Delivering Sustainable Urban Housing through Local Strategic Partnerships

Developing Capacity and Knowledge

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Summary

This report examines the role of local strategic partnerships and regeneration companies in developing sustainable housing projects. In particular, it looks at housing projects that are designed to be sustainable by minimising greenhouse gas emissions once the buildings are occupied.

The report:

- Reviews the legislative framework supporting sustainable housing.
- Examines the tools available in regeneration projects that can help ensure key sustainability issues are considered.
- Investigates the role of the key professionals (i.e. the design team) and their knowledge and experience of the relevant guidance and sustainable development issues.
- Provides an assessment of the ability of a local strategic partnership to deliver sustainable urban regeneration.

The main findings of the research are:

- National legislation is too weak to deliver sustainable housing development.
- Local strategic partnerships are well placed to develop local tools to support sustainable design and, when working with regeneration companies, are able to deliver such projects.
- Local strategic partnerships have many other goals; energy and greenhouse gas emissions are unlikely to be a priority and may be sidelined if not championed.
- Guidance and best practice material is available, but it is perceived as technical information and is not widely used by those in the design team.
- Most of the design team prefer to obtain information through direct discussion with experts, rather than using printed guidance material.

Introduction

Cities can be vibrant places, full of opportunities and life. A significant and increasing percentage of the world's population lives and works in cities. Their lives (and the viability of their cities) depend on a vast and continuous flow of natural resources. The provision of these resources and disposal of waste products generally occurs outside of cities in the hinterland regions. But this is not sustainable and is demonstrated when the land required is measured, for example, through ecological footprinting (see, for example, the ecological footprint of York [Barrett et al., 2002]).

Cities are generally regarded as places of high energy use and growing environmental problems. If the growing needs and aspirations of the planet's increasing population are to be met, within the earth's capacity, cities must contribute to more sustainable lifestyles. A compact urban form can provide a good quality of life and make sustainable choices easier and more economically viable. Transport can be more sustainable with reliable and efficient public transport. Buildings can be designed to use less energy. Waste can be reduced, reused and recycled more effectively. However, delivering sustainable cities does require careful thought and planning.

In the UK there is a recognition that our cities have suffered from a lack of investment and are perceived as less desirable places to live. The reputation of our cities is marred by poor housing, crime, social exclusion, air pollution and a lack of quality open space. The government has recognised the need to improve our cities and has sought to encourage an 'urban renaissance' (Urban Task Force, 1999). Various types of funding have become available for regeneration of areas within cities. The government has encouraged development within cities, reducing the availability of greenfield sites and promoting the use of previously developed land. Most cities can now boast of important regeneration projects that have improved both the fabric of and culture within the city (see www.regeneration-uk.com/Links/live.htm).

The goal of regeneration is primarily the economic development of cities, and although regeneration has contributed to social and environmental wellbeing, this is often a much lower priority of regeneration strategies. There is still a lack of an integrated approach to local problems and a lack of understanding of the wider benefits of a low-carbon approach. Opportunities for more sustainable forms of development are often missed.

Under the Local Government Act 2000 local authorities have been charged with developing local strategic partnerships (LSP). These are networks of local stakeholders, including businesses, public bodies and voluntary and community groups. The LSP should take responsibility for developing a Community Strategy to promote social, environmental and economic wellbeing. However the LSP has no statutory role, but is rather a partnership approach, facilitated by local government. These partnerships have a significant role in determining local regeneration goals. They often work closely with a dedicated local regeneration company that is responsible for co-ordinating regeneration projects. They are key to making sure that sustainable design is part of the regeneration process.

Design is a key element of sustainable housing since it affects the environmental impact of those buildings throughout their lifetime. The form and location of development have important implications for greenhouse gas emissions from buildings and transport. Buildings can be sited to make best use of ambient energy, and important services such as shops, schools, etc can be sited within easy walking distance of homes. Sustainable Settlements – A Guide for Planners, Designers and Developers (Barton et al., 1995) gives detailed information on site layout design for sustainability, including energy and transport matters. The key principles are:

- Access and layout – unnecessary journeys should be minimised and accessibility should be improved for pedestrians and cyclists. If possible, main residential roads should run east–west to improve the solar orientation of buildings.

- Orientation – where possible, the long face of buildings should be orientated to be within 30 degrees of the south.

- Overshadowing – trees and other buildings should be far enough away to allow full solar access, thus allowing maximum amounts of daylight to reach the building. Deciduous trees will allow light to penetrate in winter, whilst providing welcome shade in summer. This reduces overheating. Overshadowing caused by a sloping site should be allowed for with greater spacing, or the use of staggered building heights.

- Microclimate – local site microclimate can be improved by hedges, trees and fencing. These features can provide shelter from wind and rain, which is important for comfort in open spaces. In addition, buildings can be protected, reducing heat loss. Care must be taken to preserve solar access (that is, overshadowing).

- New buildings should, as far as possible, use materials that are energy efficient. This includes considering the energy used in transporting materials to the site and the energy needed to produce the various components of the building. This is the embodied energy or the energy expended in the production of the house. Such consideration may influence decisions about the materials used and encourage local sourcing.

These design elements will be vital if the government's aspirations of reaching a 60 per cent reduction in carbon dioxide emissions, highlighted in the recent energy white paper (DTI, 2003), are to be realised. They also offer the opportunity to consider the wider aspects of sustainable housing within the design framework.

Sustainable design is touted as best practice, but it is not yet mainstream. This report looks at the various issues that have implications for including sustainable design within the regeneration process. The current legislative framework is reviewed, followed by a review of design and planning tools. A case study of Leicester's regeneration strategy and local strategic partnership is then presented. This examines, through a series of interviews, the role of the key professionals involved in the design process – that is, the design tea. It looks at the attitudes of the design team to sustainable design and the use of design tools. Finally, based on the experience in Leicester, some recommendations on an approach to sustainable regeneration are offered for replication across other local strategic partnerships.

