a social scale as well.

If you wanted me to summarise - the one thing about the participation is that it made people believe in themselves. It gave them a feeling of importance and it gave them good useful information. And in some cases they saw fruits of their comments, so they were not just observers. There was a dialogue and we considered ourselves to be listening experts and architects. We felt we needed to understand Byker better in order to provide the right solution - so it was a two way process of getting to know each other. Their involvement in the project helped them to settle down quite quickly and residents associations were formed, the Byker Recreation Association (a teenage project in the converted bath house) was set up. There was a lot of community spirit and we found mechanisms to help it where we could.

Do you feel you were successful, if not in creating a community, then in helping to keep it going?

We have been criticised (Peter Matpas in the 'Architects Journal') for only rehousing 50% of the original Byker residents. But I think that within our input, it would have been far less than that - and there never was compulsion. The population of Byker prior to redevelopment had been around 16,000 - 17,000. When we arrived it was down to 13,000 because a large area had been cleared for the motorway. We were given instructions to reduce the density of the Tyneside flats. So it was only ever intended to rehouse 9,500 people and a reduction in the local population.

In terms of being a settled area, where people were happy and where people were able to run the lives they wanted, I think at the time it was successful.

Interview with Fiona Swindell – Byker Advice and Resource Centre, 25th April 1996

I said straight away when you asked to meet with me, "Will you need to talk to local people?" because that is the only way you'll find out how they really feel about it, whether they feel it as sort of worked for them.

I think that in theory it's a really good idea to try and get people involved on a long-term basis and I think some of the things which were done initially; the

way that the architects were actually based in the community so the people could quite easily access them; was a really good idea. But that wasn't followed through. After it was set up there doesn't seem to be any long-term mechanism set up so that people could continue to have some kind of dialogue with the local authority about how they felt about housing - how it worked for them and how it didn't.

I think that some of the things the project lamentably failed at was to look long-term into the future and anticipate some of the issues surrounding car ownership. There is nowhere for people to park their cars that is safe. A lot of these things are unanticipated. We wouldn't in 1971 have believed there would be the level of vandalism we have now. The architects were quite constrained in participation by responsibility and by budgets

The participation was done on quite a large scale and it is one of the oldest schemes of its kind, compared to smaller scale housing regeneration and residents' input, particularly in London. I think that might be one of the problems here - that they tried to do it on such a large scale, and the fact that they demolished the homes - and I don't know whether they looked at what made Byker special. And I think that the architecture had quite a lot to do with that. The fact that people lived back-to-back. They were small sort of communities in themselves with people being able to get quite close to each other. What they created; which they obviously thought was a really good idea at the time; was a village atmosphere, but they have actually created areas where people probably feel quite isolated, areas where people are not overlooked very much. And there are lots of bolt-holes. Lots of ways in and out of the area compared to only two exits in a street that makes it a bit easier to control

What is the extent of the security problems and do you think it is self-policing?

Well I'm not sure. They cut down the number of roads to help create this village atmosphere but the downside of that is the way people can feel vulnerable and isolated. Not only are they not overlooked, some of the houses are quite physically isolated. They are stuck in the middle of green spaces or something and the kids can move right around the house. That increases the possibility of them getting harassed because they are seen as an easy target.

Has there been a decline since 1971 in levels of safety and sense of community?

I don't know if it is possible to measure the sense of community. I first walked around Byker as a sociology student and the tutor gave us this line that it was wonderful and we looked at and admired the architecture. And it was very interesting and it did look good. It was very different and I thought it was a wonderful place.

When I came to work here, I found out things like the fact that less than 50% of the population lived in Byker before the redevelopment. That's partly because when people moved out, many decided not to move back in again.

And people whom maybe had their homes compulsorily purchased, they didn't move in again. So I don't know what effect that might have had on the sort of mix of people in the community. I think Byker is possibly one of the wards in the city with the highest density of council housing and probably one of the lowest density of business and employment uses.

What about the density of Byker. Is it too many people in a small area?

I don't know. It was higher density before and people have this perception that it was a lot nicer place to live before. That is very difficult to comment on. I think a lot of the open spaces – people who come and walk round really like the open spaces. And I guess that one of the things that would attract people to come and live here – they will see lots of green and it is really pleasant. But it is a nightmare to maintain it properly and so it is a constant battle. It is sort of a collection point for litter and people use to open spaces to dump stuff in. So you can see it causes problems as well as having its positive points. The green spaces are where young people start to congregate because there isn't anywhere else to go. That increases the feelings of fear, even if they're not doing anything. The large crowds of kids make most people feel vulnerable. They are afraid of what they are going to do. The later end of the year is bonfire season – at the end of the summer onwards there are constantly being fire lit in parks. A lot of the play parks ended up being taken away because there was open access and young people began to congregate and drink, take drugs and then they are seen by the rest of the community 'Ah that's a problem caused by the playparks', not the fact that the young people are doing something and that's the only place they can do it.

There is no alternative for the young people it's 'lets get rid of the playpark' but unfortunately, that doesn't get rid of the problem because they are still getting together in other areas and now the younger kids, the under fives, have lost a valuable resource.

Can you think of any other sections of the community, like the young/teenagers, who are being excluded for management decisions?

Yes. Most of the time, young people aren't taken into account at all. There are very few young adults involved in the residents' associations. I think the youngest I a man in his mid-twenties. But I don't think it's easy for young people to participate in that sort of thing anyway because they're not encouraged when they are at school to participate in decision-making processes anyway. The statistics about how many young people vote tells you something. They don't see the point in it.

Is there any qualitative measure concerning involvement – whether people are having and real influence and whether people are being excluded? Is there real collaboration in the management of the estate?

I think some of the Tenants' Associations have had noticeable successes. The Raby Cross Tenants' Association managed to get the canopy

areas around the shopping centre removed because youngsters were getting on top of them, throwing things and spitting at people. They were using them to hide under and it made surveillance harder. And those were removed to try and make it a bit safer. So there are things that local people can do if they get together and lots of the tenants' associations are very very strong.

But recently the doctor's surgery decided it wanted to move. The Tenants' Association tried to develop a campaign to save it but people just seemed to be apathetic even though when you talked to people, they were concerned that if the medical centre closed then the chemist will go and then the post office will go because there is no real commitment for keeping a post office there. Within the last few years they have opened one in the supermarket (at the top of Byker, along Shields Road) which is over ¼ mile away. There is no real commitment for providing a service in this area where there is a lot of elderly people.

How much do people use the local centre here, compared to those who go across to Shields Road?

If you looked, you would probably find that the majority of people use both because they cannot get everything they want here. They have to go up to Shields Road. A lot of people will use the post office to cash cheques. So they will tend to spend some of their money in the local area. There is the concern of a knock-on effect that if the shopping centre starts to close, it will create a dead middle in the heart of the estate.

The Tenants' Association work complements the work we do and if they weren't here, then we'd have to do some of their work anyway.

We were bequeathed the building from the DHSS and it hasn't changed much since the 1970's. it used to be a butchers and a haberdashers. There used to be a greengrocer, a 2nd hand furniture shop and a betting hop as well. So a lot of shops have closed down. There are light industrial units out the back of Raby Cross and there used to be a funeral director and a builder – a lot of things have gone fairly recently.

Is it a major failing of the scheme that you don't have control over the provision of services?

It is very difficult to have control over that but I think it has been seen as a commercial enterprise and perhaps there should really be a different attitude in rental levels in trying to attract services into the area. There should be rent reductions or whatever, to help support businesses here. Attempts have been made to improve the security for some of the residents but not all of them.

What effect did the right-to-buy have on the public / private housing mix in the area?

The people who have bought and have tried to sell have found that even if someone comes and wants to buy the house, that person cannot get a mortgage. I don't know if it's to do with the level of defaults but now it seems to

be impossible to get a loan to buy a house in Byker. So that's had a profound effect on those people who have bought. They have found they are stuck here.

In the original scheme there were some attempts are getting some speculative private development. What is that like now?

There are several areas and quite a lot of housing associations within the area. They are concentrated on Shields Road and in flats over the shops. But the problems of selling properties is affecting people who have bought private housing as well. One family have ended up auctioning their house off for next to nothing.

Do you have much contact with home-owners?

No. But that is mainly because most of the work we do is directed towards council tenants. But there are a few.

How distinct are the identities of the different communities within Byker?

I think that the different areas do have some sort of identity. I do think, as well, there are issues because a lot of the street signs got pulled off and vandalised. And sometimes there hasn't been enough money to replace like with like.

They try quite hard to keep the colour schemes and things going but recently that has started to change.

Are the current Tenants' Associations grouped around the same neighbourhoods as originally intended?

Some of them are. The Byker village certainly is and others at Janet Croft and Raby Cross. There are a total of four groups who meet monthly. They are self-organised but some of them do get support for us at times. They quite enjoy talking to people and small groups and there are interesting contrasts between the youth groups and the tenants' groups. People who have lived in the area before and after the redevelopment scheme. (check out the 20 year rule).

When the first residents came into the houses there was a booklet with information about very simple things like – where there batons behind the plaster so that they could put up curtain rails. It had instructions about the heating system, information all about the properties. These booklets haven't survived. Residents who moved in after this date, well the information has been lost. So now people do have genuine difficulties about the heating system and trying to control it and other aspects of the design.

The wall is very nice to look at but hell to live in. a lot of it is single person flats and there isn't an effective door entry system. So if you want visitors, you have to make very elaborate prior arrangements. And even then, kids block the locks so they can't use the entry system anyway. So the doors are often just left open. Some kids have actually managed to get keys and so they can get into

the shared corridors and use it as places to hang out, harass people, drink and take rugs etc. so people feel quite vulnerable in the walls. The car parks are very insecure. So overall security is still a real problem. We even had a community safety day to look at some of these very issues.

Interview with Carol Armstrong - Secretary of Janet Croft Residents' Association, Byker Estate, 2nd August 1996

I understand that Janet Square was one of the first phases of the Byker redevelopment?

Yes. We were what was called the pilot scheme. 46 tenants were selected - they promised us utopia but it didn't happen. And actually, I've been to Gothenburg many years later and I've seen the Swedish one, on which Byker was based and what it was meant to be like.

Can you tell me about the history of the Janet Croft Residents' Association? How and why was it formed and how have you managed to keep going?

Well, we formed about 10 years ago because there was such a controversy about the heating system. A public meeting was called with the likes of all the dignitaries from the civic centre and what not.

When we first came here in 1971, we had our own pilot scheme boiler house which worked perfectly. Then someone in their wisdom said 'cut them off from the boiler house and they can get their heating from the reclamation plant at the bottom of the hill'. That worked for a couple of years and then there was a lot of mishaps. Things were going wrong and that was when the public meeting was called to say that the council was going to install individual heating boilers in everyone's homes here in Janet Square at the cost of about £800 each to be paid by the council. But the fools didn't realise that we still had our original boiler house and all we needed was re-connecting. So after a lot of hot-headed meetings - this heating would have to go on an outside wall and I've got very little cupboard space to start with. I would lose a cupboard to get this £800 boiler and somebody said 'why don't you just re-connect the old boiler' 'Oh you've got your own boiler house. Where is it?' It was then we realised we knew more about the scheme than the council and so we decided to form a Tenants Association or were advised to. The Tenants were selected and we amalgamated with the estate at the bottom - that's where our chairman lives - and that's how we became to be known as Janet Croft, because that part of the Byker estate is on the croft of the hill. The chairman has gone on to buy his council house down there - myself as the secretary and we have a treasurer and a small committee of about seven tenants. We used to hire the scout hall. £7 we had to pay every time we had a meeting and we found that too expensive.

Do you have access to any of the hobby rooms for community meetings?

They're too small. We originally went into that because there is one just at this corner. But there is no way we could get a committee of ten in with table and chairs. There was no water or anything like that, although we didn't necessarily have to have a cup of tea, but it was too small.

We inquired about the school but the caretaker wasn't prepared to open it up and let us have a classroom. So to cut the tale short ... we have our meetings around this table (Mrs Armstrong's own 3 bedroom terraced home in Janet Square) and we meet regularly, about every six weeks. A lot of good has come from it. I think it is better to have an association.

How many people from the area are involved in the association, outside of the committee?

Well, you get them coming to you with all sorts of complaints. They think the committee can wave a magic wand and you get a drain pipe put up and all of this ... but we keep emphasising as we have from the very beginning, that we wouldn't get involved in individual cases. We said 'What affects the 46 tenants and the 40 down at the croft was our reason for being a committee'. You still get them coming to you and saying 'The woman's kids next door are jumping all over my garden' ... and things like this. We have emphasised that these are things which they must sort out themselves.

I don't know if you heard about the roofing all going in 1980. We lost all our roofs. Before this current roofing we had a corrugated iron roof. We had a strong wind from the west here and if you can imagine a tin of sardines, well it was like that, the roof just rolled back. There was an awful carry on. I was sitting here on a Wednesday afternoon and to be honest, I thought a couple of planes had collided in the sky because the debris just blew over and across the roofing. So it really affected Janet Square the worst ... which is why it doesn't look like Mr Erskine's sketch any more. We had to be re-housed in hotels. The council was just horrified that this could happen. So now we've got this roof, which we're assured will last a lifetime. It was a terrible time with scaffolding all around the estate. I think it took about three weeks just to relay the roof insulation. There were no injuries, but how that happened with so much metal flying off the roofs I'll never know. But we survived and got over it.

There were a lot of things from this incident which the committee took by hand to the officials in the Civic Centre. There were insurance claims as rain saturated carpets and furnishings.

So the committee was involved heavily in the day-to-day management issues on the estate. Were you also involved in the designing of the estate?

Oh yes. Right at the beginning. That must have been about 1970. And actually .. I don't know if you've seen anything of old Byker ... we lived in long grey terraces, back-to-back in Tynesides. Streets consisted of 3 long blocks with 100 tenants in each – the street I left had 300 houses in it.

The community spirit was excellent because people had to get on. There was none of the carry-on you get now. And the spirit was excellent, you know, you knew you could rely on them.

I lived in Norfolk Road (facing the old Nash House and the public baths) with no bathroom, no running hot water, gas lights – electricity did come along later – and the spirit there was marvellous. I had 4 children born in that 3 bedroom flat which I'd rent from week to week. My boys were in the church choir – St Michael's at the top of the hill – and that was my first involvement, when the vicar called down one day. We had a very active vicar in those days and he said that he heard a whisper there was to be new housing erected in the Byker area. If it was true and came about, would I be interested? 'Oh yes' I said 'Yes please'. And it just took off from there. I got a letter to say I had been selected – I still think looking back that the churches had a lot of influence, because both the Protestant and Catholic churches helped to make a selection from their congregations to come here. It was good.

We were absolutely thrilled with this letter which said we had been selected, you know. They asked if I would attend a public meeting in the Byker Community Centre, next to the church. When we all turned up – the 46 prospective tenants of Janet Square – we all knew each other. And it was 'EE, have you got one as well? Have you been selected?' and it was fantastic because it was people you went to school with or people you knew. And they were all selected from the Byker area. No-one from the other side of Shields Road. We were all with young families.

So we attended this meeting along with Mr Erskine and all his lovely coloured boards – lots of green grass – looking fantastic. And I think there was a meeting every fortnight about 7.00pm which allowed tenants who were working to be there. And you found that husbands and wives went along together. And there were a lot of good things come out of it. There were certain fellas in the groups who were electricians, there were some who were joiners – one of the big things which never got put right was the rocking flooring – the joiners in the group said it would never work and they were right. It still rocks and creaks. If you spent a night in this house, you'd think it was haunted. Over the years we've got used to it. The council have now come up with a new waterproof flooring - the old ones weren't waterproof and I've had to have three new floors in the last 25 years.

So then, we all tripped down to see this site which was derelict and when we saw it we said that they'd never get 46 houses in there, you know. We watched them go up. I used to stand and watch with my youngest in a push chair and I couldn't work out the split level at the time. I had an upstairs flat with someone down below and I couldn't understand the shape of them.

It was wooden construction and it all went up in a day. After three days the roof was on. This sort of construction went on for about a year and it was actually on 28th July (which was a Thursday and my birthday) 1971 when it was completed. We all met up when the houses were complete – all in Janet Square, all 46 tenants with all our kids. There was a lovely atmosphere – we had been allocated our houses but there was still some of the landscaping and gardening to be done. They asked me and someone across the square if our houses could be the show-houses for the rest of Byker to trip through and have a look at. There was a big sign in my garden that said 'this house was a four bedroom house for £6.32 per week, to cover rents, rates, heating and water'. That was a lot of money in 1971 and it meant that I had to go out and find a

cleaning job. So on the 28th July, Alderman Grey from the Civic Centre, came to Janet Square and gave everyone their keys who then tripped excitedly up their paths and opened their front doors for the first time. Within 2-3 days, everybody had furniture wagons arrive and the gas and the electricity was on.

Of that 46, we still have 16 of the original tenants here. We've lost quite a few by death naturally because we were originally a mixed group – young ones in the flats and elderly couples in the flats situated at each end, then the rest of us in the square were 3 bedrooms. There are no 2 bedroom homes in the square. We also have 3 family homes which have four bedrooms. Three of the tenants have gone on to buy from the council. They've regretted it because it hasn't worked out with their new neighbours.

What sort of influence did you have in the design of the houses?

We had quite a lot to say to Mr Erskine, it was very good. They introduced us to continental height benches which for me was the correct height. Landscaping was open plan. As time went on, we asked if we could extend our garden fences to enclose the public area because it was never maintained – but they said no.

A lovely thing, because adjoining the last house here was a row of old council houses. So on the outer facing gable wall, Mr Erskine had a big blue sky painted and a big yellow sun which was massive on the outer wall of the house. It is demolished now, of course. You woke up to this big yellow sun every morning – it was very Swedish and a very different type of lifestyle.

We were promised underground heating which would melt the snow in the winter – which never happened.

This house was promised a shower cubicle, which never happened. The staircase was meant to be polished wood but it was painted. I came home one day and nearly cried because I was promised polished wood. We were also expecting pine floors so that we could do without carpets – we couldn't afford carpets anyhow – but that never happened. There were a lot of things they had promised which never happened but I think really, looking backwards we were conned. Still, now we had a bathroom, 2 toilets and a garden which we never had before.

Quite a few say now that we were conned ... as I say, we were promised utopia, and being simple ordinary working class people, we all thought we were to begin living like film stars.

There were quite a few suggested changes that did not actually happen?

Yes. And for the privilege of this, we promised we'd feedback information on things that weren't right or that went wrong to the Civic Centre and then they would take account of that in the rest of Byker ... which we did. I was interviewed twice by Tyne-Tees Television and the BBC when I first came here. I remember saying it was marvellous because there was so much greenery, which we hadn't before, we had to go to a park. Hot water was wonderful because before I did all my washing in the wash house and had to find

someone to mind the four kids to let me get out for half an hour to get the washing done. So to get the hot water was fantastic.

It must have been very different because the old environment of the streets and Tyneside flats was a very 'hard' environment. Is it a complete contrast with the trees and with the colour?

We've got too bloody much now. We're having a big meeting next week because we're annoyed with them. We feel we've been neglected.

We've always said that this was the best maintained, tenant maintained estate in the country. We feel that we've played our part and we've been willing to get on with it ourselves. The neighbourhood housing office is just letting us do it. But we've been crying out for trees to be pruned. Sadly we had a rape incident 3 weeks ago at the top of the street in the bushes – I was so sick – it was only 9.30 in the morning.

