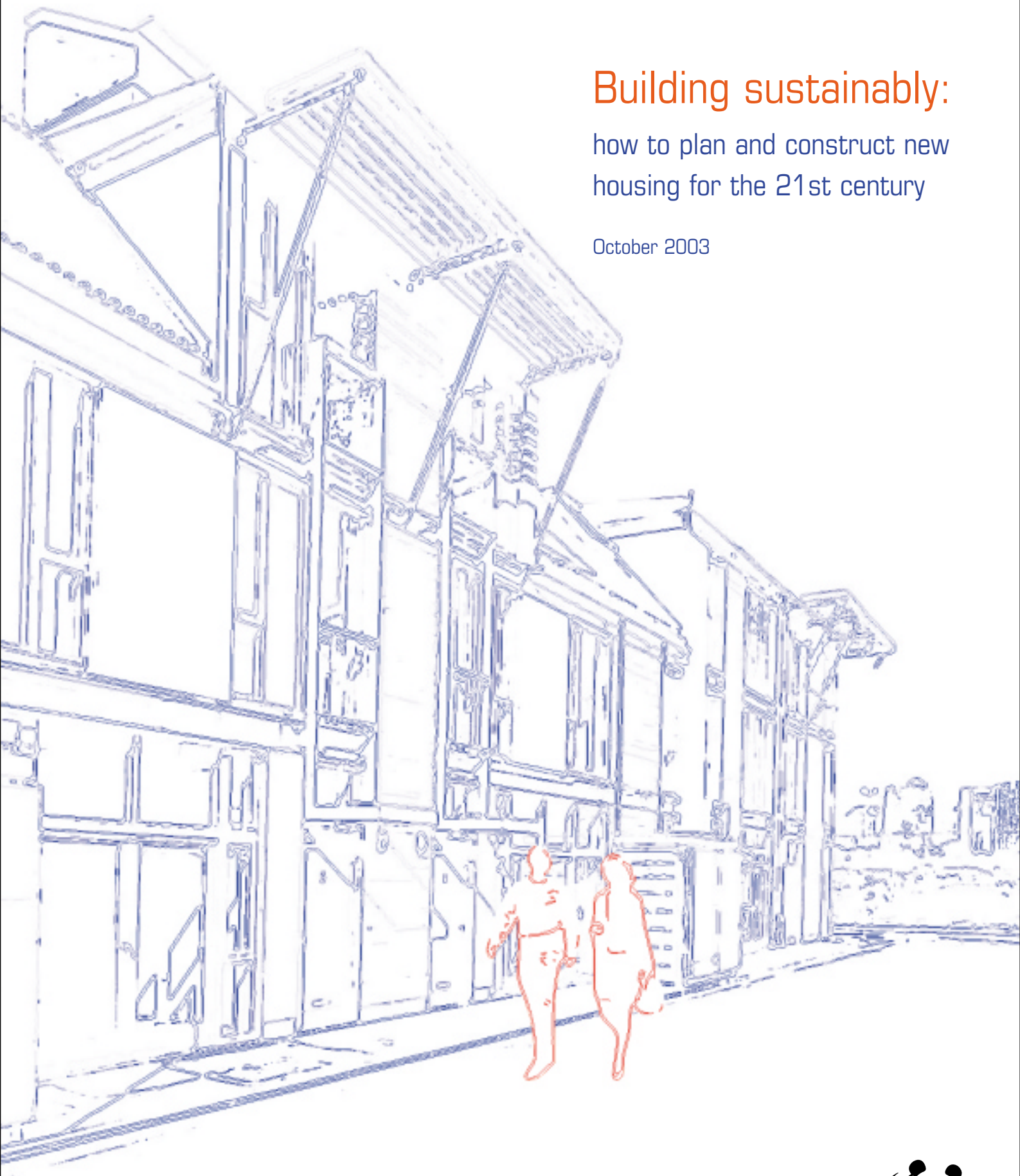
Building sustainably:

how to plan and construct new housing for the 21st century

October 2003



A Sustainable Housing Forum report

TCPA

WWF

The Sustainable Housing Forum

The Sustainable Housing Forum forms the latest step in the TCPA's continuing work on the implications of changing over to more sustainable forms of development which began well before the first World Summit on Sustainable Development in Rio de Janeiro in 1992.

The TCPA Sustainable Housing Forum has the following four objectives:

- To raise the environmental standards of new housing so as to make a contribution to sustainable development targets and the reduction of emissions that contribute to climate change;
- To establish what practical steps could be taken to achieve these higher standards by drawing together the experience from the growing number of innovative housing projects and assessing how much of current best practice could be applied as the norm throughout the house building industry;
- To make recommendations to government and the house building industry for the specific changes to the design and regulatory systems having the best potential for achieving higher standards by 2010;
- To use the drive for higher standards in new housing in order to raise public and political awareness of the practical possibilities for making new construction generally more sustainable, and the long-term benefits, both financial and in relation to quality of life.

The following organisations contributed to the development of this report.
The findings do not necessarily represent the views of those organisations.

Sustainable Homes

BRENT COUNCIL

BRE

STSD
Somerset Trust for Sustainable Development

ENFIELD Council

solarcentury

RICS

Queen's University Belfast

Global to Local Ltd.