Review of UK legislation influencing sustainable housing

Whilst there have been a variety of policy documents that relate to the development of sustainable housing, including the General Information Report 53 on Building a Sustainable Future: Homes for an Autonomous Community (DETR, 1998a), there is little actual legislation that enforces its delivery. The key areas of legislation or regulation for housing development are Building Regulations, town and country planning, and environmental protection.

Building Regulations

The health and safety issues of buildings in construction and use are covered by Building Regulations. Local authorities are often responsible for enforcing these regulations, although other building professionals can also carry out this role if registered with the appropriate authorities.

Building Regulations specify the standards that buildings must reach to be approved. They cover a wide variety of issues, including structure (Part A), fire safety (Part B), energy conservation (Part L), drainage and waste (Part H), and access for the disabled (Part M). The regulations do not specify how to reach the standards and leave much of that to the design teams.

Many of the issues covered by Building Regulations are relevant to producing sustainable buildings. However, the prime objective of the regulations is to ensure safe buildings with a healthy environment. At times, the specification of the regulations has invalidated sustainable choices. For example, low water usage systems were not possible under previous regulations since low water flows were considered a risk for the transmission of certain disease vectors.

Building Regulations are only the minimum standards that must be reached, but buildings are rarely designed to go beyond these. Building Regulations however are regularly updated and the standards in buildings have improved over the last few years; for example, the energy efficiency specifications have improved twice since the early 1990s.

Building Regulations remain the only statutory instrument of pre-occupancy legislation that covers energy conservation in buildings: Part L1 (DTLR 2002a) covers domestic buildings and Part L2 covers non-domestic buildings (DTLR, 2002b). There are specifications for heat loss through the building envelope, and efficiency of the heating system depending on the fuel type. The standard assessment procedure or SAP is used to rate the energy performance of a building design and calculate the associated carbon dioxide emissions. Part L of the regulations has been revised to include all works involving 'material additions and change of use' to buildings, as well as new build or extensions. This revision will have significant impact on the refurbishment of old buildings and will affect the choice of windows, wall claddings and insulation. The new EU directive on energy in buildings is likely to further drive improvements in standards.

Town and country planning

The modern town planning system can be traced back to the post-war era (Greed, 1996; Reade, 1987). The Town and Country Planning Act 1947 was the first comprehensive legislative document of the modern system. This act requires that development is guided by a plan for the area and that all development should receive planning permission. These tenets remain the central planks of the planning system.

The primary legislation currently governing the planning process is contained in three acts of Parliament (PPG1 Annex C [DOE, 1997]) and each of these acts has been amended by the Planning and Compensation Act 1991.

- The Town and Country Planning Act 1990
- The Planning (Listed Buildings and Conservation Areas) Act 1990
- The Planning (Hazardous Substances) Act 1990

Most local authorities including counties, districts, boroughs and unitary authorities are responsible for planning and are designated local planning authorities (LPA). They have two specific functions: firstly, to prepare a plan for the area and identify policies to guide development in the area; and secondly, to provide a development control function, which means that all new development must be approved and given planning permission.

Local planning policy is guided by national government through planning policy guidance notes (PPG). Local planning policy and development control decisions must agree with national guidance. However, the local plan is the key document for all local development.

National guidance in PPG includes many references to more sustainable development:

- PPG1 (DOE, 1997) calls for good design in new developments. PPG3 (DETR, 2000) supports this; calling on local planning authorities to reject planning applications for poorly designed developments. Development plan policies that clearly define the necessary criteria for good design are needed; PPG3 also suggests that these should be supported by supplementary planning guidance.

- Higher densities of housing development are also generally encouraged within PPG3 (DETR, 2000, paragraph 58). More densely packed housing is generally more energy efficient; flats and terrace housing are significantly more efficient than detached housing. Combined heat and power for electricity and district heating is more viable in more densely packed developments.

- PPG3, for the first time, suggests that local authorities should promote energy efficiency in housing where possible (DETR, 2000, paragraph 56). This marks a change in the guidance since energy efficiency has generally been seen as a matter for building control through Building Regulations.

- In general, government policy, through PPG, now calls for new development to be easily accessible by sustainable means of transport. The development of 'out of town' shopping centres, supported during the late 1980s and early 1990s, has largely been superseded by policy that calls for development that 'sustains and enhances the viability of town centres' (DOE, 1996). Current policy suggests that services, shops, hospitals and leisure facilities, which generate a large number of trips, should be sited in locations that maximise the opportunity to use alternative means of transport to the car.

- Similarly, PPG3 suggests that in new housing development the need to create sustainable residential environments should guide local plan policy to identify sites that can give easy access to a variety of services, such as jobs, schools and public

services, by modes other than the car. In the past land use planning has generally sought to segregate different land use types to avoid bad neighbour conflicts. Current policy seeks to encourage mixed-use development, where residential and non-residential development is in close proximity.

- PPG3 also suggests that the design of new housing developments should promote safer environments for pedestrians and give priority to pedestrians (DETR, 2000, paragraph 56).

If sustainable development is to be supported in local development decisions then the role of the development plan is pivotal. Development plans form the framework for all land use decisions within an area. Where the plan is up to date and contains relevant and consistent policies, it should form the basis for making decisions about development control, unless there are other material considerations (Tewdwr-Jones, 1997). Conversely, where a planning application is not in accordance with the plan it should not be allowed unless material considerations justify granting the application.

However, the planning process is a highly discretionary quasi-judicial process and it can be difficult for authorities to demand solutions that go beyond the guidance in PPG. Attempts to identify and protect specific environmental resources, via capacity studies or the use of the precautionary principle, have run into difficulties in the development plan process (Counsell, 1999; Counsell, 2002). In addition, national guidance is clear that land use planning may only consider land use issues, or the land use aspects of other issues. Development plan policy should not venture into areas that are guided by specific statutory instruments. For example, it is difficult for local authorities to demand higher energy efficiency standards in buildings than expected through building control, even though these standards are really the minimum to be achieved. Where increased standards have been achieved, this is often a result of the local authority owning the land and being able to exert the necessary influence.