So now we think we have a strong case. We want all the overgrown bushes out and grassed over. In the long run we feel that could save money. Because the pruning they carry out is only lopping the tops off the trees and bushes and within six weeks its all grown back gain.

You spoke about the estate being tenant maintained. Were you given any budget to help you maintain the area?

No. in the beginning the whole estate was given one wheel-barrow, a couple of hoes and other tools – well the fellas were dead keen in those days. They were based here and anyone who wanted them used to come here and sign them out. But that wore off because in a couple of years you got a tenant next door who just couldn't care less and their garden was a wilderness. The feeling of apathy comes in ... you start to ask why you should bother. This is why we're writing a strong letter to the council, we're saying we ant action and we want it now.

Regarding traffic, we've got an adopted pathway out the back with a number of road humps. We said at the beginning they were too low, people coming down the lane should turn into the carpark but it doesn't happen. People tend to ignore the council's carpark and park at the back of their properties.

I want to find out how your involvement has helped you or others involved, in terms of learning new skills and whether being involved in a tenants' association has given you a greater sense of community?

I don't think the sense of community would have remained if there wasn't a tenants' association. I think having the tenants' association keeps the majority together.

We're not finding new tenants getting involved – this is what we're up against now. For example, three calls this morning were about the heating. I called the heating station and they said yes they had a fault, the engineer was on his way and it would be put right within ten minutes. So I called the tenants back and told them that everything was in hand.

The new tenants don't want to know. Over the years we've more or less said we'd sweep our fronts and keep our own little patches of landscaping tidy. The type of tenant we're getting now, sadly a lot of them are out of work. They are coming with young children. We were like that 25 years ago – now we're looking for some peace but I've got the family from hell next door. 25 years ago these were built as family homes but they don't seem to appreciate that things change. For instance, we've just had a renewal. 46 houses got a new front door. Originally we had a glass door which is now obsolete as they opened outward. So the council official came along and we had a meeting. He said 'right Carol, there are 46 tenants who all qualify for a new front door'. He left me the picture of them and the colour schemes and 'would I find time to go round, show them all the new front door and let them pick their own colour scheme'. I said I'd do it. So everybody gets a new front door. The thing was those who were getting a new back door as well – only 13 qualified. It was open murder. 'how did the secretary of the estate get both a back door and front door?' I tried to say because I had a fully glazed back and front door. A lot of people became very nasty. They said I went to bed with the council and that was how I got a new back door. Then they all started to change their minds on the door scheme, so the council put it's foot down and gave everybody the same door.

We have had the same discussions over other things like anti-vandal paint. Kids had access onto the flat roofs but now we've got spiked railings and the paint.

How satisfied are you with the new Byker – how do you feel about it? What do you like about living in Byker now?

Nothing. We have no shopping centre, it is very depressing.

What do you dislike?

Well, first there is the litter, the filth, the vandalism, the graffiti. I feel sickened with it. There are seven arches under the buildings on this estate. None of them are lit properly. Trying to get them sorted, I found that no-one in the Civic Centre was prepared to accept responsibility. I tried highways and housing.

Do you think a lot of the security problems are to do with the design?

Yes. The bad lighting, too many bushes and trees. But it's also the type of residents now moving into the estate. We couldn't dictate or demand but we asked that the council select tenants with care. They did promise they would select with more care but that has gone now. The impression now is that they want the rent and they don't care who they put in.

All the commitment to community participation has gone – once the rot sets in it takes over. We live here and we need to feel comfortable and safe. We used to have a great new year party in the square but that stopped 5 years ago because of trouble with new residents. The sense of community is gone.

My other dislikes are the speeding traffic and the lack of shopping. We had to fight to get chicanes put in place – all sorts used to speed along here in the pedestrian square, even down the steps. But now we are traffic free in the square with the new chicanes and the bollards. Shoppers have been forced onto Shields Road and I must get the bus as I can't walk to the top of the hill. We have nothing here now.

The litter and filth is still the worst problem.

I just want this little part of Byker to look good and be a nice place to live. But I'm feeling that I now want out of Byker. It would break my heart to leave my old friends behind but you can't create a community on your own.

Interview with Jimmy Johnson - Chairman of Shipley Walk Tenants' Association, Byker Estate, 7th August 1996

I'm trying to get an idea from the people living here in Byker, how successful they feel the redevelopment was; in terms of participation, what the problems are now and what changes you would like to bring about? Can you tell me about your tenants' association?

The Tenants' Association arrived out of a local neighbourhood watch - we still have a lot of neighbourhood watch members in the group - and we have approximately 30 members who attend once a month. The focus of the group was originally security and crime and that is still a big issue.

How old is the tenants' association and what sort of people are involved?

The group is about 12 years old and there is an elected committee of 12 members. The people who attend are all tenants from the area - at one time it was only people from the Shipley Walk area (next to the Byker wall itself) but what happened is after consultation with the Housing Department we extended our organisation to the lower half of Byker (an area which wasn't represented by any association) - which boosted the number of tenants. The people are just tenants who are interested in the welfare of the estate and also local council matters - resolving local issues. We sometimes have representatives of the police at the meetings alongside other invited organisations. Some of the main points raised at the meetings are crime and vandalism - the shubbery and planting being seen as a major source of the problem.

These are gradually being pruned and replaced with smaller growing plants. I think they went a wee bit overboard with the trees whenever the housing estate was built - they just put trees anywhere including in front of people's windows and blocking street lighting.

What sort of things do you like about the area?

Well, I must say, the first thing I like about it is the community spirit which Byker is noted for and always has been.

Why do you think that is?

I think it goes back to the old days when we was a proper village - the people just came together in the area, like a giant family. Everyone had each other. As times went by - under the new housing charter where people can now be rehoused from any area - we are feeling the impact of a lot of undesirables coming into the area and of course this upsets the long-standing residents. Lots of children are moving in and there are very little facilities for play, bar the outdoor crèche, so they have to play round the roads, paths and doorways.

Has the tenants' association ever had the chance to have their say on who does move into the area - does the council consult you?

We bring this point up quite often ... but you can't get it resolved because the housing department is not at liberty to give out information on who the flats are being re-let to and where they come from - it is not open to public discussion.

To return to the earlier question, are there any further advantages to living in the area?

Well the advantages are the proximity of Shields Road, the well known local shopping centre. It has been very handy for people over the years. The people here at Shipley Walk are closer to Shields Road than the planned centre at Raby Cross (the central shopping area in the Byker redevelopment area) and prefer to shop there - not even using the local Metro to go to the city centre -- because it saves us having to travel.

Do you ever use the facilities at Raby Cross?

Yes ... but they are all more or less one-stop shops for if you run short of something, that's all. Shields Road is the main centre because that's where the main supermarket is. However, over the last few years it has become run down and there are a lot more charity shops appearing and vacant premises. Also when Parishes left the area (the local department store) it was a major disaster. In the future there will be a major development taking place on Shields Road, refurbishing the street over the next 7 years and hopefully a lot of the shops will return.

What are your thoughts on the landscaping - is it a good or bad point?

It's actually a bad point. The topography of the area makes it quite difficult to manage it properly and then the children go to work on it and vandalise it - so it's a constant uphill struggle.

Do you think that's the fault of the architects - that they failed to anticipate?

Yes, I don't think they looked forward to what would take place in the future. As far as I'm concerned, they didn't have any insight.

For example, the sort of houses they designed where the roof is low and accessible for children to climb onto ... once they are on the roof they can move right along and are comparatively safe at that height to break into people's houses. That explains the anti-climbing paint throughout the estate.

A lot of the break-ins have been through the bottom half of the glass-paneled doors. The council hope to replace them all with solid hard wood doors and the extra cost to cover the entire estate will be quite a bit. Most of the doors already replaced have been because of break-ins.

Are there many people in the Shipley Walk area who have bought their properties?

Off hard I can't say there are a great deal. Most of them are council tenants on low wages or they are out of work altogether.

Have the council ever given the tenants a say in what maintenance or work should be carried out, or have they ever given you any budget for direct work?

No, not really. I know that the maintenance of the shubberies and planting areas took up the majority of the allocated grant for the area.

Are there any other bad points about the area?

Yes. I would say the traffic routes leading into the estate. Due to the topography of the area and the design layout, all the streets and pathways lead directly onto the major roads in the estate making children very vulnerable. And most of the traffic is taxis trying to take short cuts to the city centre.

When the estate was built - you would have noticed the large car parks are all based on the outside of the wall at the perimeter and no traffic was allowed on the estate except for the essential services. But as many cars were getting burgled and wrecked, people became afraid to leave their cars in those isolated car parks and they started bringing them into the estate and parking them outside their doors and on any grass verge they could find. They have overtaken the area now and it can't really be rectified.

Has the tenants' association been involved in traffic issues?

Yes, we wanted road signs put up - name signs for the different roads leading into the estate because an awful lot of people get lost. The problem is that the last set of signs were vandalised, so the council is reluctant to put up any more expensive signs.

Are the road humps along Kendal Street quite recent?

They are 3-4 years old. We're hoping to have other streets treated the same way, especially along Gordon Road which leads directly to the school. If any road should have traffic calming, it should be that road.

The other problem is that since they've put the humps along Kendal Street the traffic won't go along there now and so it all goes along Gordon Road - so it has actually increased the traffic along Gordon Road. However, it has had a good effect for people living along Kendal Street and one of the main problems there was that people stepped down from their front doors directly onto the main street - there is no footpath at all. At least along Gordon Road you have a front garden and a view of what is coming.

But everything you bring up is about expenses ... the council has to allocate its grant to the priorities and so we can put these matters forward but they have to decide what is the right priority.

What would your number 1 priority be - in deciding between security, landscape maintenance or road safety?

My main priority would be safety - crime and the road safety factor. It all comes down to better management.

There has been a spate of break-ins over the last few years but the police are getting on top of it now - but it has been very bad.

What difference do you think a sense of community or lack of it has made on crime levels?

I think the difference is in a lack of discipline and lack of individual responsibility. Part of the idea of community is feeling responsibility for those around you. That is what we are now missing.

The problem is that there are an awful lot of old people in this area who are frightened to get involved. Fear of being victimised - the fear is there among the older generation on the estate.

What do you think are the important aspects of the physical design of the area? What features are actually used and where do people meet and interact on the estate - one of the original aspects of the architect's brief?

Well, there are garden seats throughout the estate but they are never used except for those at the top of the bank - a lot of people take a rest at the top of the hill before going on to Shields Road. We wanted to remove all the surplus seats before they were all vandalised.

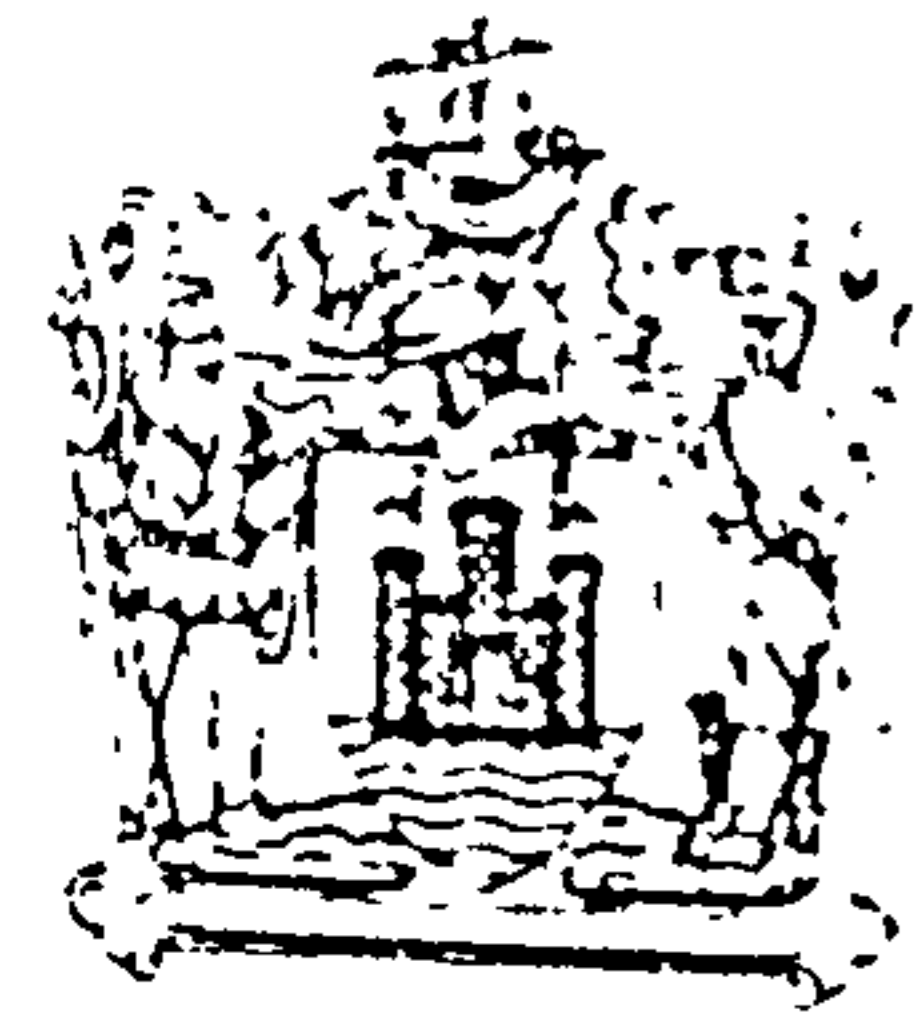
The focus of the community is here in Raby Cross. Here are the shops, the resource centre, the chemist, the doctor. While Raby Cross is the centre, Byker itself is broken into a number of sections and it all begins and ends at the wall. There are separate community groups representing Shields Road and the other side of the Metro.

What would the major landmarks in the area be?

What makes Byker 'Byker', is definitely the wall - and to a lesser extent the Byker Railway Bridge. You can have terrific views across the city if you live in the Byker wall.

There are problems of living that close to one another in the wall, sharing the same balcony. All the walls are hollow, so you can hear the sounds and the arguments of everyone else. There are a lot of noise complaints and also problems with the heating system. You still can't turn the heating off. Even if they are off at the radiators, the pipes are still hot. Therefore there is constant heat and during the summers it can be a real problem - people have to leave their doors and windows open for ventilation and that can't be good for security.

H



CARRICKFERGUS BOROUGH COUNCIL

Alan Barkley
Director of Environmental Services

Environmental Health Department
Town Hall
CARRICKFERGUS
Co. Antrim B138 7DL
Tel. (01960) 351604 Fax. (01960) 364739

August 1998

Dear Resident

CARRICKFERGUS BOROUGH COUNCIL ***LOCAL AGENDA 21 – HOUSEHOLD SURVEY 1998***

Thank you for your co-operation in completing this questionnaire. The information you have supplied will be used to produce a report describing the current state of the Borough of Carrickfergus. This document will provide the basis for Carrickfergus Borough Council's Local Agenda 21 strategy.

The report will be produced in the Autumn of this year and I can assure you that the information you have give will not be identified as coming from any particular household.

Should you wish to become further involved in this project or have any additional queries please contact

Environmental Health Department
1st Floor, Heritage Plaza, Antrim Street, Carrickfergus
Tel. (01960) 351604.

Thank you for your assistance.

Yours faithfully

Alan Barkley

ALAN BARKLEY
Director of Environmental Services

CARRICK Times

and East Antrim Times

10/23/98

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MAJOR SURVEY ON STATE OF CARRICK AREA



Enjoying themselves at the summer scheme in Carrick Leisure Centre were Laura and Nicola Allison. 30507. (Pic by Tim Cully)

CARRICK FAMILIES are to be asked what they think of the state of the borough.

Five hundred households stretching from Greenisland to Whitehead will fill in questionnaires on the subject over the next few weeks.

It is part of a scheme which will put Carrick "ahead of the game" as local authorities right across the United Kingdom are expected to come up with an environmental work programme by the year 2,000.

Two academics from the University of Ulster at Jordanstown will be involved in the survey which is being organised by the borough council's Environmental Health Department.

The aim is to get as much information about the state of the borough as possible and this will be used to create a corporate environment strategy.

Department director Alan Barkley admitted it all sounded "airy fairy" but the final report would determine what future action the council would take in relation to the sustainable development of the borough.

"The whole idea flows from Local Agenda 21 which was produced at the Earth Summit in Rio de Janeiro some years

ago," he continued. "This was a huge document setting out an environmental work programme into the 21st century and aims to provide guidance for governments in establishing environmental policies on issues such as pollution, energy, population and development."

Families in the borough will be asked an extensive range of questions from what they use as fuel and how they dispose of their household rubbish to what they think of public transport.

"At present we sometimes work from information gleaned years ago," Mr Barkley explained.

"This report will enable us to say exactly how much woodland we have in the borough or how much shoreline. It will be that detailed and will be used to shape any future development in the district.

"When it is finished it will be one of the first such reports to be produced in the province so I think Carrickfergus is ahead of the game."

Questionnaires are expected to be distributed in the first week of August.

It is understood they

By **Ann Purdy**

have been held back a couple of weeks as the authors did not want the troubles at the start of this month to influence people's answers.

In an introduction to Local Agenda 21 the Government noted: "It is about local authorities working together with local people to shape decisions rather than explaining policy and practice to them."

"It is about repositioning current resources so that they are effectively targeted and it is about sharing responsibilities with local people for some of the tasks and the difficult decisions which have to be taken."

INSIDE TODAY

A swinging time Carrick **Page 15**

Classic vessel calls in **Page 21**

FABRIX

LIPTAIN - DRESS

Day of reckoning!

CARRICK borough should be looking its best today (Thursday) as it is being judged in the prestigious Ulster in Bloom competition.

In spite of one of the wettest Junes and the recent civil unrest, members of the borough's technical services department have been "pulling out all the stops" to present a bright and positive image.

The borough has three entries - the town itself in the

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46 OLD CARRICK ROAD

Special offers

Carrickfergus Borough Council - Household Survey 98

questionnaire no.

Attempts (circle box)				
Target House	Vacant house	2 nd attempt	3 rd attempt	No response after 3 rd attempt
Comments				

Hello, I am undertaking a survey to help assess social, economic and environmental conditions within Carrickfergus Borough on behalf of the Council. You may have read about it in the local papers. I am seeking your views on household conditions, behaviour and perceptions. The survey will be used to help the Council better understand the state of the borough and set priorities for action. (Ask to speak to head of household. If not available, ask to speak to spouse of head of household)

Interviewee (circle box)				
Not at home	Interview refused	Head of household	Spouse	Other (specify)
Comments (set time/date for return visit if appropriate)				
Household address (street/postcode)				

The questions should take around 15 minutes to complete. Thank you for agreeing to take part in this survey. Firstly I would like to ask about your household.

Q1. How long have you lived at this address?	Year(s)	Month(s)
Q2. How long have you lived in Carrickfergus?	Year(s)	Month(s)
Q3. How many persons are there in the household? (record number)	Adults	Children (under sixteen)

Attitudes

Q4. What do you <i>like</i> about living in Carrickfergus? If more than one answer, which is the most important?	
Reason (use their words)	Rank (1=most important)
Q5. What do you <i>dislike</i> about living in Carrickfergus? If more than one answer, which is the most important?	
Reason (use their words)	Rank (1=most important)

44

Show Quality and Density of Development Card 1. Q6. Can you tell me which type and quality of building you find the most attractive and acceptable in any development? Why does this one appeal to you the most?

Preference (circle box)			Reason (use their words)
A	B	C	
D	E	F	
G	H	J	

Q7. Can you tell me which you like the least and why?