The narrow focus on land use can make it more difficult to achieve sustainable development, which requires an integrated approach if it is to be achieved. Although changes are imminent in the planning process, they are unlikely to lead to differences in the delivery of policy. The changes mainly relate to simplifying plans and development control processes. Unless national and local planning policy supports more sustainable housing, then little change is likely.

Environmental protection

Certain matters contained in Section 79 of the Environmental Protection Act 1990 constitute statutory nuisances if they are prejudicial to health (Wolf and White, 1997).

Prejudicial to health is defined as 'injurious or likely to cause injury'. The spirit of the act is intended to protect public health. Recent court decisions (Sandwell Metropolitan Borough Council v. tenant [1990]) and threats of action (Newark and Sherwood's Condensation Containment Programme was initiated due to threats from unsatisfied and suffering tenants) have exemplified that it could be invoked to protect and ensure optimum energy standards in dwellings that suffer from continuous dampness due to improper provision for heat, light and ventilation.

This legislation is enforceable by local authorities that are under a duty to inspect their areas for statutory nuisance, and investigate complaints.

Tools supporting sustainable housing

Whilst legislative support for energy efficient design is limited, the government and other bodies have developed tools to help in the sustainable design of housing. The government has published a lot of best practice guidance, and local authorities have sought to strengthen their planning policies through planning tools such as supplementary planning guidance (SPG). Checklists and appraisals have also been used. Specialised tools such as ecofootprints and life cycle analysis can also provide some input.

Best practice guidance

The main body of government guidance on energy efficiency in housing is published through the Energy Efficiency Best Practice in Housing programme). This programme began in 1989, and aims to promote energy efficient good practice by providing impartial and authoritative information on energy efficiency techniques and technologies in buildings and industry. The programme has provided information through publications, videos, software, seminars, workshops and other events.
(See www.est.org.uk/bestpractice/)

Guidance has been published in the following broad categories on the basis of form, content and level of information:

- *Energy Consumption Guides* – comparing energy use in specific processes, operations, plant and building types.
- *Good Practice* – promoting proven energy efficient techniques through guides and case studies.
- *New Practice* – monitoring first commercial applications of new energy efficiency measures.
- *Future Practice* – reporting on joint research and development ventures into new energy efficiency measures.
- *General Information* – describing concepts and approaches yet to be fully established as good practice.
- *Fuel Efficiency Booklets* – giving detailed information on specific technologies and techniques.
- *Introduction to Energy Efficiency* – helping new energy managers understand the use and costs of heating, lighting, etc.

There has been an extensive range of material published over the years, with some 88 publications currently in print on the topic of energy efficiency and renewable energy in housing. The publications have been updated as technology has improved and new regulations have come into operation. Some of the guidance is quite technical in nature, but there is also guidance available that has been written for non-technical readers, such as councillors.

Some 42 publications that contained information on energy efficiency in housing were reviewed (detailed in Appendix 1). The publications are easily accessible and can be downloaded from the web. Hard copies are also available. Much of the best practice material is available free of charge.

The publications contain information suitable for a wide range of housing:

- Buildings that provide private residence to individuals and families. Care homes for ill people or the aged, hostels and other community residential buildings have not been included.
- Rural, urban and semi-urban locations.
- New housing development and refurbishment projects.
- Private and public sector.

Each publication has an introduction specifying its aims and its target audience. Some of the publications are targeted at more than one group and there was some overlap. The material covered not only technical aspects, but also financial and non-technical issues. However, there was little coverage of information that could be used to support a business case for incorporating energy efficiency or renewables within design, which is vital since such solutions have a capital cost. Financing arrangements often mean that such additional cost is unacceptable even where it is recouped within the first few years of the building operation.

There is no published assessment of the success of the Energy Efficiency Best Practice programme, even though the programme encourages users of its publications to provide feedback. Thus it is difficult to gauge the overall success of the programme.

Planning tools

There are a variety of tools that can be used to support planning decisions that are also relevant to the design process. These tools are often developed by the planning authority to help developers meet the requirements of local planning policies.

- **Supplementary planning guidance**
  Development plan policies may be supported by supplementary planning guidance (SPG). The local planning authority can use SPG to provide more detailed information and guidance on specific issues for developers and the public. SPG must be consistent with the plan and must cross-reference any policies in the plan. SPG can help to clarify plan policy, allowing the development plan to remain concise. It can identify the exact approach to specific types of development or overarching principles on development. This gives developers a clearer idea of the way their development can meet the needs of plan policy. The adoption of SPG should generally follow the same process as the adoption of the development plan if it is to have material weight in the process of deciding a planning application.

  Various local authorities have used SPG as a tool to support policies on sustainable development (Leeds City Council, 1998; Lincoln City Council, 2000). Leicester City Council (2002) has recently published SPG on energy efficiency and renewable energy in new developments, with the aim of supporting more energy efficient building and the local generation of renewable energy.

- **Design briefs**
  Design briefs are a form of SPG for specific areas that can also be used to inform developers. These provide a masterplan for a specific area and cover the important issues in the development of that site. Design briefs are often used for conservation areas and also for large new development areas. They typically include information on urban design, road layout, transport choice, passive solar design of buildings, water drainage schemes, crime prevention and social inclusion. Not all of these issues are directly related to land use, but the use of the masterplan allows a more integrated approach. Barton et al. (1995) provides a guide on the issues to consider in specific site developments.

  To date there has been no research into the effectiveness of these local planning tools. The new planning legislation supports greater use of SPG, but there is no assessment of the success of SPG in delivering more sustainable forms of development.

- **Checklists**
  Planning applications can also be assessed using simple checklists. The government has produced such a checklist (DETR, 1998b) to help assess new development. More recently, a detailed check of neighbourhood sustainability was produced (Brownhill and Rao, 2002), which provides a way of scoring development. Although this technique is subject to the value judgement of the assessors, low scoring developments are more likely to be improved than when this technique is not used.

  Some local authorities have also provided development control tools to help assess the sustainability of proposals. Leicester City Council and Epsom Borough Council, amongst others, have produced checklists to help assess an individual project against sustainability criteria. These checklists are generally produced outside of development control, either by strategic planners or through community action such as LA21. This means that development control teams do not have ownership of these tools and so may consider them merely extra unnecessary work. Furthermore, they do not have any statutory position or weight and merely inform the individual officer. Unless the output from the use of these tools could be included as a material consideration, the results may have no influence on development.

  Checklists are a weaker tool for delivering sustainable housing, but once again there is no independent research that clearly identified the effectiveness of such checklists in supporting sustainable forms of development. Such research is essential if appropriate planning tools are to be developed and supported. The role of checklists would also need to be clarified if they were to be brought into the planning process.

- **Planning gain**
  In many development control decisions, particularly larger projects, local authorities have the opportunity to negotiate sustainable solutions through planning obligations. In return for the loss of an amenity or an additional burden caused by a new development, the local planning authority may request some contribution to lessening the impact. This may cover, for example, improvements in roads and junctions near the site, replacement of a lost local amenity by a similar amenity at another site, improvements in infrastructure and community facilities, or a percentage of affordable housing on a new housing development. These arrangements are often called

planning gain. Negotiation of planning gain may offer an opportunity to deliver sustainable solutions through transport, construction and landscaping.

Planning gain is a useful tool for delivering specific items; for example, affordable housing, highway improvements and amenity improvements (Bunnell, 1995). The successful use of planning gain is highly dependent on the individual planning officer. Planning gain has not been used strategically to ensure sustainable forms of development, and without specific government guidance, it is difficult to see it being used widely.

- **Environmental impact assessment**
  Many urban development projects require an environmental impact assessment (EIA) as part of the requirements under the town and country planning legislation. If EIA is required then the developer must submit an environmental statement along with the planning application (Duxbury, 1999). This document may then be a material consideration. EIA is potentially a powerful tool for assessing the benefit of a development; however, its position in the planning process is somewhat ambiguous and it has not yet fulfilled its potential as a means of delivering sustainable forms of development (Benson, 2001).

Regeneration in Leicester – a case study

Leicester is one of the largest cities in the East Midlands region of the UK and is located approximately 100 miles north of London. It has a population of about 300,000 and is situated on the River Soar, at the heart of the rural county of Leicestershire. Its position on a wide floodplain has assisted in the city's development on major north–south communication routes, including the motorway network, canals and the railways. The city has a strong manufacturing presence with 29 per cent of employees in the traditional textile, hosiery, knitwear, clothing, footwear and mechanical engineering industries. Some of these industries are now in decline and there is an increasingly strong service sector within the city, including two universities and health services.

The background to regeneration

Leicester City Council is committed to sustainable development. It was the UK's first Environment City and received honours at the Earth Summit in Rio de Janeiro in 1992. Over more than the last decade, the city has shown a keen interest in all matters relating to sustainable development and the environment. The current Local Plan (Leicester City Council, 2001a) and the Replacement City of Leicester Local Plan (Leicester City Council, 2003a), the draft document currently in preparation to replace the existing Local Plan, both have sustainability as a core strategic theme. The Replacement Plan identifies the need for sustainable forms of housing. In particular, it expects any development to take into account that housing should be:

- easily available and affordable
- comfortable with minimum risk to health
- safe and secure
- accessible
- well balanced with open public space and services

The council identified the efficient use of energy as an important area for sustainable development. Leicester has adopted key energy targets as part of its climate change strategy (Leicester City Council, 2003b), specifically:

- To reduce the carbon dioxide emissions in the city by 50 per cent from 1990 levels by 2025.

- To provide 20 per cent of the city's energy requirements from renewable energy by 2020.

Leicester City Council further supported these aims through local plan policies and by the adoption of SPG on energy efficiency and renewable energy in new developments (Leicester City Council, 2002). It provided practical advice to incorporate such measures and opportunities. Leicester has also used SPG for site specific design briefs; for example, the Ashton Green Design Guide (Leicester City Council, 1999). This provided an overview of design issues for a new greenfield extension and formed the basis of a masterplan approach.

However, like most cities in the UK, Leicester has areas in need of regeneration. Changes in the employment sector and in lifestyle choices have resulted in vacant industrial buildings in the city centre. The redevelopment of vacant buildings would help to meet Leicester's housing targets and also the government's brownfield development target of 60 per cent.

In Leicester, the Local Plan (Leicester City Council, 2001) estimated that 12,000 to 14,000 new homes are needed between 1996 and 2011. The provision of more housing in the city centre is a priority. The development of these new homes in the city centre is expected not only to meet brownfield development targets, but also to improve the vitality of Leicester's city centre. Vacant buildings can cause significant difficulties in relation to crime and vandalism and lead to a run-down feeling. During 2000 and 2001, five city centre conversion schemes provided 120 flats. The development continued on six other schemes comprising 300 flats.

However, local developers have expressed doubts about the capacity of the city centre for new housing, since many of the potential development sites are privately owned and, even if they became available, the changing nature of the economy means that there are competing interests for other land uses. Some of the likely constraints mentioned in responses to the consultation on the draft version of the Local Plan were:

- difficulty of acquiring land

- bringing the derelict and used sites to levels of re-use (eliminating contamination)

- service requirements, eg parking, good schools, etc
- local objections

In April 2001, the Leicester Regeneration Company (LRC) was established to facilitate the revitalisation of nearly 1,000 acres (400 hectares) of core inner city area. The LRC is expected to provide a framework to overcome these obstacles to inner city redevelopment. Investors in property development often state that they are happy with some constraints on development providing they are well understood and apply to all investors; this framework should provide an appropriate level of clarity for developers to make their commercial decisions.