Preference (circle box)			Reason (use their words)
A	B	C	
D	E	F	
G	H	J	

behaviour - Energy

Q8. Number of storeys								
Q9. Type of property (circle box)	Mid terrace	End terrace	Semi detached	Detached	Apartment/flat			
Q10. What type of fuel do you use for domestic heating? (circle box. if dual, ask for approximate % of each fuel type?)								
Coal	%	Gas	%	Oil	%	Electricity	%	Don't Know
Q11. Do you use electricity for other forms of energy use other than domestic heating (cooking, lighting etc)? (circle box)				Yes	No	Don't Know		
Q12. What is your total annual fuel bill (if known)? (circle unit)								
		£/quarterly bill bags of coal/oil tank fills per year						

Show Card 2. Q13. Do you have any of the following energy saving features in your home?
(yes/no/don't know)

Low energy light bulbs	Therm radiator valves
Double/triple glazing	Timer control
Draft proofing	7 day programmer
Cavity wall insulation	3 port valve
Loft insulation	K glass (low emissivity)
Room thermostats	Low energy fridge

behaviour - Waste & Recycling

Q14. Can you tell me the location of your nearest recycling point? (location/don't know)			
Q15. Do you recycle? (circle box)		Yes	No
If yes, Show Card 3. Q16. Which of the following materials do you recycle regularly? (yes/no/don't know)			
Paper	Steel		
Glass	Plastic		
Aluminium	Organic waste/composting		
Q17. Approximately how much waste does the household produce each week? (circle units)		Number of black bags Number of wheelie bins (large/medium/small)	
Q18. What would encourage you to recycle more? (use their words)			

behaviour - Transport

Q19. Do you or your partner work? If yes, where? (record town/location)	
Q20. What is your mode of travel to work? (circle box/if more than one, record main mode)	
Car	Train
Bus	Motorcycle
Bicycle	Walk
	Other
Q21. How many cars are there in the household? (record number)	
Q22. How many bicycles are there in the household? (record number)	

behaviour - Shopping

Show Card 4. Q23. Where do you normally shop for the following goods? (record town/location)	
Groceries?	
Clothing?	
White goods?	

Knowledge & Perceptions

Show Card 5. Q24. Can you identify and name the following local landmarks? (tick box if named correctly)		
1. Campanile/ St. Nicholas' Bell Tower	2. St. Nicholas' Church (Col)	3. Town Hall
4. North Gate	5. Knight Ride/ Heritage Centre	6. Kelly's Coal Office
7. Charles Shields Institution	8. Carrickfergus Gas Works	9. Market Square/ The Big Lamp
10. Methodist Church	11. Barn Mills	12. Carrick Rangers Football Ground
13. US Rangers/ Andrew Jackson Centre	14. Masonic Hall	15. Y.M.C.A.
16. Carrickfergus Castle	17. King William III Statue	18. St. Nicholas' Church (RC)
19. Sailors' Row/Gills Almshouses	20. Town Walls	21. Railway Station
22. Marine Gardens	23. Kilroot Power Station	9. Prospect Arch/ Woodburn Road

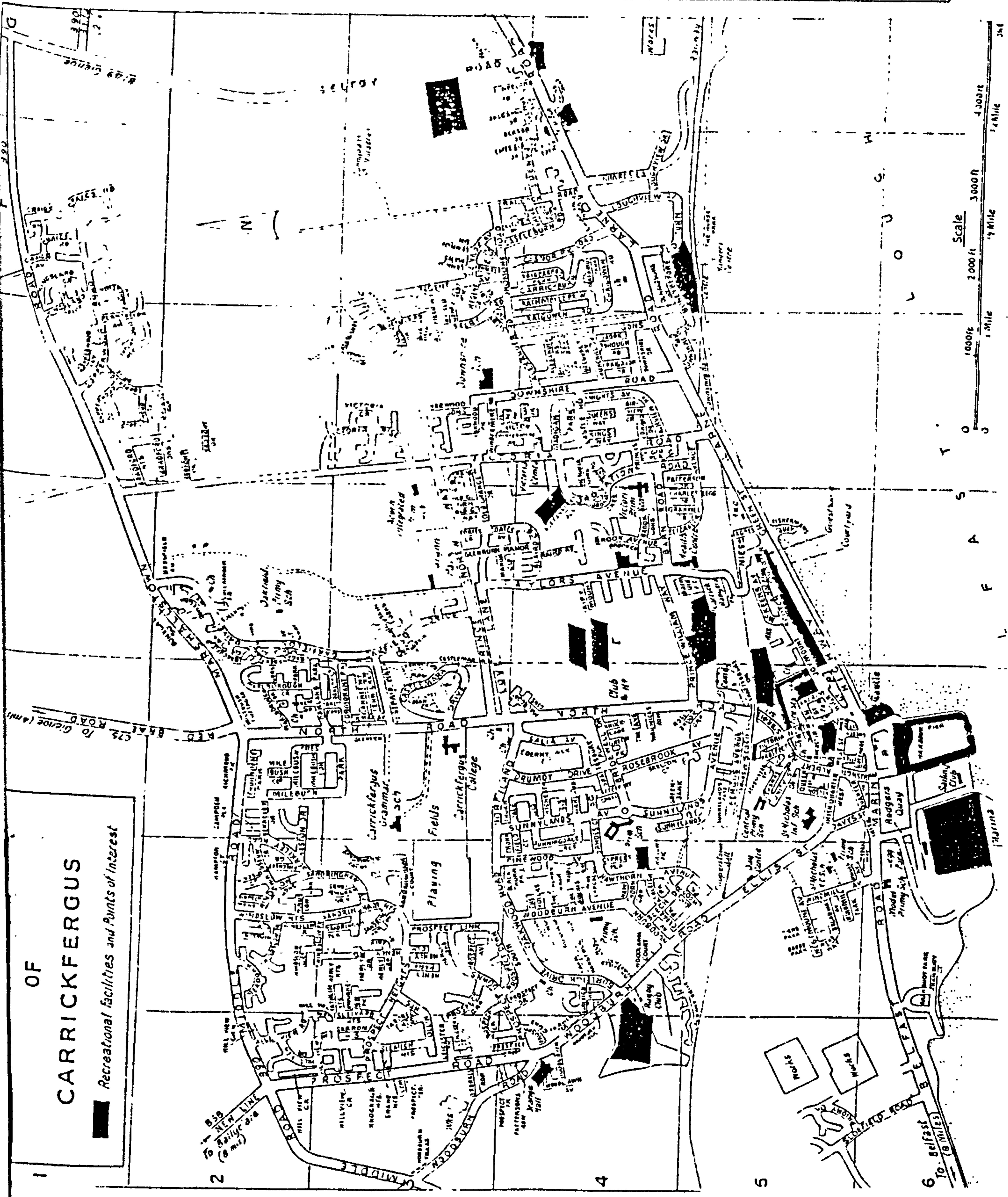
Q25. What elements of the local environment that you would like to see preserved?

Q26. Are there any additional comments you wish to make about living in Carrickfergus?

Q27. Have you heard of the phrase <i>sustainable development</i> ? (circle box)	Yes	No	Don't Know
If yes, what does <i>sustainable development</i> mean to you personally? (use their words)			

Q28. Have you heard of the term <i>local agenda 21</i> ? (circle box)	Yes	No	Don't Know
If yes, can you briefly explain what you understand by the term <i>local agenda 21</i> ? (use their words)			

Q29. Can you draw a line around the area on the map below that you understand to be your neighbourhood?

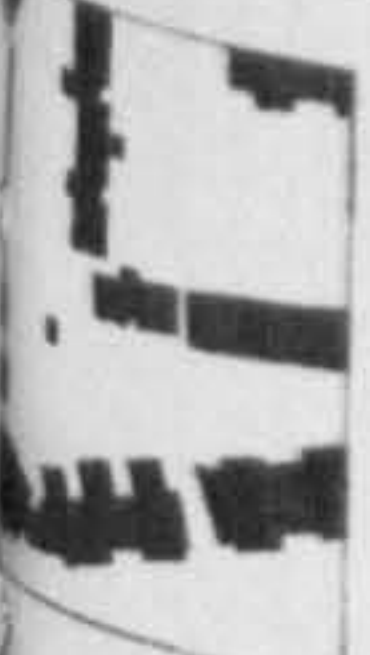


Thank you for your time and help in completing this survey. All your answers will be treated as confidential and will be sent to the Borough Council to help prepare a Local Agenda 21 strategy to improve the quality of life in Carrickfergus in the 21st century.

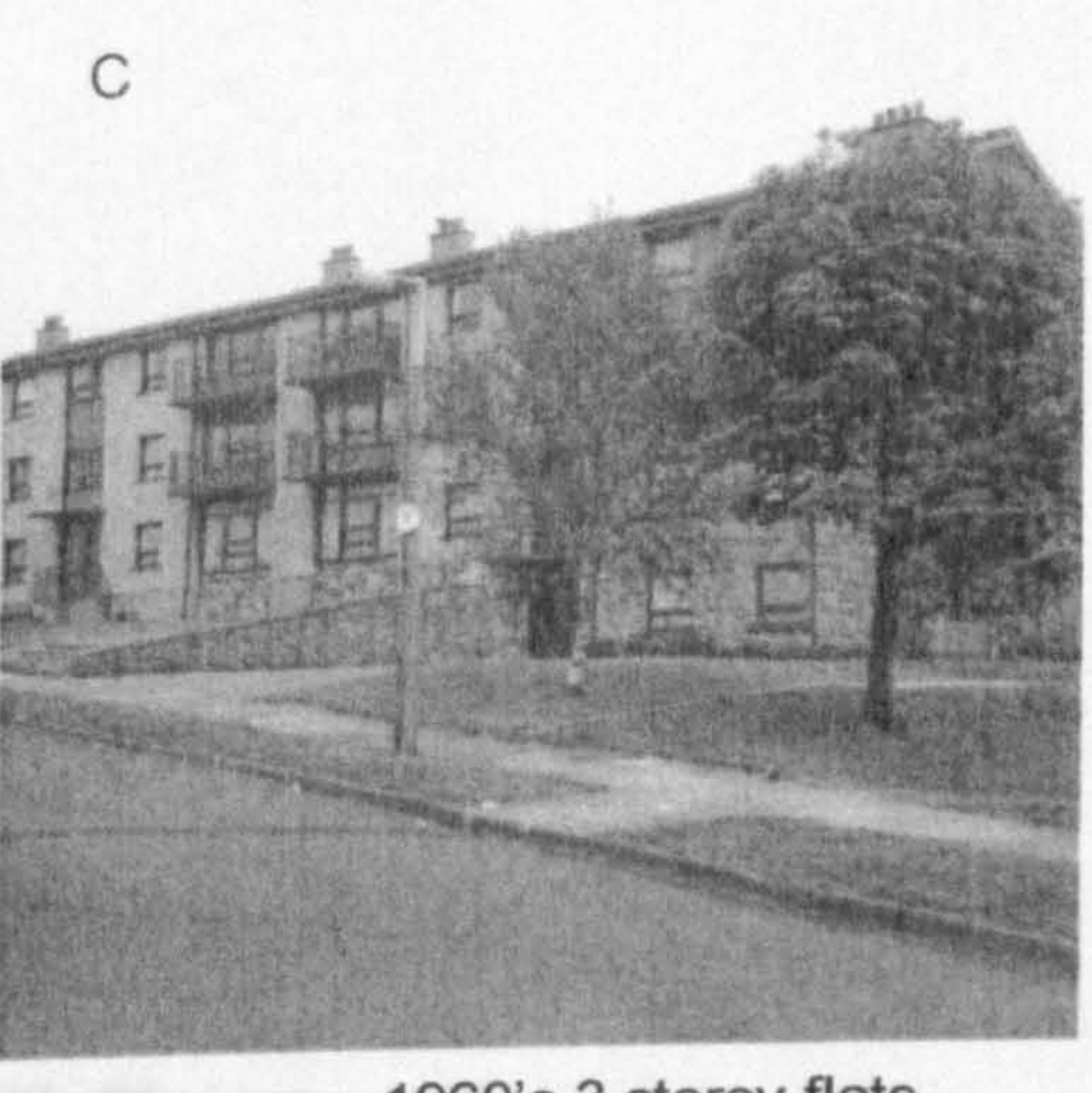
Quality and Density of Development – Card 1



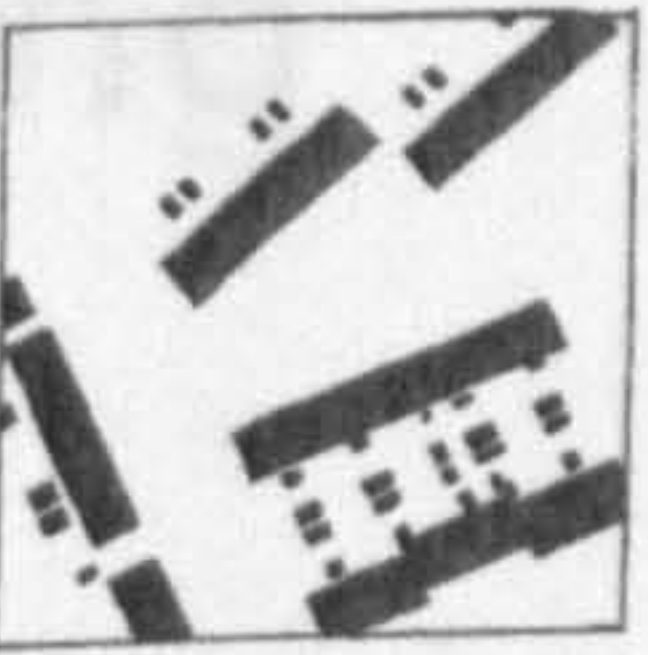
3-4 storey modern townhouses (approx. 30 dwellings per acre)



2-3 storey Victorian terrace (20-25 dwellings per acre)



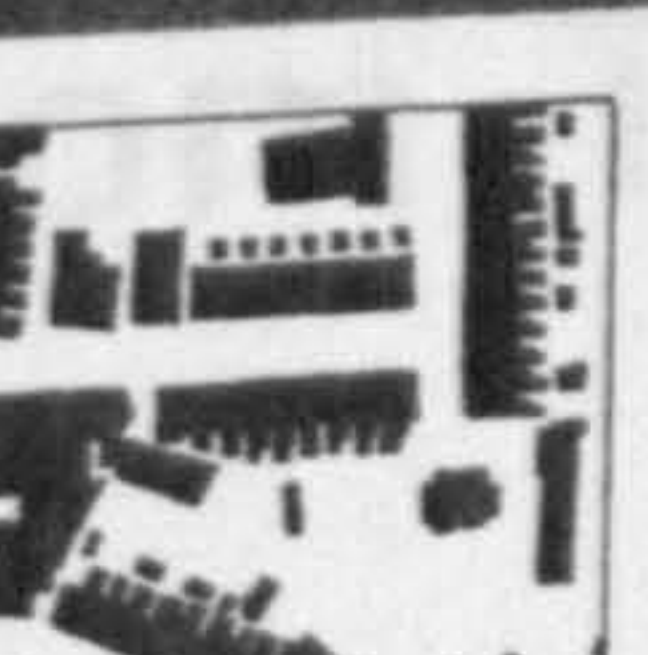
1960's 3 storey flats (approx. 25 dwellings per acre)



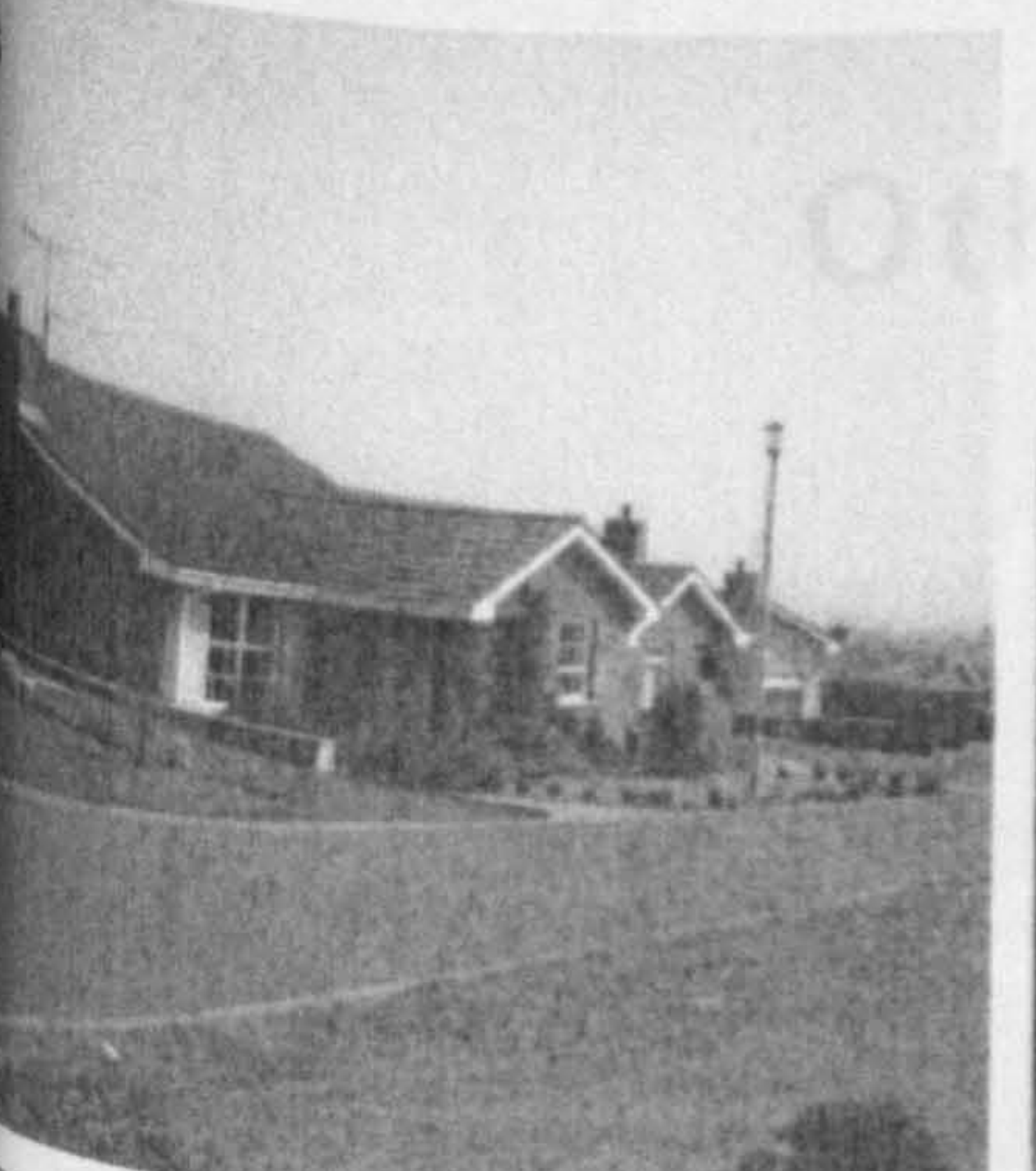
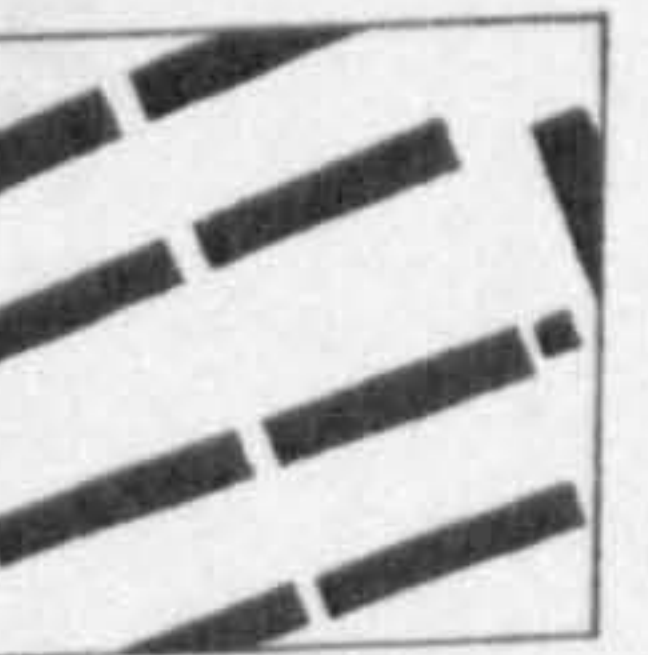
2 storey modern terrace (15-20 dwellings per acre)



2 storey Victorian terrace (approx. 20 dwellings per acre)



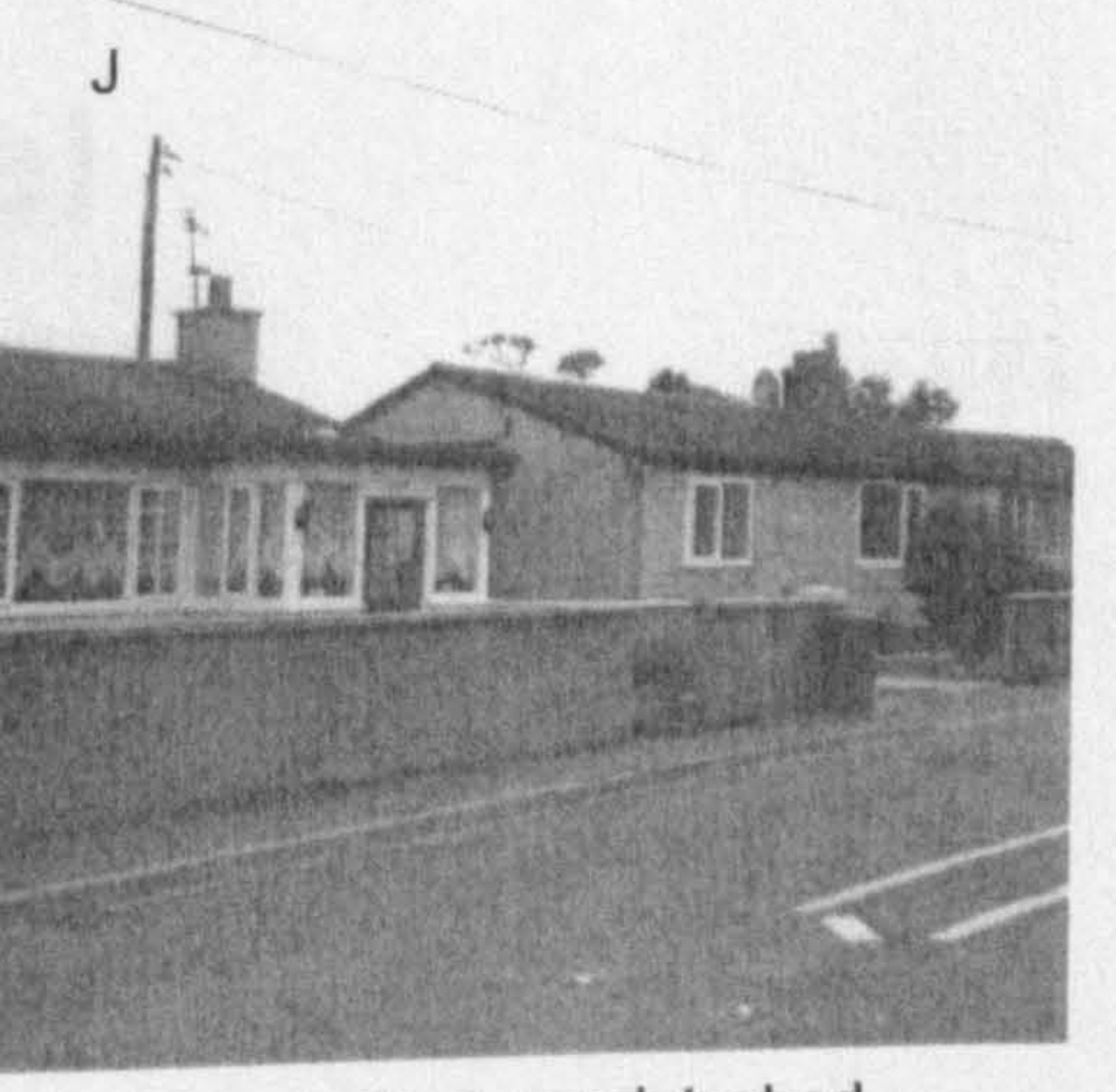
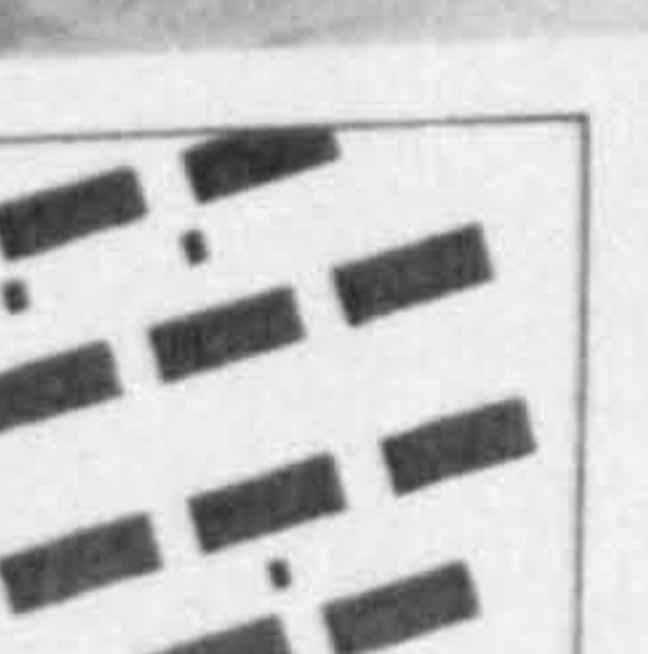
1970's 2 storey terrace (15-20 dwellings per acre)



Modern detached bungalows (10-12 dwellings per acre)



Inter-war detached bungalows (8-10 dwellings per acre)



Post-war detached bungalows (approx. 8 dwellings per acre)



Low Energy Light Bulbs

Double/Triple Glazing

Draft Proofing

Cavity Wall Insulation

Loft Insulation

Room Thermostats

Other (please name)