The regeneration focus

Five major areas in central Leicester were identified for redevelopment:

- a new office core, close to the railway station
- a new science and technology park
- the retail circuit
- St George's cultural quarter and new housing development
- waterside developments of homes, offices and leisure facilities

Leicester has maintained its requirement for more sustainable development. In large-scale development, such as urban regeneration schemes, it is imperative to focus on investment in energy efficient homes within easy reach of local services. This requires a carefully planned and well thought out strategy. The LRC, aided by Leicester City Council, Leicester Partnership (Leicester's LSP), the East Midlands Development Agency and English Partnerships, is expected to lead on delivering best practice approaches to sustainable design. They have approached this by using design guidance in the form of a masterplan for each of the five development areas.

The masterplan enables the LRC to provide a detailed framework of the type and standard of development expected. Consultants developed the masterplan (Leicester Regeneration Company, 2003) in collaboration with the partners in Leicester. It covers redevelopment in the city for the next 10 years, giving a strategic

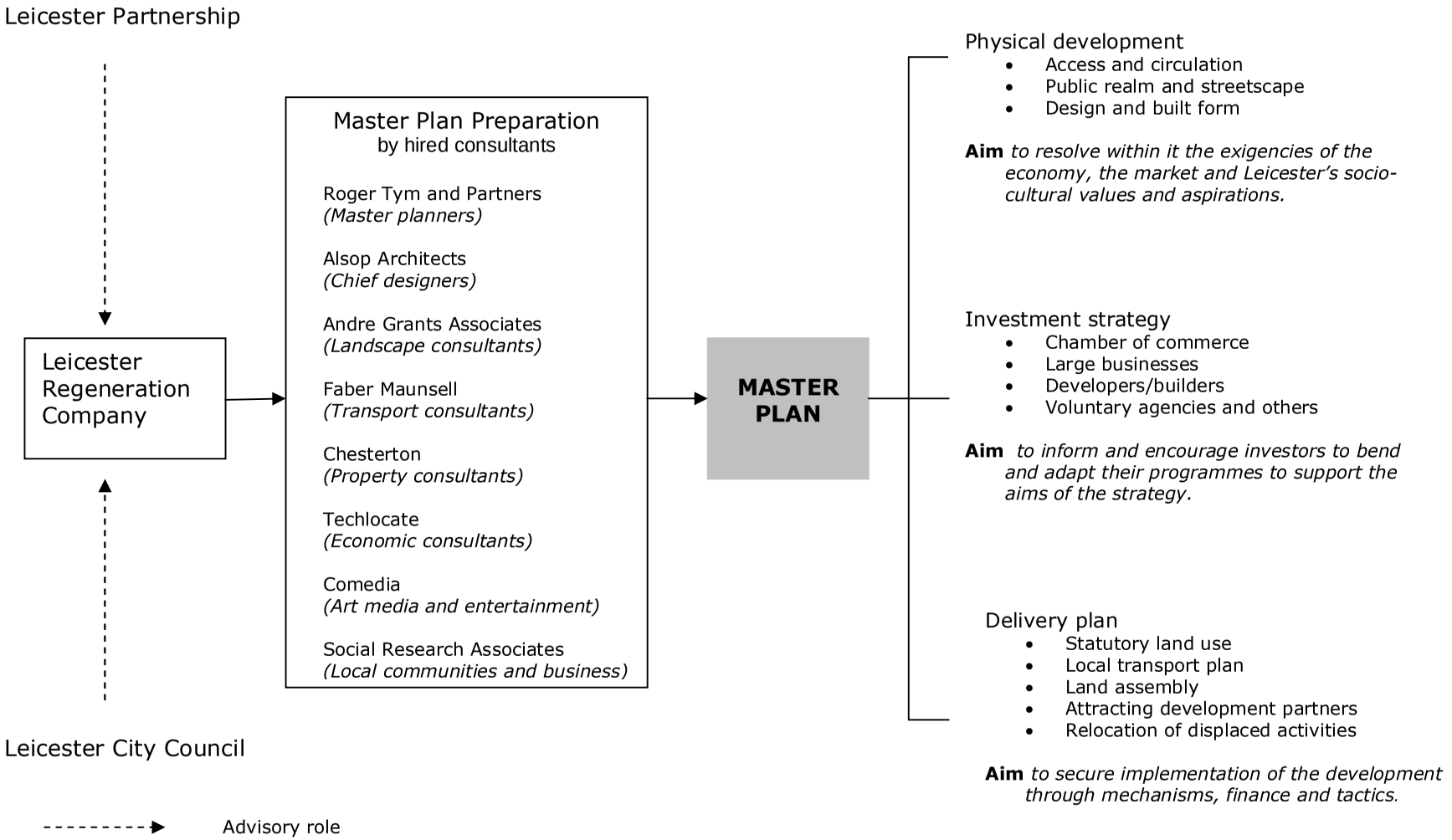
framework for regeneration and an urban renaissance in Leicester. Figure 1 illustrates the masterplan process and the key stakeholders involved.

Other local tools for supporting the development of low-carbon regeneration are available. In 2002 Leicester City Council launched an SPG on energy efficiency and renewable energy. Leicester Partnership also recognised that there would be benefit in developing a building standard for Leicester that would apply in all regeneration schemes. The provision of public money gives the opportunity for leverage in these projects, thus justifying higher standards and allowing them to be supported through the development process. The national guidance on energy efficiency was also available to all stakeholders.

The design team

Regeneration in Leicester is based on a partnership approach and many players are involved in various stages of the process. The LRC and Leicester Partnership are keen to see sustainable design in regeneration and the design team needs to meet their requirements. However, sustainable development often requires a different approach and it can be difficult to make a business case for such an approach, since it often requires extra capital costs at design stage, for savings over the building's life. If sustainable solutions, including energy efficient buildings, are to be included in regeneration in Leicester, then the design team needs to be well informed and motivated to champion such matters. The design team will develop the brief for any development. The design team incorporates the professionals engaged in the design i.e. architects, master planners, urban designers etc. However the partnership approach means that some members of the Leicester Partnership, such as Leicester City Council, EMDA and other public bodies have responsibility for specification of the brief and guidance during the development process and thus have significant influence on the design process.