Paper

Glass

Aluminium

Steel

Plastic

Organic Waste/Composting

Town Centre

Elsewhere in Carrickfergus

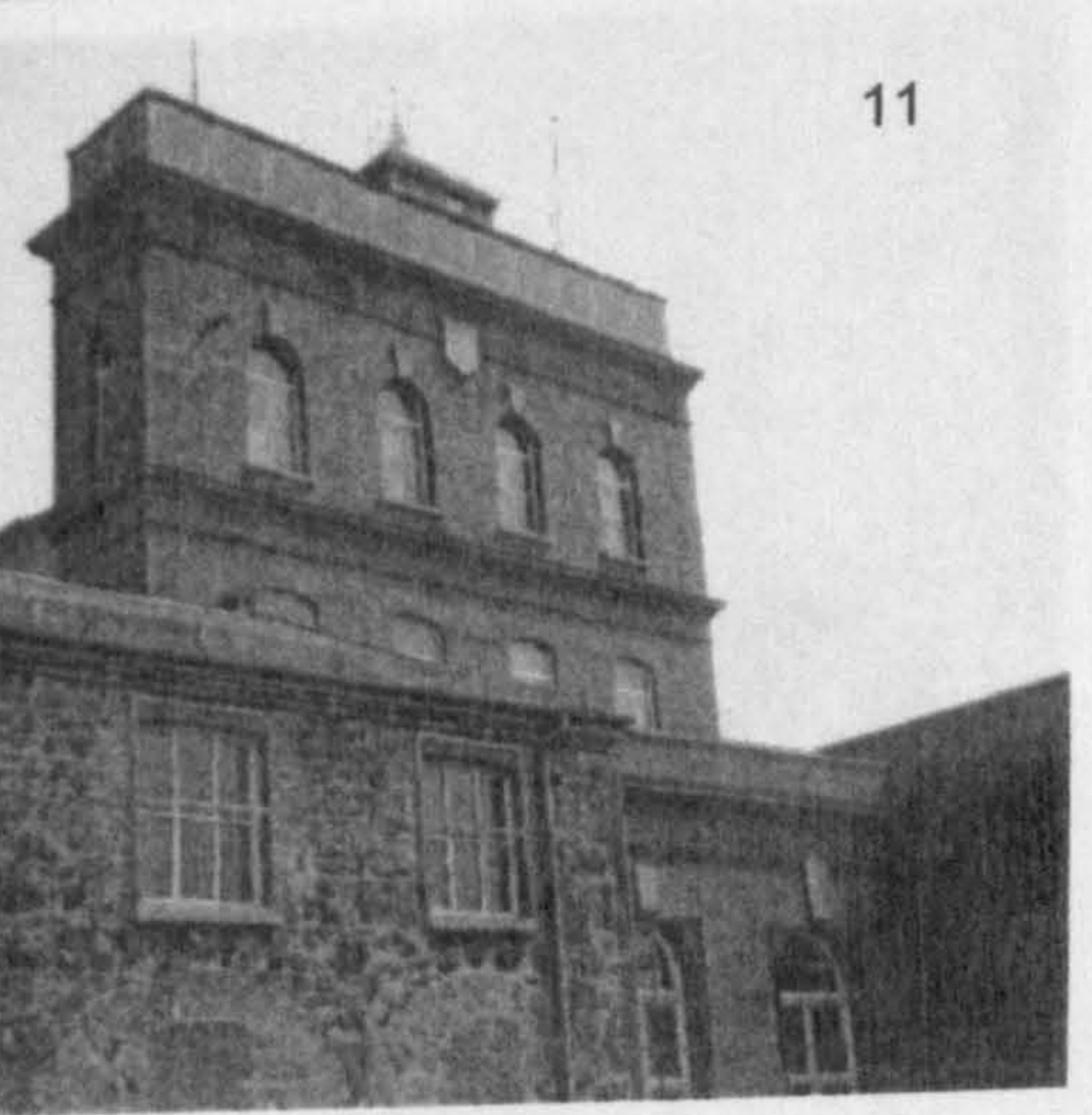
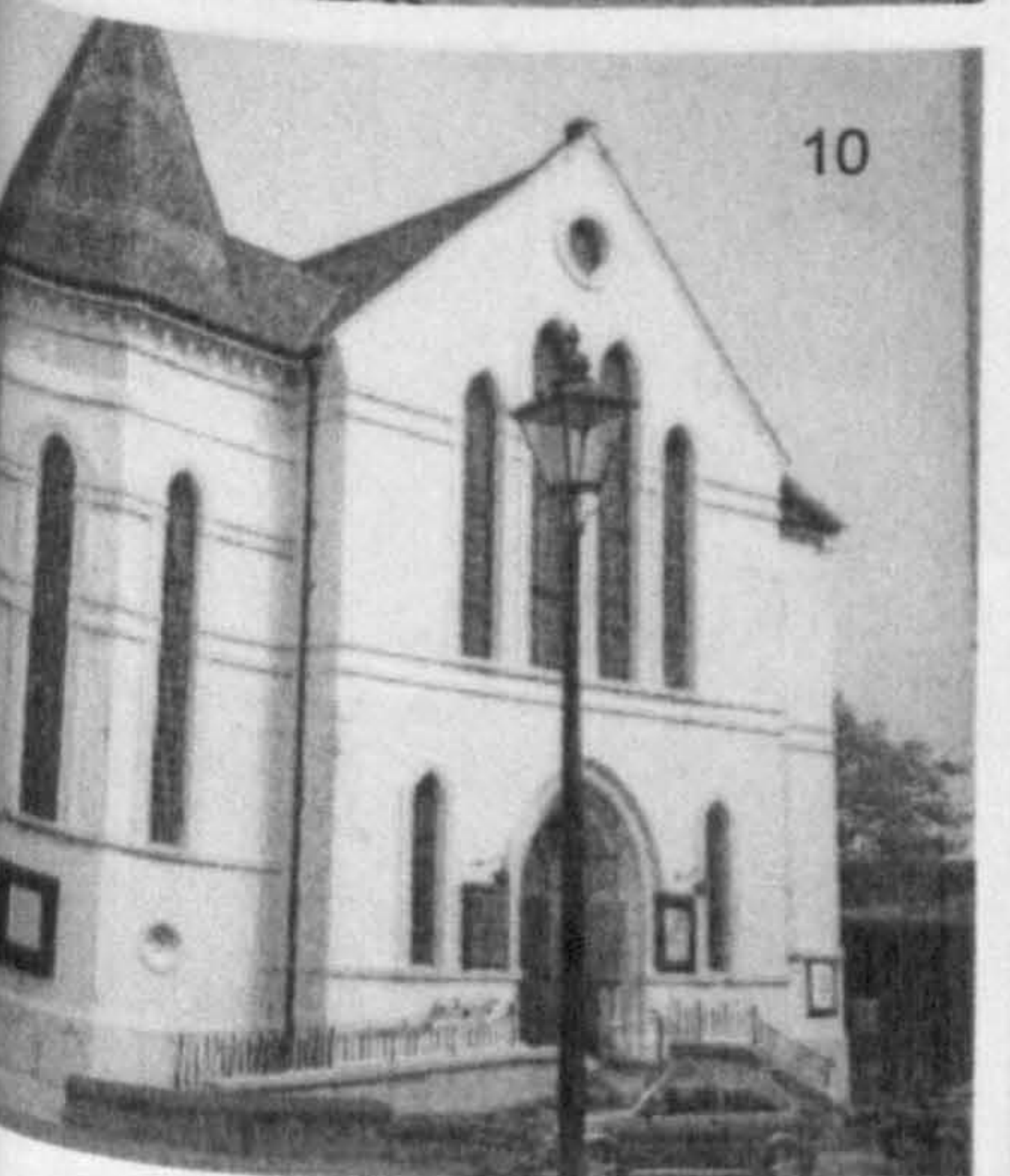
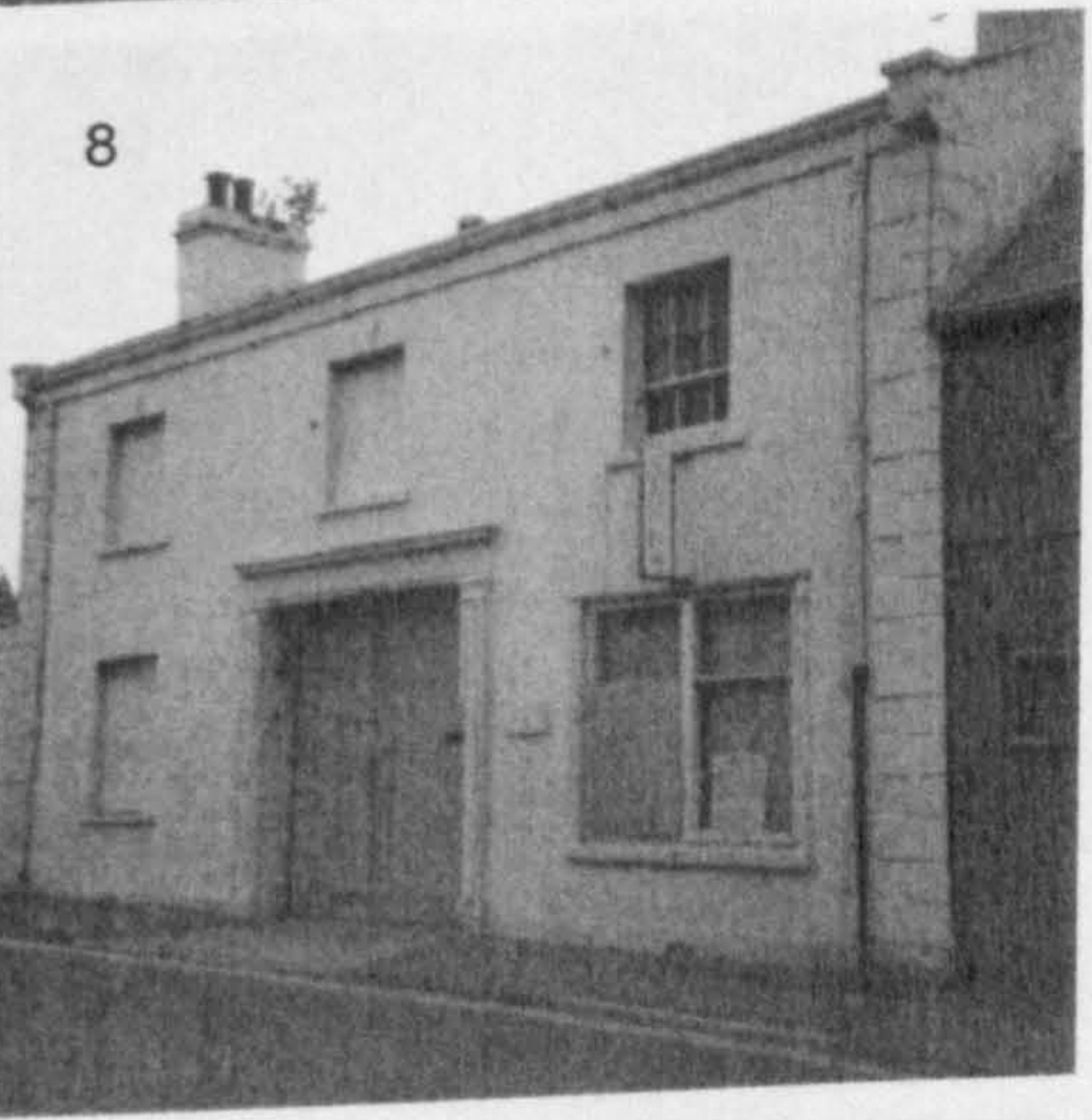
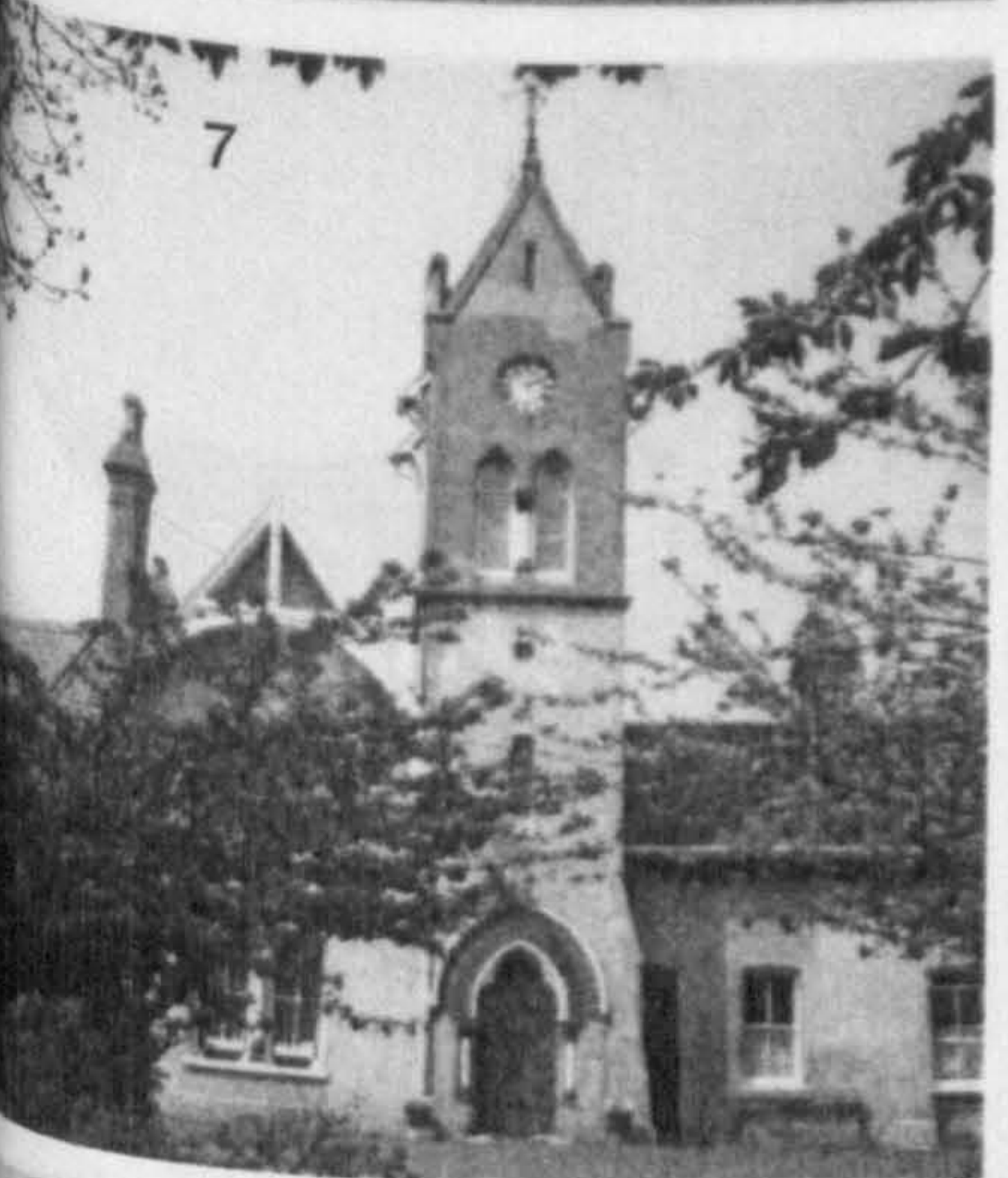
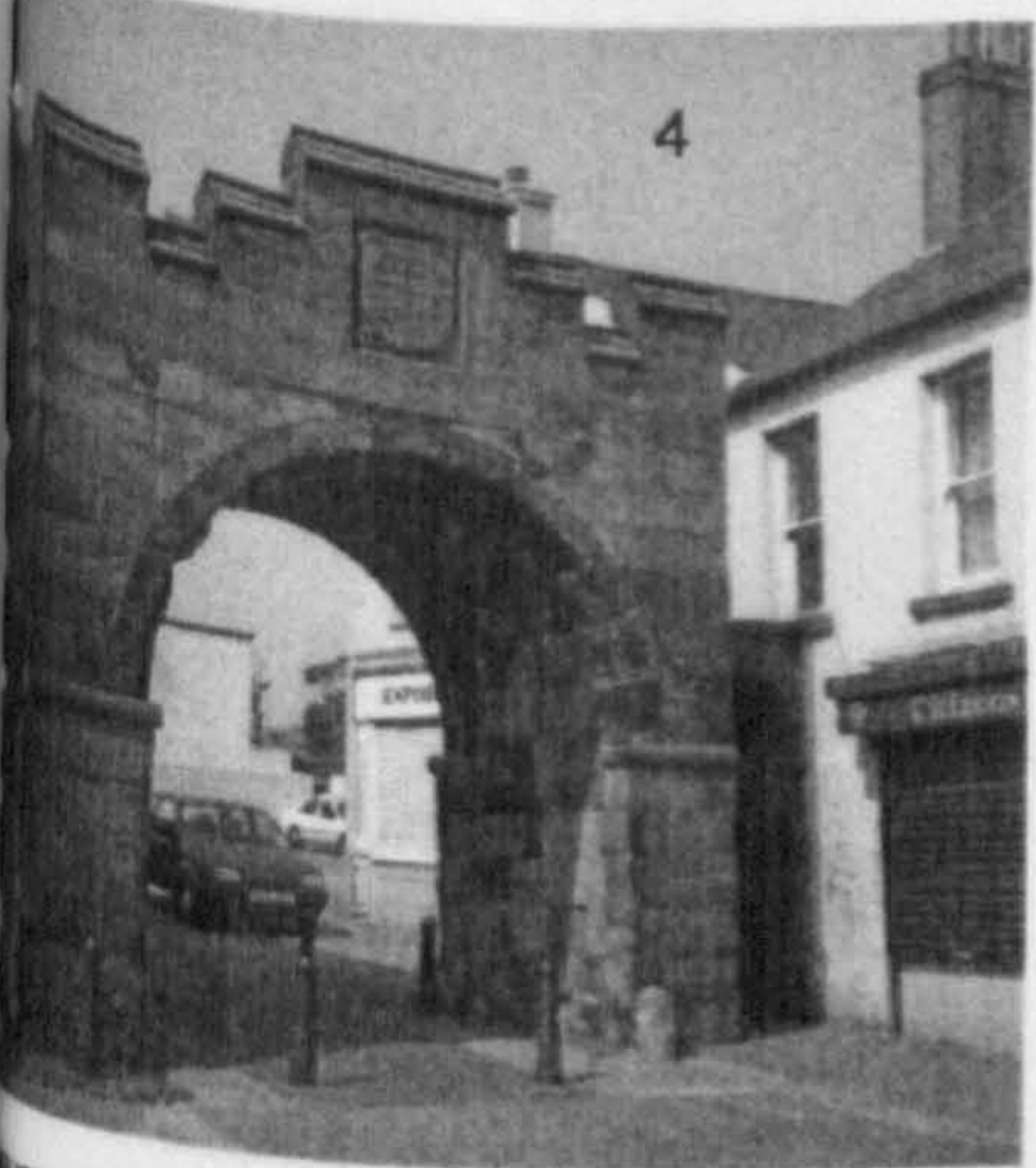
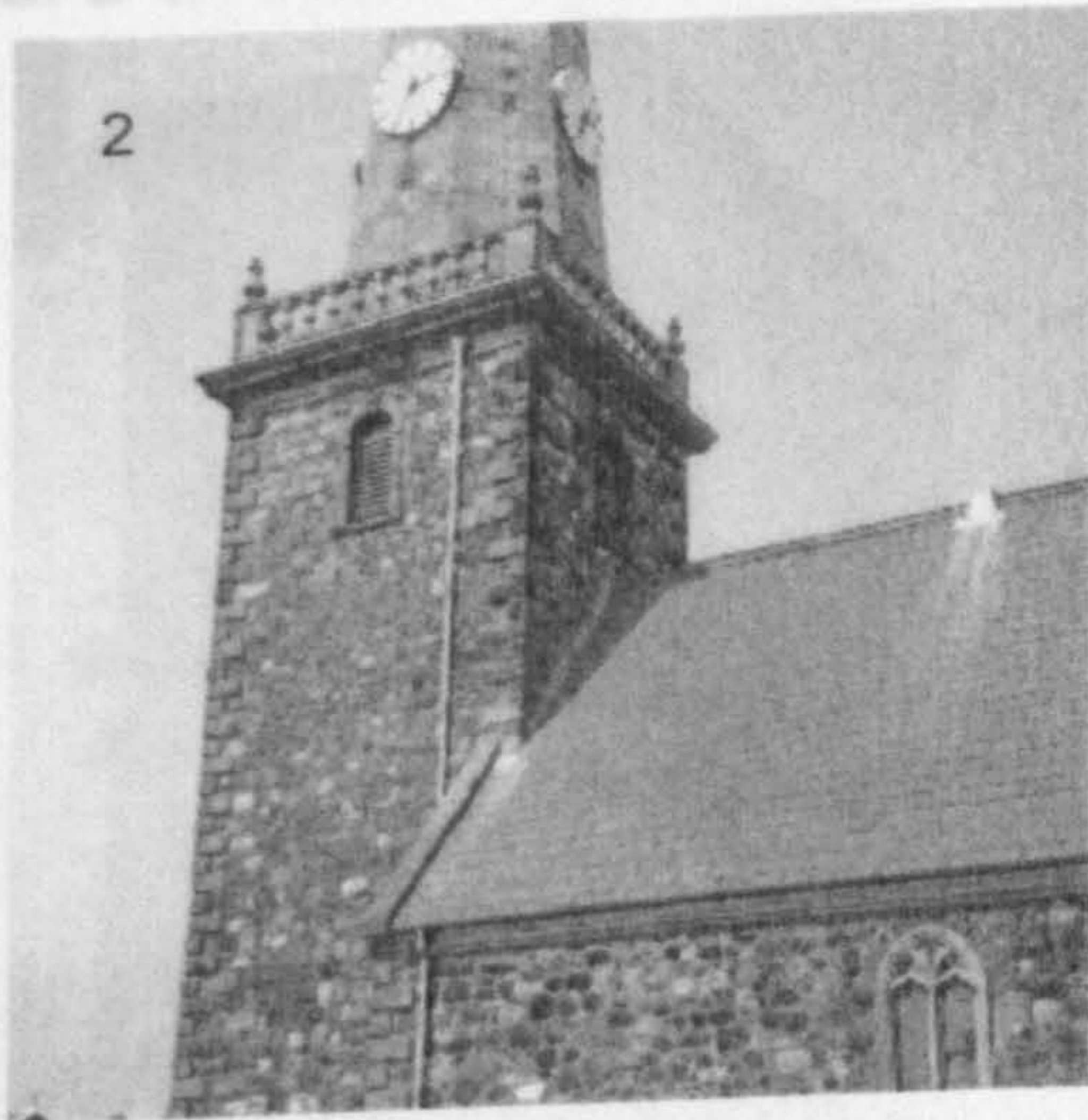
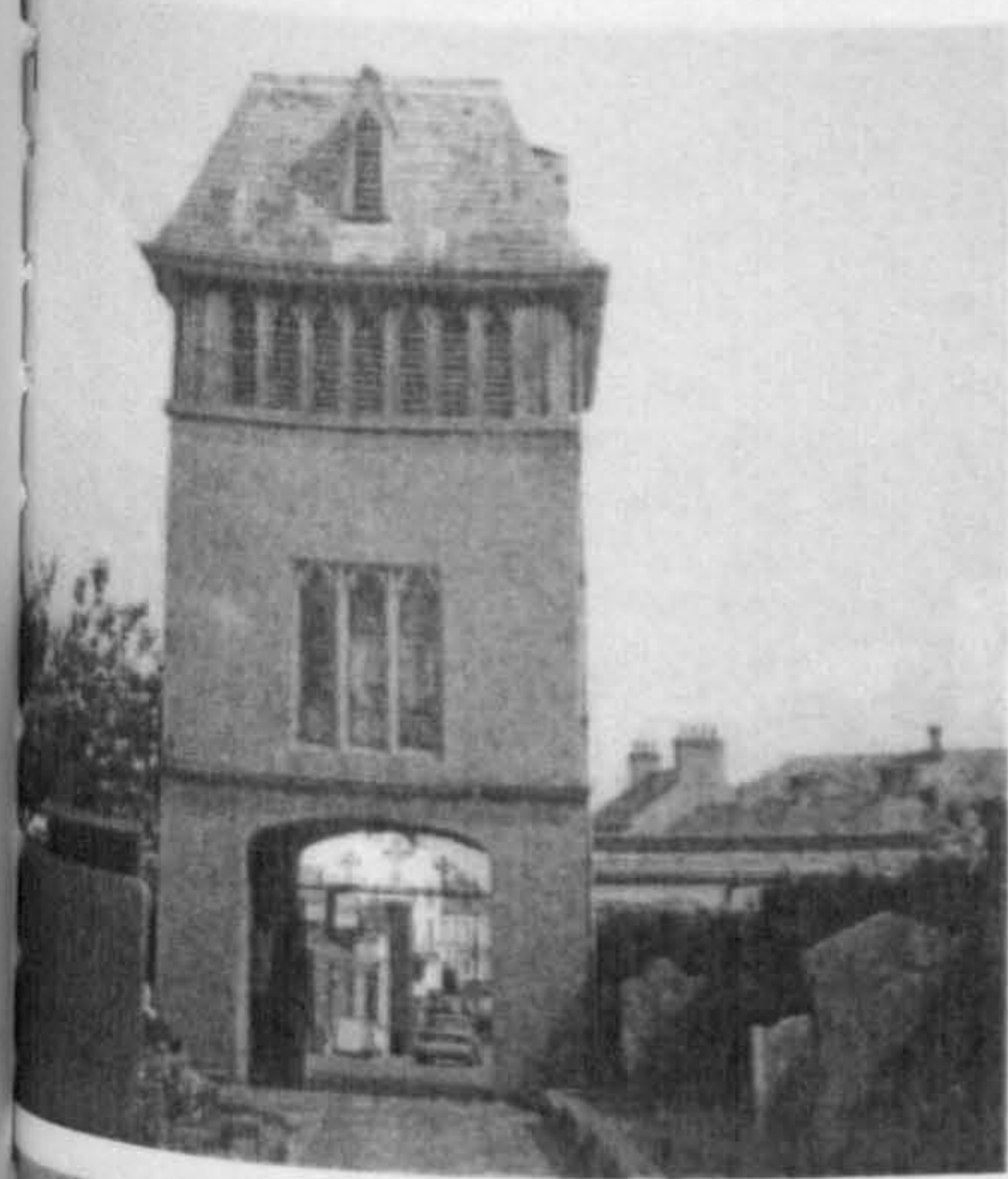
Newtownabbey

Larne

Belfast

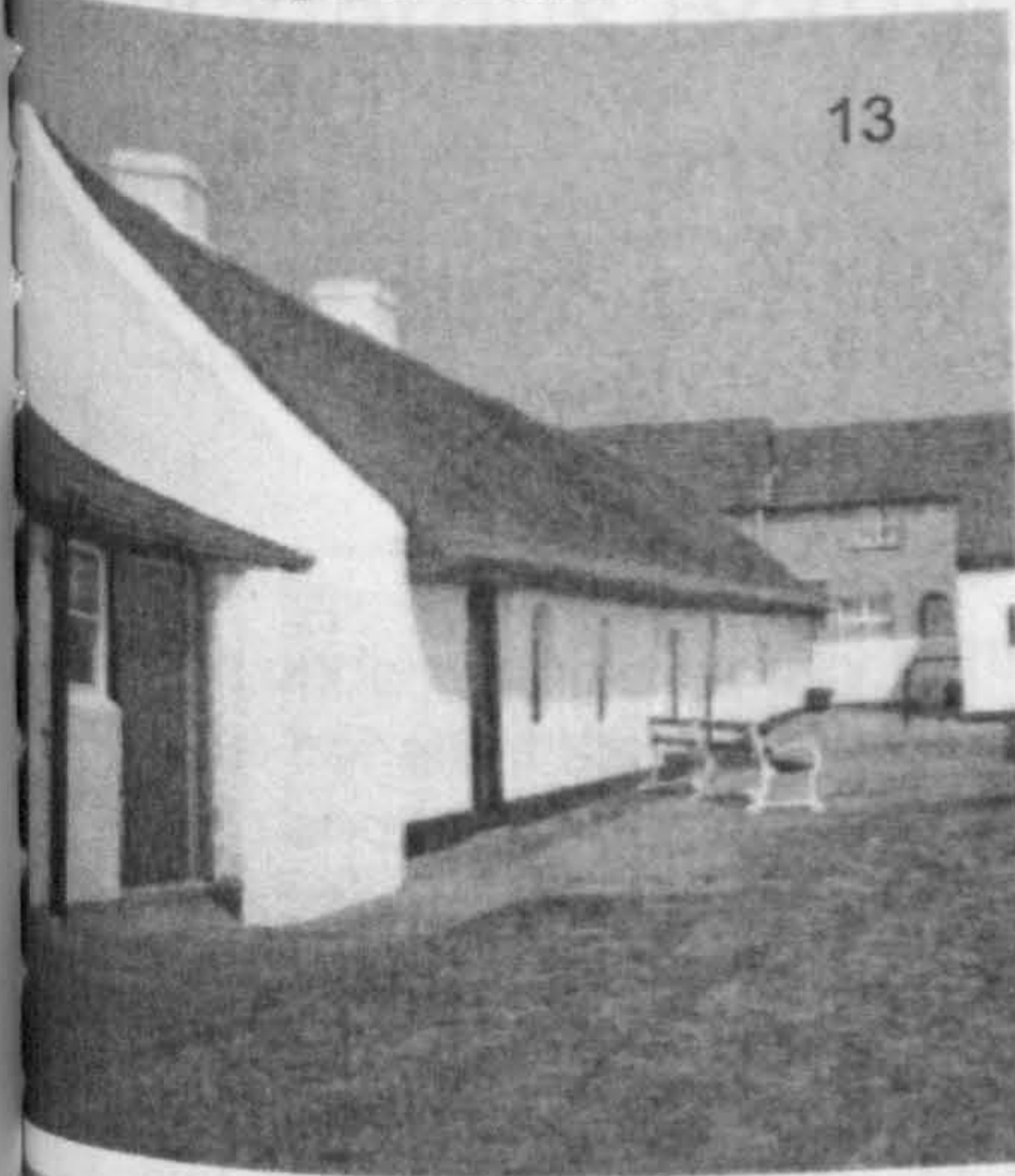
Other

Barrickfergus Landmarks - Card 5



Warrickfergus Landmarks Card 5

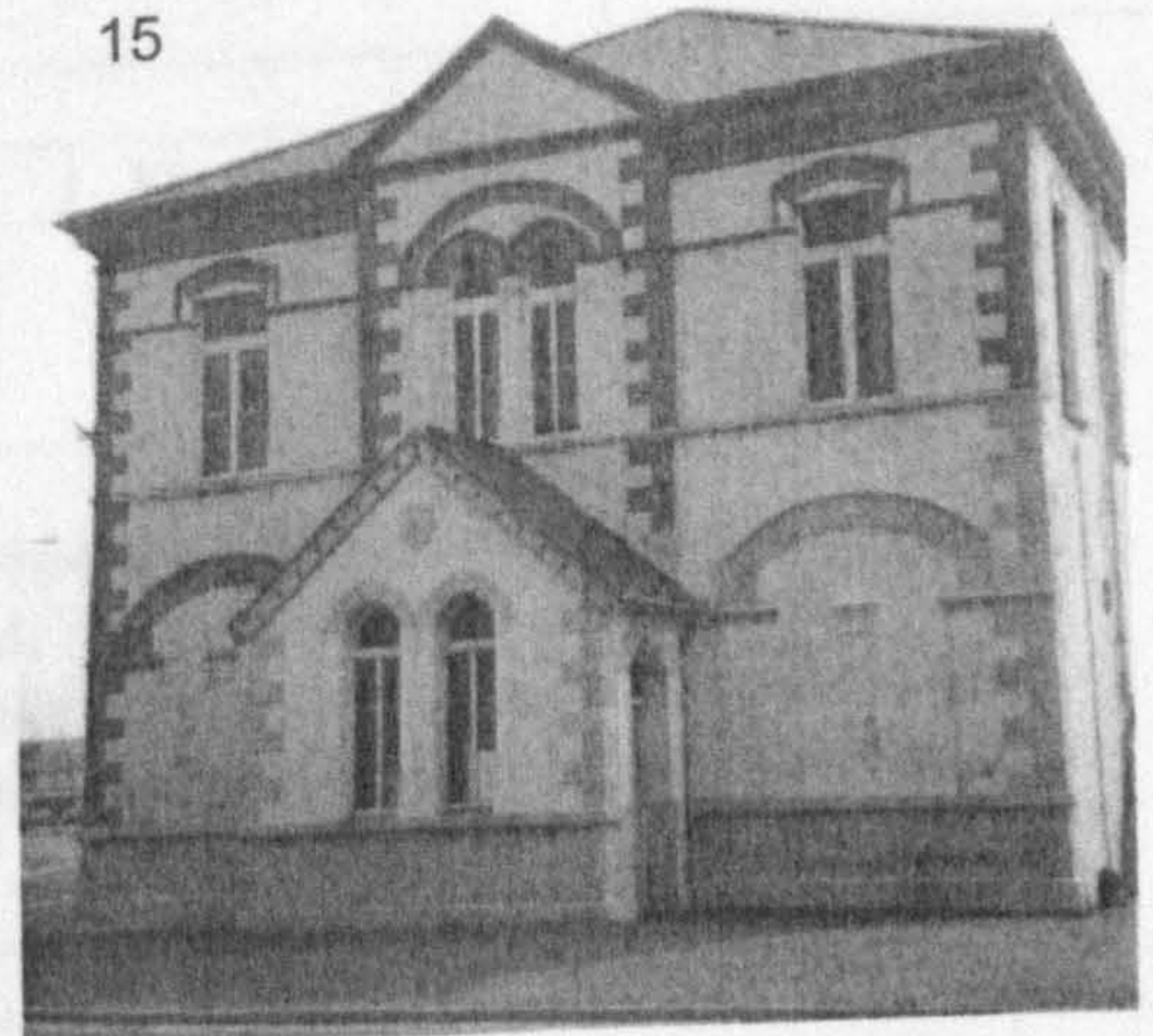
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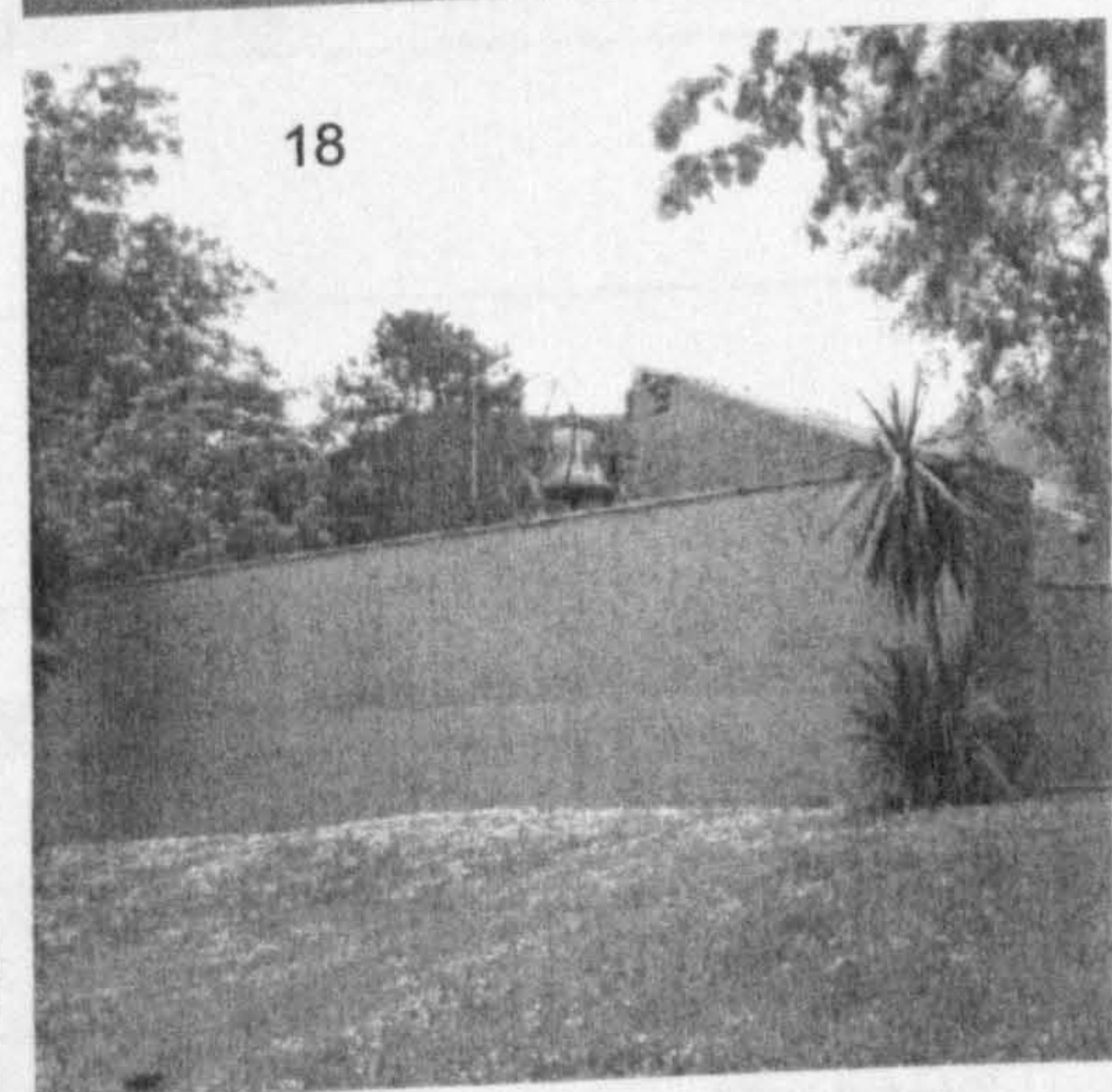
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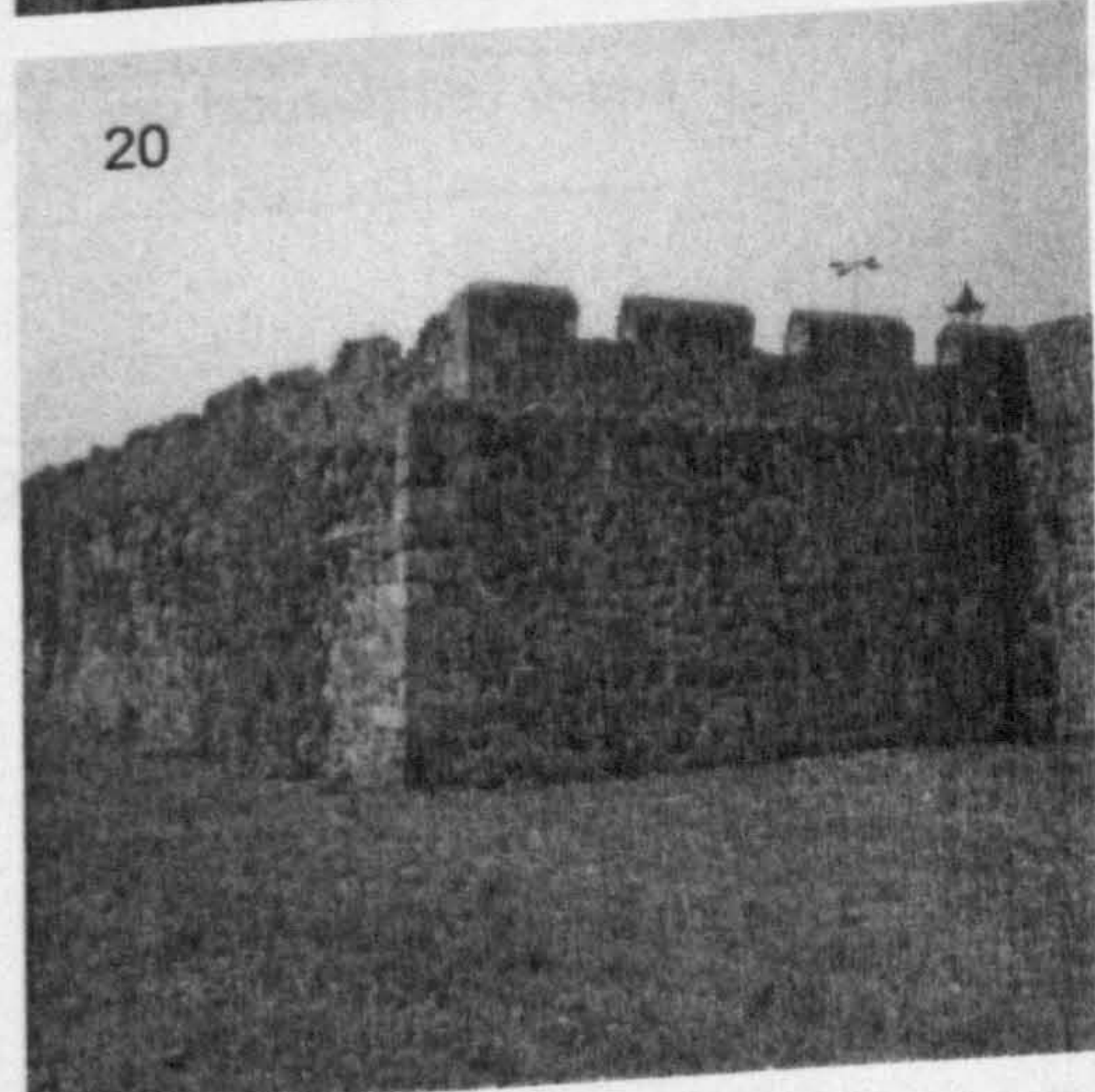
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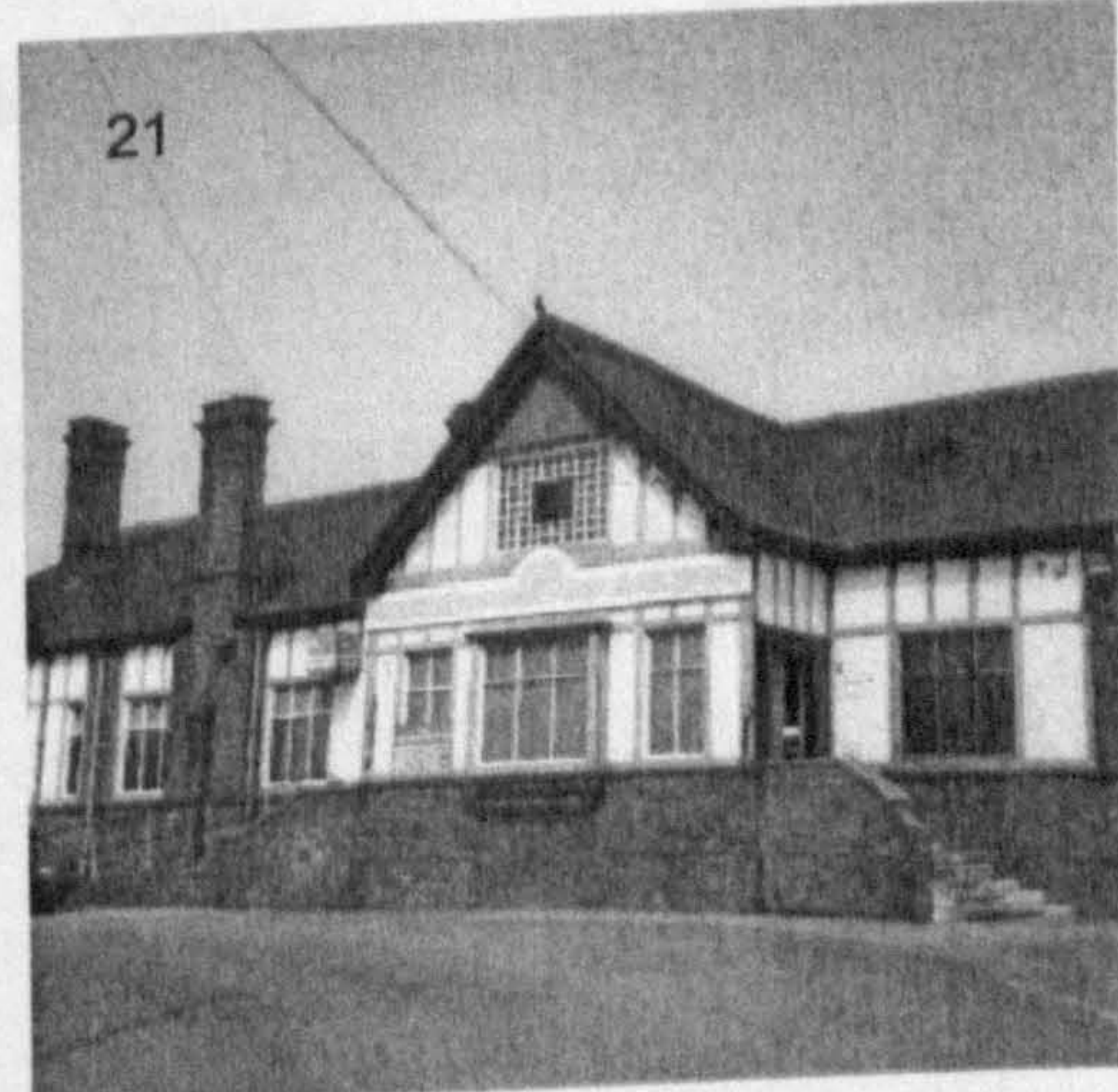
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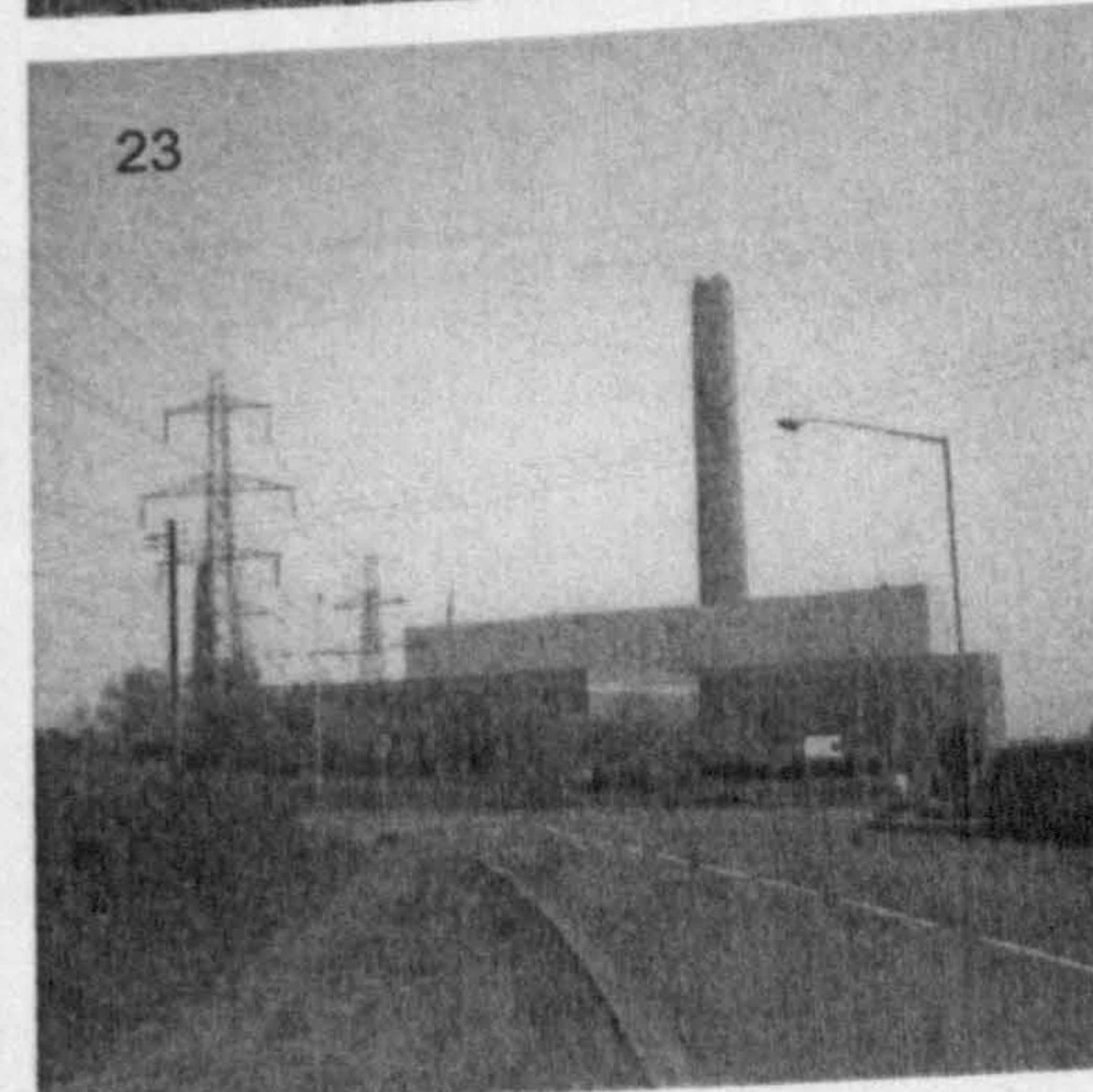
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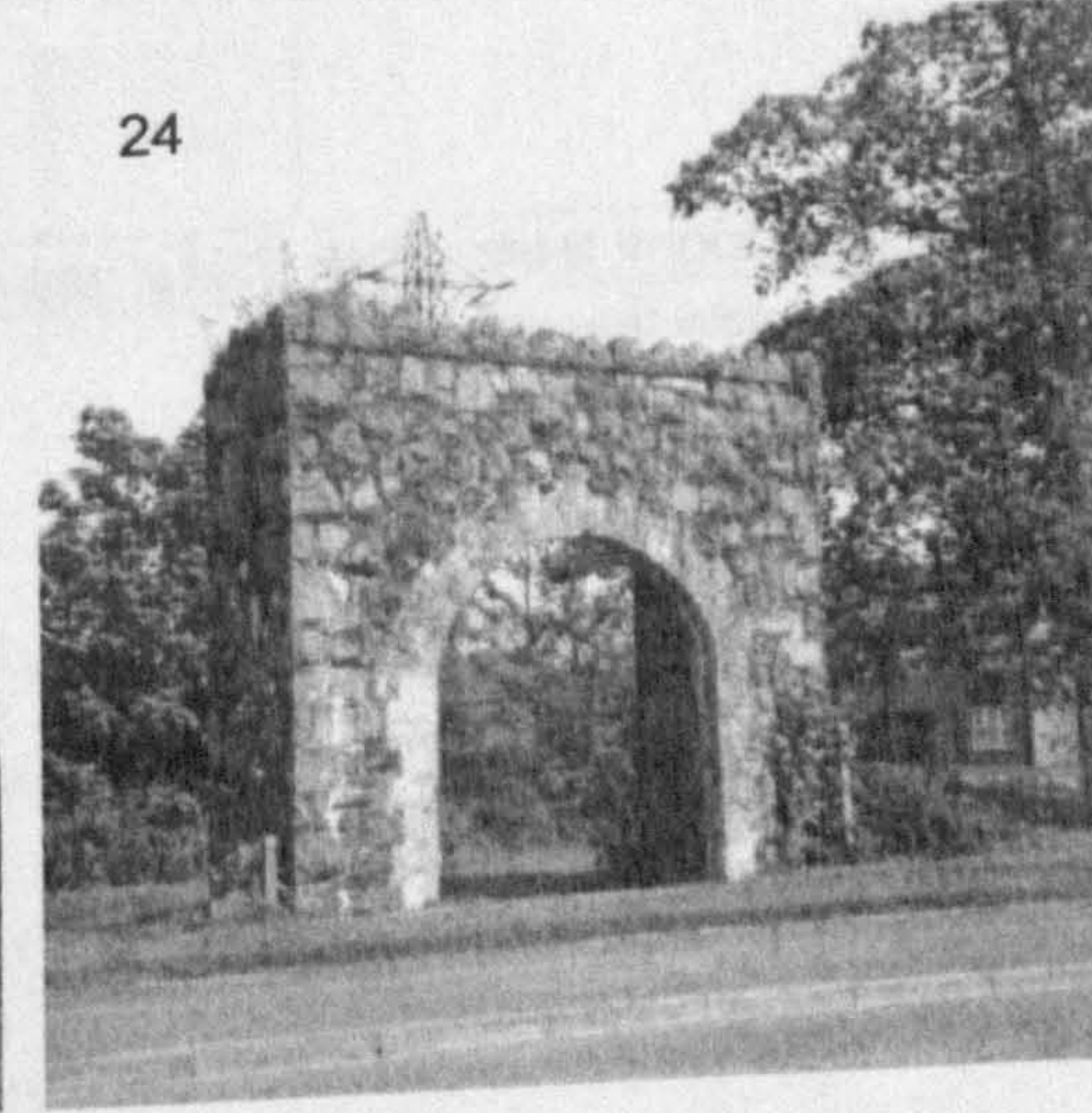
21



23



24



Carrickfergus Borough Council - Household Survey 98

questionnaire no.