Figure 1 Master Plan Process



Survey methodology

In order to assess their knowledge and ability to deliver the client's brief, a cross section of those involved were interviewed, that is the design team and other influential members of Leicester Partnership. The interviews were semi-structured face-to-face interviews conducted with twelve individuals chosen from the key partners in the regeneration process with specific input into the design process, namely:

- Leicester City Council
- Leicester Regeneration Company
- Leicester Partnership
- East Midlands Development Agency
- Planners
- Chief designers
- Engineers/Building services consultants
- Developers/Builders
- Local housing organisations
- Local energy advice centre
- Local universities

The objective of the interview was to collate information on each participant's:

- Awareness and understanding of sustainable development and urban regeneration.
- Concern for climate change and issues regarding energy efficiency and renewable energy in housing and their understanding of the link to sustainable development.
- Knowledge about the guidance available through best practice and current UK legislation to promote energy efficiency and renewable energy in housing.

- Perception of barriers in incorporating energy efficiency and renewable energy in housing.

- General views and ideas on the regeneration process and its effectiveness in having a genuine stakeholder dialogue.

In order to assess these key issues a series of open questions were devised. The questions were designed to allow the interviewee to provide detailed input from their own experience, but also to achieve some specific answers to certain questions. The questionnaire comprised the following sections:

A. General information

- Role of organisation.

- Personal role in the organisation and in relation to the urban regeneration programme.

B. Awareness

- Urban regeneration proposed by the Leicester Regeneration Company.

- Masterplan and its development.

- Energy efficiency best practice programme.

- Current UK legislation to implement energy efficiency in buildings.

C. Knowledge and understanding

- Sustainable development.

- Urban regeneration.

- Sustainable housing.

- Sustainable energy.

- Best practice publications and training events.

D. Concern and perception

- Climate change and its impact on housing and new development.

- Image of Leicester and vision for the city's future.
- The Leicester Regeneration Company and its role in facilitating a stakeholder dialogue to set and achieve common goals for future development.
- Constraints in adopting sustainable energy solutions.

E. Views and ideas

- Further thoughts on the issue.
- General recommendations.

A copy of the interview questions is included as Appendix 2.

Results of the survey

Most of those interviewed were aware of the purpose and progress of the masterplan. Whilst the majority of respondents define urban regeneration as a revitalisation of the urban environment for a better quality of life, nearly half linked it with physical regeneration of derelict buildings. This suggests that many of the key players do not yet see the wider issues in regeneration.

The interviewees were asked: 'What are the main factors for consideration for sustainable housing?' Most identified issues such as location, employment opportunities, infrastructure and sustainable construction. Sustainable energy came low on the list, with only about a third identifying energy efficiency and renewable energy, in spite of it being identified as important for the sustainable use of resources by most of the respondents.

On the question of guidance information, all of the respondents were aware of the Energy Efficiency Best Practice in Housing Programme, but only half had actually used the guidance in some way. Further investigation revealed that only a small number had used a specific publication within their work. In addition, consulting energy efficiency literature was rated low as a means of informing oneself, except where there was a specific job need. Most of the interviewees assumed that the guidance was mainly technical. Networking and seminars were considered the best way to access information. A majority of respondents were aware of the energy efficiency requirements in Building Regulations and used them as the building standard. The requirement for higher standards in some cases (such as some social housing) was acknowledged by some of the respondents.

When asked to make recommendations to promote energy efficiency there was agreement across the interviewees with the following recommendations offered (in order):

- high insulation
- environmentally friendly building materials
- low-energy appliances
- air tightness
- heat recovery

The same question was also asked about renewable energy technologies and the recommendations offered were (in order):

- district heating
- combined heat and power/micro CHP
- solar thermal
- green tariff electricity

When then asked to identify the constraints on the uptake of energy efficiency and renewable energy technology in housing, they mentioned:

- Lack of legislation to enforce higher standards in energy efficiency.
- Lack of leadership in championing the cause of environmental protection and its role in human welfare.
- Apathy from all.
- Lack of consumer interest and demand for energy efficiency and renewable energy in housing.
- Lack of willingness to pay higher initial cost of energy efficiency and renewable energy measures; and reliability in new technology.

Participants described several factors they believed to be responsible for a slow take-up of energy efficiency and renewable energy measures in housing:

- The need for higher capital investment to incorporate energy efficiency and renewable energy measures in housing, but homeowners are always looking for lowest prices.

- The low price of fossil fuel makes it difficult to justify investment in energy efficiency measures since pay-back periods are long and was not much of an incentive to practice energy conservation or other options. In turn, this also added to the long pay back period for those measures in the absence of government funding or grants.

- Current market forces presented a major risk to investors in new technologies since they were faced with uncertainties such as consumer acceptability and / or willingness to pay.

- A lack of statutory requirements on the house building industry to use, invest in or supply energy efficiency or renewable energy options. The building regulations were often interpreted as minimum standards to follow. The legislation was not able to generate the right aspirations in designers or homeowners to consider and apply sustainable energy solutions in housing.

The interviewees also suggested that current legislation was not sufficient to promote energy efficiency, particularly in the light of international agreements on carbon emissions.

The suggestions made to promote energy efficiency included:

- More legislation to support renewable energy, district heating schemes and combined heat and power.

- A mandatory requirement on the developer to provide energy from renewable sources for housing schemes of a particular scale and density, especially where mixed use was a possibility.

- A mandatory requirement on the developer to buy a fixed proportion of green tariff electricity to create more demand and incentive for green electricity production.

- Tax benefits to developers like other businesses that provided sustainable housing. This could be designed as a financial incentive for those who invest in energy efficiency and renewable energy options.

- Further strengthening of building control mechanisms that would ensure strict follow-up of existing standards and specifications.

- Better marketing of energy efficiency measures and their provision in the market at par with other products and services.