Attempts (circle box)				
Target House	Vacant house	2 nd attempt	3 rd attempt	No response after 3 rd attempt
Comments				

Hello, I am undertaking a survey to help assess social, economic and environmental conditions within Carrickfergus Borough on behalf of the Council. You may have read about it in the local papers. I am seeking your views on household conditions, behaviour and perceptions. The survey will be used to help the Council better understand the state of the borough and set priorities for action. (Ask to speak to head of household. If not available, ask to speak to spouse of head of household)

Interviewee (circle box)				
Not at home	Interview refused	Head of household	Spouse	Other (specify)
Comments (set time/date for return visit if appropriate)				
Household address (street/postcode)				

The questions should take around 15 minutes to complete. Thank you for agreeing to take part in this survey. Firstly I would like to ask about your household.

Q1. How long have you lived at this address?	Year(s)	Month(s)
Q2. How long have you lived in Greenisland?	Year(s)	Month(s)
Q3. How many persons are there in the household? (record number)	Adults	Children (under sixteen)

Attitudes

Q4. What do you <i>like</i> about living in Greenisland? If more than one answer, which is the most important?	
Reason (use their words)	Rank (1=most important)
Q5. What do you <i>dislike</i> about living in Greenisland? If more than one answer, which is the most important?	
Reason (use their words)	Rank (1=most important)

Show Quality and Density of Development Card 1. Q6. Can you tell me which type and quality of building you find the most attractive and acceptable in any development? Why does this one appeal to you the most?

Preference (circle box)			Reason (use their words)
A	B	C	
D	E	F	
G	H	J	

Q7. Can you tell me which you like the least and why?

Preference (circle box)			Reason (use their words)
A	B	C	
D	E	F	
G	H	J	

Behaviour - Energy

Q8. Number of storeys						
Q9. Type of property (circle box)	Mid terrace	End terrace	Semi detached	Detached	Apartment/flat	
Q10. What type of fuel do you use for domestic heating? (circle box. if dual, ask for approximate % of each fuel type?)						
Coal	%	Gas	%	Oil	%	Electricity
				Yes	No	Don't Know
Q11. Do you use electricity for other forms of energy use other than domestic heating (cooking, lighting etc)? (circle box)				Yes	No	Don't Know
Q12. What is your total annual fuel bill (if known)? (circle unit)		£/quarterly bill bags of coal/oil tank fills per year				

Show Card 2. Q13. Do you have any of the following energy saving features in your home?
(yes/no/don't know)

Low energy light bulbs	Therm radiator valves
Double/triple glazing	Timer control
Draft proofing	7 day programmer
Cavity wall insulation	3 port valve
Loft insulation	K glass (low emissivity)
Room thermostats	Low energy fridge

Behaviour - Waste & Recycling

Q14. Can you tell me the location of your nearest recycling point? (location/don't know)			
Q15. Do you recycle? (circle box)		Yes	No
If yes, Show Card 3. Q16. Which of the following materials do you recycle regularly? (yes/no/don't know)			
Paper	Steel		
Glass	Plastic		
Aluminium	Organic waste/composting		
Q17. Approximately how much waste does the household produce each week? (circle units)		Number of black bags Number of wheelie bins (large/medium/small)	
Q18. What would encourage you to recycle more? (use their words)			

behaviour - Transport

Q19. Do you or your partner work? If yes, where? (record town/location)	
Q20. What is your mode of travel to work? (circle box/if more than one, record main mode)	
Car	Train
Bus	Motorcycle
Bicycle	Walk
Other	
Q21. How many cars are there in the household? (record number)	
Q22. How many bicycles are there in the household? (record number)	

behaviour - Shopping

Show Card 4. Q23. Where do you normally shop for the following goods? (record town/location)	
Groceries?	
Clothing?	
White goods?	

Knowledge & Perceptions

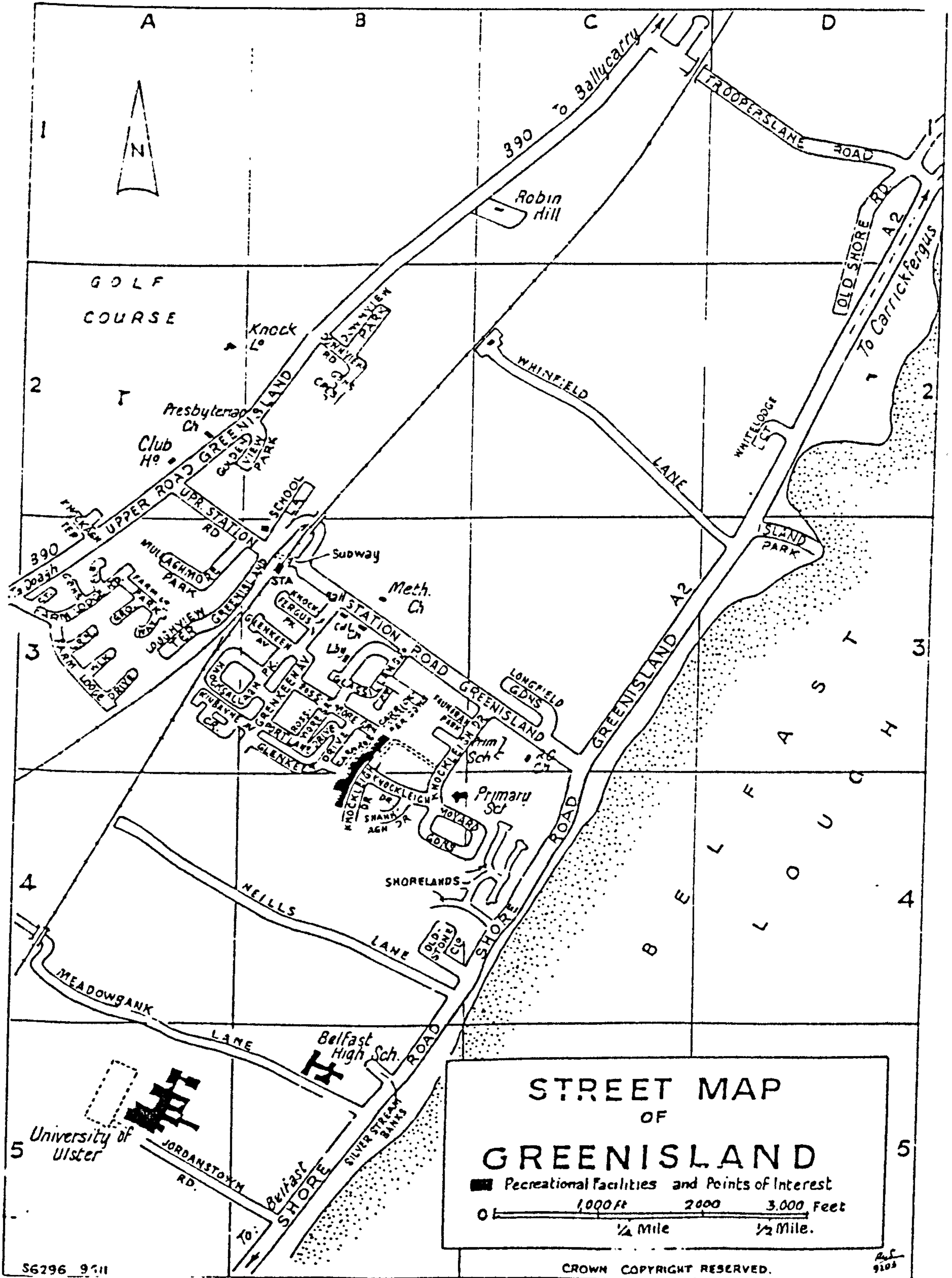
Show Card 5. Q24. Can you identify and name the following local landmarks? (tick box if named correctly)			
1. Presbyterian Church		2. Jubilee Hall	
4. Church of the Holy Name (Col)		5. Greenisland War Memorial Sports Club	
7. Knockagh War Memorial		8. NI Railways/ Greenisland Station	
		3. Greenisland Primary School	
		6. Greenisland Library	
		9. Recycling Point/ Glassillan Green	

Q25. What elements of the local environment that you would like to see preserved?

Q26. Are there any additional comments you wish to make about living in Greenisland?