The role of Leicester's LSP and regeneration company in delivering sustainable housing

Renewable energy and energy efficiency are recognised as an important aspect of sustainable regeneration in Leicester's strategy, but energy issues are by no means the primary concern. Cost and time constraints are considered far more important. Improved legislation is a means of altering this, and the EU Energy in Buildings Directive (European Union, 2003) with the introduction of minimum standards and a certification scheme may provide a driver for further change.

Locally derived tools, eg the Leicester building standard and SPG, may be more accessible to the key actors in Leicester's regeneration programme than national guidance. However, these may be difficult to defend in the development process and may be reduced or dropped in the face of problems achieving adequate investment. The ability of these tools to aid the design process has yet to be assessed.

Leicester Partnership is well placed to define high-quality development and to steer the LRC's standards and design criteria, but other constraints may reduce the opportunities for action. A lack of depth of knowledge of sustainable solutions may also constrain opportunities. Local strategic partnerships are made up of many different stakeholders and they all have their own key goals to achieve through the partnership. Issues such as energy use and greenhouse gas emissions is unlikely to be the prime goal of any particular stakeholder and, without a champion, they are at risk of being overlooked or put to one side during the development process. The benefits of a low-energy strategy have to be presented in a way that helps other stakeholders realise their key objectives, such as reducing costs, improving marketing, attracting investors and aiding good design.

The LRC would benefit from further information on sustainable energy solutions tailored to the masterplan for Leicester. However, any information or training would need to be delivered in an accessible way. Speaking with experts was identified as the preferred way of gaining information. Developing local networks of

experts, available for advice, could therefore support a more sustainable approach to design.

As a way of supporting the development of better information, a different approach was trialled in Leicester through an innovative workshop for all of those engaged in the regeneration process. Representatives of different local authority departments and professions (architects, designers, Local Agenda 21 officers, development control planners, building control officers, property officers, energy management officers), together with representatives from the LRC and Leicester Partnership, were invited to look at achieving sustainable development at a particular site in Leicester. Plans of the site were made available and the options of developing the site were discussed with a leading UK architect in zero carbon dioxide developments, Bill Dunster. This approach enabled the different officers and stakeholders to more readily understand the motivations and constraints of each other. Since Bill Dunster has already successfully developed low-energy settlements, he was able to provide the evidence to support a business case for such schemes.

Such interdisciplinary workshops could be a useful tool for increasing knowledge and awareness and overcoming some of the barriers that are preventing more sustainable communities from being designed and built. They can also provide an opportunity to highlight the many advantages of low-carbon design, particularly in relation to other stakeholders' main objectives.

Although there has been no detailed evaluation of the outcomes of the workshop, the feedback from delegates indicated that the delegates felt they had a better understanding of the opportunities for emissions reduction. The different stakeholders had also gained insight into the motivations and constraints of other stakeholders.

Conclusions and recommendations

Local strategic partnerships, acting with regeneration companies, have the opportunity to deliver sustainable urban forms, but in the current policy and legislative framework it is not certain that such pioneering approaches are likely. The capacity for sustainable design can be built through developing and sharing local expertise. Locally derived tools to guide development can also be useful. There is also a need to fully engage all key stakeholders with a shared vision. For this to be possible, local sustainability champions are needed.

The interview survey produced a detailed set of information from which the following broad conclusions have been drawn:

- Regular consultation and use of Energy Efficiency Best Practice in Housing guidance is very limited among professionals involved in the urban regeneration programme proposed by the Leicester Regeneration Company. The major reason for this is time constraints.

- All stakeholders felt that the preferred method of gaining information was through meetings and seminars.

- There is a general perception that Energy Efficiency Best Practice in Housing guidance targets only technical and energy experts, but a literature review revealed that a range of guidance is available for a cross-section of institutions and professions.

- There is immense dissatisfaction among professionals involved in the urban renewal of Leicester, and more widely across the country, about the existing legislative framework within which they have to incorporate sustainable energy solutions in housing.

- The current government policy on energy discourages widespread adoption of energy efficiency and renewable energy technology across all groups – private developers, designers, local authority officials, housing landlords and house owners.

- A lack of awareness among professionals about current trends of energy consumption in housing, and a low concern for the security of the energy supply, adds to restricted energy conservation measures.

- Energy efficiency and renewable energy options for housing are not marketed successfully to take care of consumer interest.

- The house building industry is very sluggish to change and suffers from a shortage of a trained and well-qualified workforce. There is a need for training and legislation to rigorously apply higher building standards.

Local tools, such as checklists and supplementary planning guidance, can provide appropriate support for sustainable urban regeneration. These tools are likely to be more effective if all stakeholders 'buy into' the process and accept their value and use.

Multidisciplinary workshops – engaging stakeholders in debate – are a valuable tool. The workshops allow stakeholders to see the opportunities for greenhouse gas emissions and energy savings. They also build institutional capital, with the various stakeholders having a greater insight into the whole development process, not just their part of it. Awareness of other stakeholders' motivations and constraints leads to a more integrated design approach. It also makes use of the system of information gathering identified by the stakeholders who were interviewed.

In view of these findings we recommend that:

1. Multidisciplinary workshops are offered to all local strategic partnerships and regeneration companies. These could provide opportunities for publicising the Energy Efficiency Best Practice in Housing programme as well as building institutional capital.

2. Model local supplementary planning guidance and checklists are developed for local strategic partnerships to tailor to their own needs.