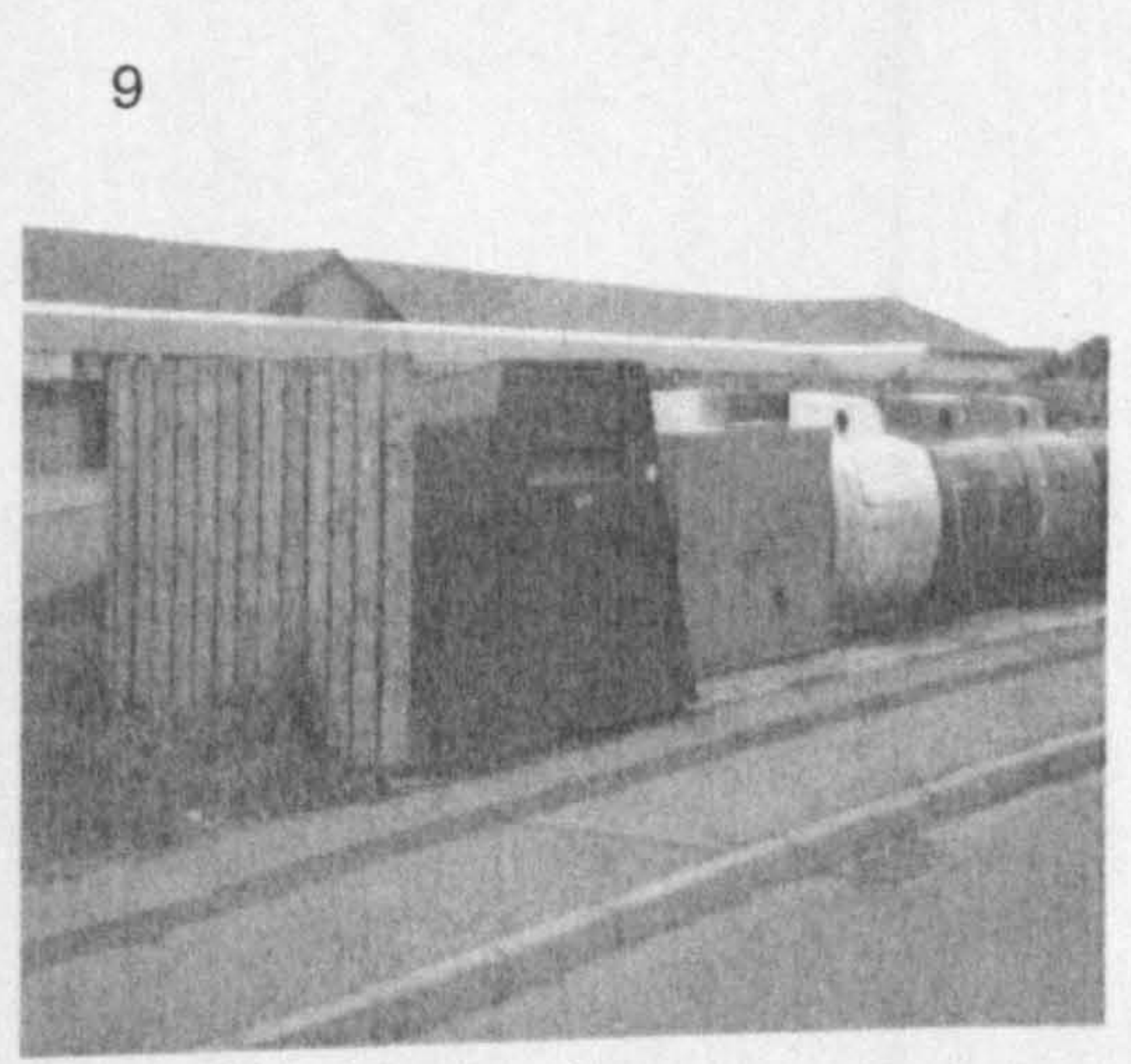
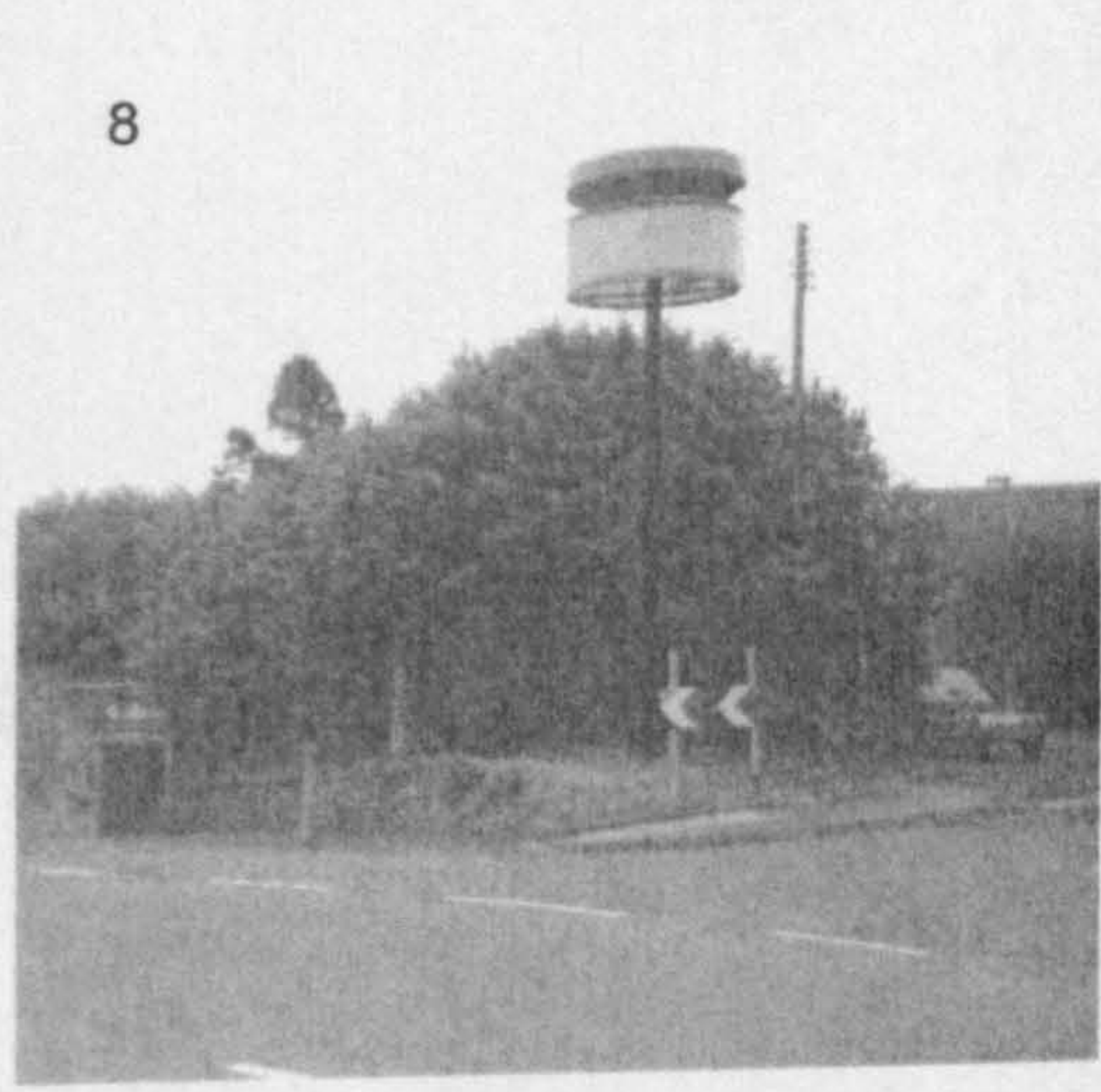
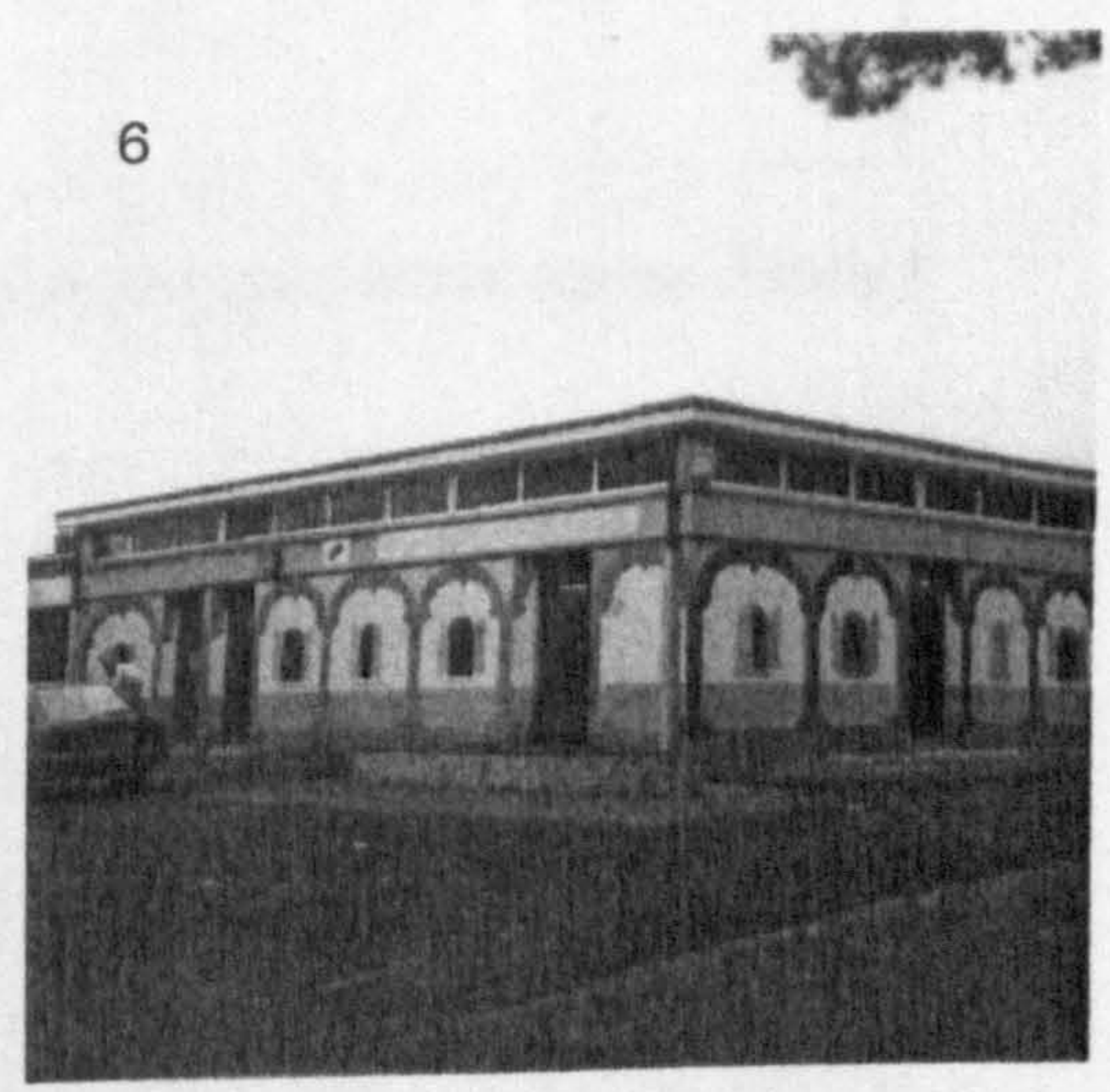
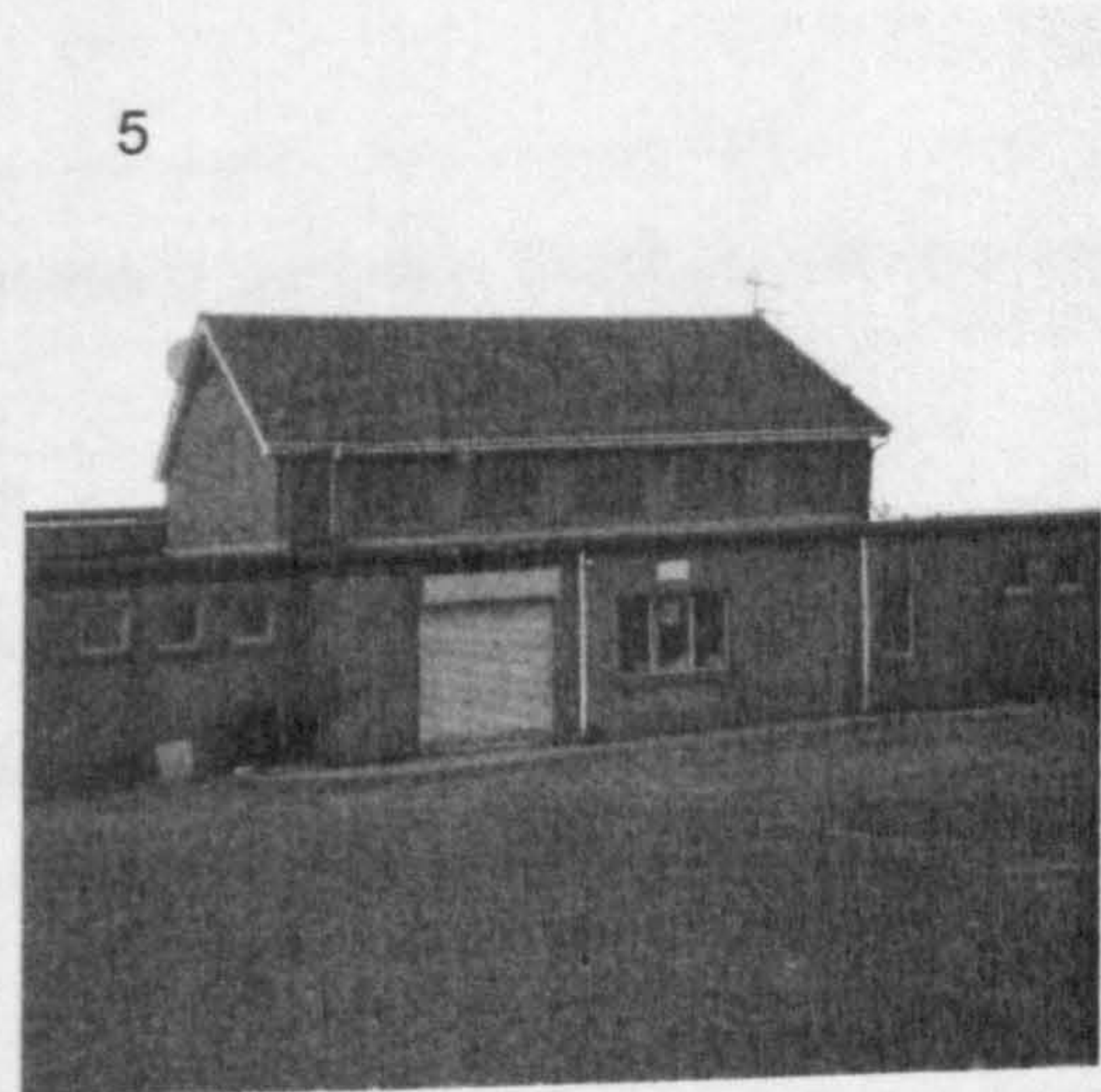
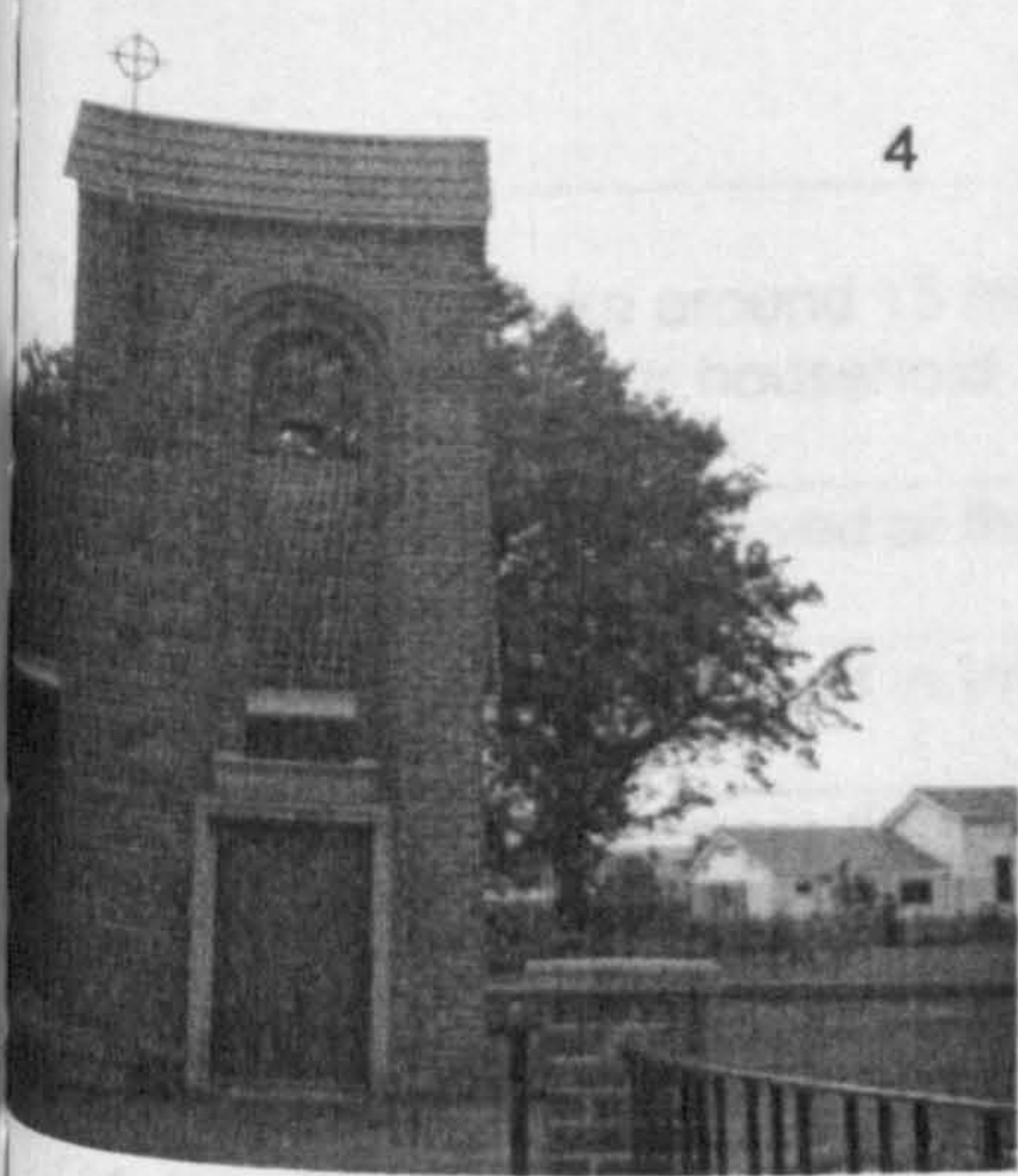
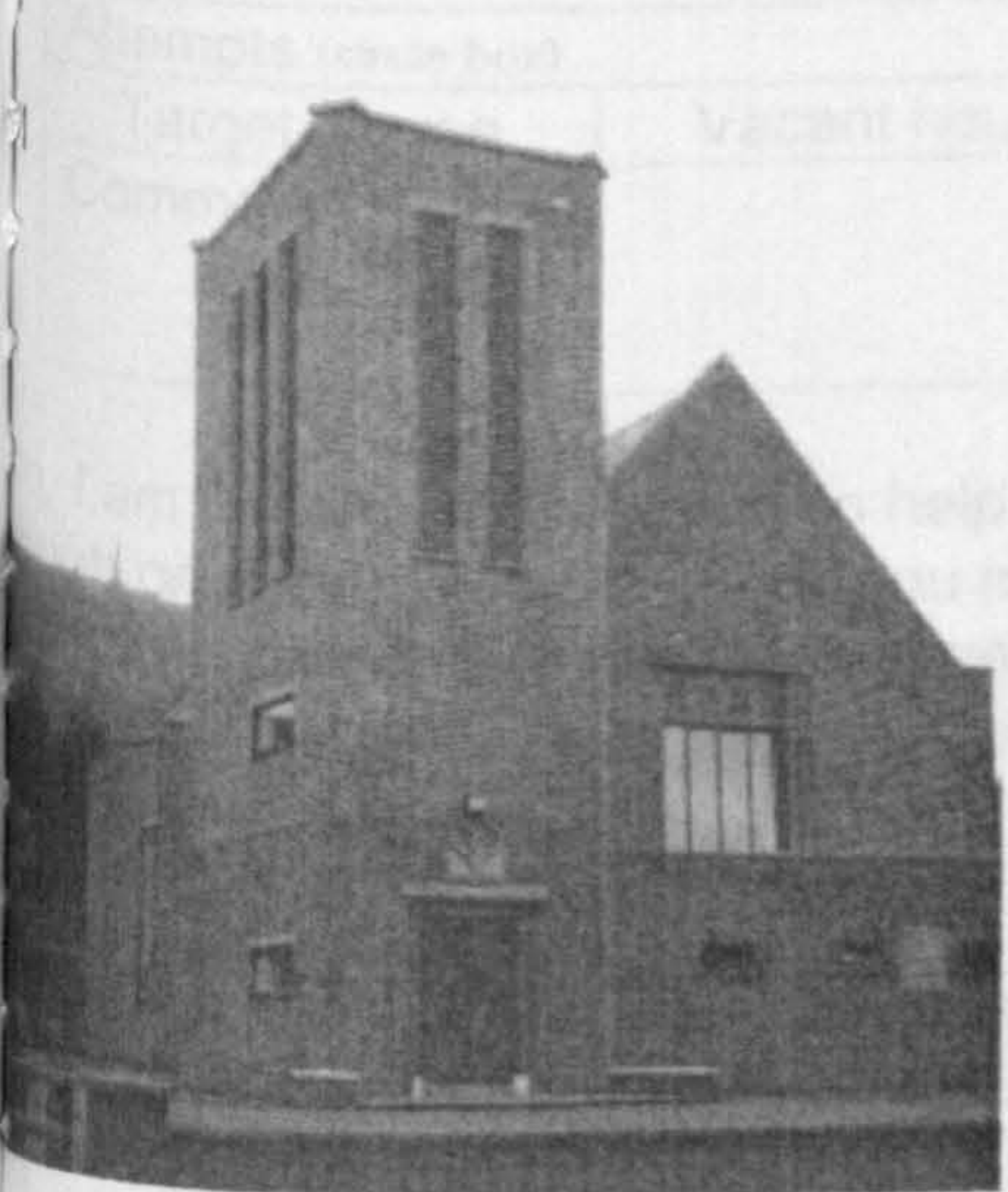
Q27. Have you heard of the phrase <i>sustainable development</i> ? (circle box)	Yes	No	Don't Know
If yes, what does <i>sustainable development</i> mean to you personally? (use their words)			
Q28. Have you heard of the term <i>local agenda 21</i> ? (circle box)	Yes	No	Don't Know
If yes, can you briefly explain what you understand by the term <i>local agenda 21</i> ? (use their words)			

Q29. Can you draw a line around the area on the map below that you understand to be your neighbourhood?



Thank you for your time and help in completing this survey. All your answers will be treated as confidential and will be used by the Borough Council to help prepare a Local Agenda 21 strategy to improve the quality of life in Greenisland in the 21st century.

Greenisland Landmarks - Card 5



Carrickfergus Borough Council - Household Survey 98

questionnaire no.

Attempts (circle box)				
Target House	Vacant house	2 nd attempt	3 rd attempt	No response after 3 rd attempt
Comments				

I am undertaking a survey to help assess social, economic and environmental conditions within Carrickfergus on behalf of the Council. You may have read about it in the local papers. I am seeking your views on household conditions, behaviour and perceptions. The survey will be used to help the Council better understand the needs of the borough and set priorities for action. (Ask to speak to head of household. If not available, ask to speak to spouse of head of household)

Interviewee (circle box)				
Not at home	Interview refused	Head of household	Spouse	Other (specify)
Comments (set time/date for return visit if appropriate)				
Household address (street/postcode)				

These questions should take around 15 minutes to complete. Thank you for agreeing to take part in this survey. Firstly I would like to ask about your household.

Q1. How long have you lived at this address?	Year(s)	Month(s)
Q2. How long have you lived in Whitehead?	Year(s)	Month(s)
Q3. How many persons are there in the household? (record number)	Adults	Children (under sixteen)

Includes

Q4. What do you <i>like</i> about living in Whitehead? If more than one answer, which is the most important?	
Reason (use their words)	Rank (1=most important)
Q5. What do you <i>dislike</i> about living in Whitehead? If more than one answer, which is the most important?	
Reason (use their words)	Rank (1=most important)

Show Quality and Density of Development Card 1. Q6. Can you tell me which type and quality of building you find the most attractive and acceptable in any development? Why does this one appeal to you the most?

Preference (circle box)			Reason (use their words)
A	B	C	
D	E	F	
G	H	J	

Q7. Can you tell me which you like the least and why?

Preference (circle box)			Reason (use their words)
A	B	C	
D	E	F	
G	H	J	

behaviour - Energy

Q8. Number of storeys								
Q9. Type of property (circle box)	Mid terrace	End terrace	Semi detached	Detached	Apartment/flat			
Q10. What type of fuel do you use for domestic heating? (circle box. if dual, ask for approximate % of each fuel type?)								
Coal	%	Gas	%	Oil	%	Electricity	%	Don't Know
Q11. Do you use electricity for other forms of energy use other than domestic heating (cooking, lighting etc)? (circle box)				Yes	No	Don't Know		
Q12. What is your total annual fuel bill (if known)? (circle unit)						£/quarterly bill bags of coal/oil tank fills per year		

Show Card 2. Q13. Do you have any of the following energy saving features in your home?
(yes/no/don't know)

Low energy light bulbs		Therm radiator valves	
Double/triple glazing		Timer control	
Draft proofing		7 day programmer	
Cavity wall insulation		3 port valve	
Loft insulation		K glass (low emissivity)	
Room thermostats		Low energy fridge	

behaviour - Waste & Recycling

Q14. Can you tell me the location of your nearest recycling point? (location/don't know)			
Q15. Do you recycle? (circle box)		Yes	No
If yes, Show Card 3. Q16. Which of the following materials do you recycle regularly? (yes/no/don't know)			
Paper		Steel	
Glass		Plastic	
Aluminium		Organic waste/composting	
Q17. Approximately how much waste does the household produce each week? (circle units)		Number of black bags Number of wheelie bins (large/medium/small)	
Q18. What would encourage you to recycle more? (use their words)			

behaviour - Transport

Q19. Do you or your partner work? If yes, where? (record town/location)							
Q20. What is your mode of travel to work? (circle box/if more than one, record main mode)							
Car	Train	Bus	Motorcycle	Bicycle	Walk	Other	
Q21. How many cars are there in the household? (record number)							
Q22. How many bicycles are there in the household? (record number)							

behaviour - Shopping

Show Card 4. Q23. Where do you normally shop for the following goods? (record town/location)	
Groceries?	
Clothing?	
White goods?	

Knowledge & Perceptions

Show Card 5. Q24. Can you identify and name the following local landmarks? (tick box if named correctly)					
1. Railway Station/ Signal Box	<input type="checkbox"/>	2. Presbyterian Church, Kings Road	<input type="checkbox"/>	3. Former Coastguard Station, Beach Road	<input type="checkbox"/>
4. Bowling/ sports pavilion	<input type="checkbox"/>	5. Community Centre	<input type="checkbox"/>	6. St Patricks Church (Col), Victoria Avenue	<input type="checkbox"/>
7. Castle Chester, Marine Parade	<input type="checkbox"/>	8. Railway Preservation Society of Ireland, workshops/ sidings	<input type="checkbox"/>	9. Former swimming pool/ Rangers supporters club	<input type="checkbox"/>
10. Lourdes Church (RC), Victoria Avenue	<input type="checkbox"/>	11. Blackhead Lighthouse	<input type="checkbox"/>	12. Philips' Garage, Victoria Avenue	<input type="checkbox"/>

Q25. What elements of the local environment that you would like to see preserved?

Q26. Are there any additional comments you wish to make about living in Whitehead?

Q27. Have you heard of the phrase <i>sustainable development</i> ? (circle box)	Yes	No	Don't Know
If yes, what does <i>sustainable development</i> mean to you personally? (use their words)			

Q28. Have you heard of the term <i>local agenda 21</i> ? (circle box)	Yes	No	Don't Know
If yes, can you briefly explain what you understand by the term <i>local agenda 21</i> ? (use their words)			

Whitehead

Carrickfergus

Newtownabbey

Larne

Belfast

Other

Whitehead Landmarks - Card 5