3. Research should be carried out to monitor the effectiveness of local tools in influencing local development.

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Appendix 1: Energy Efficiency Best Practice in Housing Publications

TYPE	TITLE	YEAR	TARGET								
			OW	DV	DS	LA	HA	MA	IN	MG	GEN
Energy Efficiency											
Good Practice Guide 021	Benefits to the Landlord of energy efficient housing	1994				✓	✓				
Good Practice Guide 194	Building your own Energy Efficient House	2002	✓								
Good Practice Guide 082	Energy Efficiency in housing, Guidance for Local Authority	1997				✓					
Good Practice Guide 079	Energy Efficiency in New Housing, A Guide to achieving Best Practice	2002		✓	✓						
Good Practice Guide 171	Energy Efficiency primer	1997	✓								✓
Good Practice Guide Study 378	Energy Efficiency in Housing Association schemes	1999					✓				
Good Practice Case Study 155, 186, 187, 189	Benefits to the landlord of energy efficient housing	1993				✓	✓				
General Information Report 008	Energy efficient housing workshop manual	1993			✓						
General Information Report 038	Review of ultra-low energy homes-a series of UK & overseas profiles	1996			✓	✓					
Future Practice R & D 002	Energy efficiency in new housing, affordable new low energy housing	1992	✓				✓				
Built Fabric											
Good Practice Guide 026	Cavity Wall Insulation in existing housing	1993							✓		
Good Practice Guide 183	Minimising Thermal bridging	1996			✓						
Good Practice Guide 103, 102, 105, 104, 099, 098	Energy efficiency in new housing, insulation	1993							✓		
General Information Leaflet 023	Cavity Wall insulation, unlocking the potential in existing buildings	1995							✓		

OW = owner/tenant	LA = local authority	IN = installer
DV = developer	HA = housing association	MG = manager
DS = designer	MA = manufacturer	GEN = general

TYPE	TITLE	YEAR	TARGET								
			OW	DV	DS	LA	HA	MA	IN	MG	GEN
Space and Water Heating											
Good Practice Guide 240	Community Heating	1999				✓					
Good Practice Guide 302	Controls for domestic central heating & hot water	2001							✓		
General Information Report 016	High efficiency condensing boilers, domestic applications	1994							✓		
General Information Report 023	District Heating & Cooling, The IEA programme								✓		
General Information Report 040	Heating systems and their control	1996			✓				✓		
General Information Report 088	Solar hot water system in new housing	2001									✓
General Information Report 059	Central Heating System specifications	2002							✓		
Solar Passive Design											
Good Practice Guide 073	Energy Efficient house design – exploiting solar energy	1995			✓						
General Information Report 027	Passive solar estate layout	1997			✓						
General Information Report 025	Passive solar house designs – the Farrans study	1997			✓						
Ventilation											
Good Practice Guide 268	Energy Efficient ventilation in housing	1999	✓		✓						
Good Practice Guide 139	Draught stripping in existing housing	1995								✓	
Good Practice Guide 291	A designer's guide to options for ventilation and cooling	2001			✓						
General Information Report 041	Variable flow control	1996			✓				✓		

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TYPE	TITLE	YEAR	TARGET								
			OW	DV	DS	LA	HA	MA	IN	MG	GEN
Lighting											
ADH 001	Domestic lighting initiatives	2002		✓				✓			✓
General Information Leaflet 020	Low energy domestic lighting	1994									✓
Good Practice Guide Case Study 361	Energy efficient lighting for housing	1998	✓	✓					✓	✓	
Sustainable Housing											
New Practice 119	Hockerton Housing project	2000	✓	✓							
General Information Report 053	Building a sustainable future, homes for an autonomous community	1998			✓						✓
General Information Report 089	BedZED Zero Energy Development	2002		✓	✓	✓				✓	
Good Practice Case Study 340	Environmentally sensitive housing - Dallow Road Luton	1997		✓			✓				
BR 278	Environmental Standard, homes for a greener world	1995									✓
Finance											
Good Practice Guide 165	Financial aspects of energy management in buildings	1995				✓				Y	
General Information Report 050	Unlocking the potential – financing energy efficiency in private housing	1998				✓					
General Information Report 051	Taking stock – private financing in social housing	1998				✓					
Refurbishment											
Good Practice Guide 080	Refurbishment of high rise development	1994				✓					
Good Practice Guide 081	Refurbishment of existing dwellings, a strategic guide	1994		✓							
General Information Report 032	Review & development of energy efficient refurbishment standards	1995					✓				

OW = owner/tenant	LA = local authority	IN = installer
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DS = designer	MA = manufacturer	GEN = general

Appendix 2: Questionnaire survey

Q1. How do you perceive your organisation's role in the urban regeneration programme proposed by Leicester Regeneration Company?

Q2. What is your personal role in the urban regeneration programme?

Q3. According to you, what are the main aims and objectives of the urban regeneration programme in Leicester?

Q4. Could you describe your understanding of the term sustainable development? How have you gotten this understanding?

Q5. Could you describe your understanding of the term urban regeneration? How have you gotten this understanding?

Q6. According to you, what are the main factors that need consideration for housing development in Leicester?

Q7. According to you, what stage of the master plan is the most appropriate to incorporate energy efficiency and renewable energy in housing? Why?

Q8. What constraints do you perceive in incorporating energy efficiency and renewable energy in housing development?

Q9. Is the Leicester Partnership/Leicester Regeneration Company being effective in having a stakeholder dialogue to incorporate 'sustainability' in the master plan development? If yes, how? If not, why?

Q10. How concerned are you at a personal level about climate change and related issues? How do you think it affects you?

Q11. How concerned are you about the image of Leicester and the need for urban renewal? How do you think it affects you?

Q12. What methods do you use to inform yourself about topics like planning, sustainable development, regeneration, energy efficiency and climate change?

Q13. Are there any constraints upon your information gathering? If yes, what are they?

Q14. Is there any information you've been looking for and not found? If yes, what is it?

Q15. Are you aware of the Energy Efficiency Best Practice programme, its publications or any other guidance for sustainable housing solutions?

Q16. Have you used any of the published guidance to help you perform your tasks in the present role? If yes, what and when? If not, why?

Q17. Do you perceive any shortcomings in the Best Practice programme and its implementation? How can it be made more effective?

Q18. Are you aware of any legislation that promotes energy efficiency and renewable energy in housing/buildings? What is it?

Q19. In your opinion, is the current legislation appropriate to promote energy efficiency and renewable energy in housing/buildings?

Q20. What recommendations do you have to promote energy efficiency and renewable energy in housing?

Q21. What is your vision for Leicester?