Contents

Preface

There have been so many false storms when it comes to promoting more sustainable housing that any optimism today may seem unwise. But it's hard not to feel optimistic looking at the way the trends are now moving: much firmer government leadership; much less resistance from planners and Local Authorities; far greater public awareness about the importance of energy efficiency in the home; and an industry that has at last seen the writing on the wall, even if it is still only a minority of its members who are turning that writing into hard-edged practice on the ground.

This Report from the TCPA's Sustainable Housing Forum is exactly what's needed at this critical moment. It identifies all the principal barriers which are still preventing today's best practice becoming tomorrow's common practice, and then advocates a course of action for the key players to remove those barriers. It's not in the business of grinding old axes, but simply seizing hold of the unparalleled opportunity we now have to ensure that all new homes in the UK achieve a high sustainability standard.

The interesting thing about this particular transformation in housing practice is that there are no obvious losers. The increased cost of more sustainable housing is modest in the first place, and is rapidly paid back as far as the house owner or tenant is concerned through lower energy bills. House builders will undoubtedly have to invest in increased skills and better building techniques, but this is an industry that's right for all sorts of efficiency improvements anyway – with or without the sustainability dividend.

The UK has lagged behind for far too long in this area. If we are to catch up, the various levers available to government to drive change through the housing sector (planning policy guidance, the Building Regulations, regional strategies, new funding for major regeneration projects like the Thames Gateway and so on) must now be deployed with uncompromising clarity and firmness of purpose. As the report so powerfully makes clear, this will be one of the most important tests this Government faces before the next General Election.

Jonathon Porritt, Chairman of the Sustainable Development Commission
October 2003

Foreword

RESPONDING TO THE SUSTAINABILITY CHALLENGE

Since the 1992 Earth Summit in Rio de Janeiro, there has been growing recognition among leading scientists and, increasingly, the public and politicians that we are using the planet's resources in ways which exceed its long-term capacity and which are undermining its vital life-support systems. In the last decade the difference in living conditions between rich and poor people, both between and within countries, has also widened, exacerbating the environmental damage.

The worldwide cumulative impacts from contemporary forms of development now pose such threats to the planet's life support systems (e.g. through climate change) that scientists are calling for major changes to achieve more sustainable forms of development. The commitments made at the summit were intended to make the changes needed to reduce these threats, and to achieve development which could be sustainable into the future. The Prime Minister has referred to these environmental threats as "the most serious danger facing mankind".

In spite of recognition at the highest political levels, progress has been far too slow. So far as climate change is concerned, the International Panel on Climate Change has calculated, and the UK government has accepted, that at least a 60 per cent reduction in CO_2 emissions is required to keep climate change within manageable limits. But Cambridge Econometrics has shown that Britain will not achieve its (much smaller) target for CO_2 reductions by 2010 without more radical changes than have been made so far. To be successful, it is clear that all sectors of the economy must take action. Since 27 per cent of UK emissions come from the housing sector, raising the environmental standards in this sector has the potential for making a significant contribution to this.

The present proposals for a major increase in house building provide a uniquely favourable opportunity, because changes in design and construction will be needed in any case in order to achieve this expansion in building rates. If these changes also raise the environmental standards of all new housing, we can serve two important objectives together.

By raising the environmental standards of new housing, a major contribution can also be made to the overall quality of people's lives. In England, two-thirds of carcinogenic (cancer causing) emissions are in the most deprived 10 per cent of wards. In other words, people living in deprived areas are much more likely to live with higher air pollution levels leading to health problems.[1] Planning for sustainable communities needs to ensure that new housing is located in decent environments which promote quality of life.

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[1] *For more information on environmental issues which are specific to disadvantaged areas see 'Achieving environmental equity through neighbourhood renewal: policy and practice guide (2003)' by the Neighbourhood Renewal Unit, www.neighbourhood.gov.uk*

WHAT IS SUSTAINABLE DEVELOPMENT?

We cannot progress effectively without a better general understanding of what is meant by this much-used term. Many definitions have been attempted, but usually only in terms of future objectives rather than indicating what changes can be made in order to get there. To be effective we need a definition of sustainable development that clearly indicates where action is needed in order to meet these objectives. The Sustainable Housing Forum believes that sustainable development is development that is designed and built so as to:

- protect the environment, globally and locally, so that the critical life-support systems are maintained for present and future generations;
- enable all people, now and in the future, to improve their quality of life through the pursuit of economic and social objectives, including social equity and environmental justice, in ways that simultaneously protect and enhance biodiversity, eco-systems, and the Earth's life-support systems, in particular:
    - by reducing global warming emissions;
    - by improving energy efficiency;
    - by reducing the consumption of natural resources and utilising renewable alternatives, and minimising waste.

WHY FOCUS ON NEW HOUSING?

Since the possibilities for achieving early improvements in environmental performance are particularly good in new housing, there is clearly an opportunity, with the greatly expanded house building programme now proposed by the government, to make a significant contribution by incorporating much of current best practice in terms of energy efficiency and economy in the use of non-renewable materials.

There is now a good deal of experience from a number of pioneering developments on how standards can be raised successfully, and what the design implications might be. The purpose of this report is to bring together this accumulated experience so that it can be used in developing an effective campaign for adopting higher environmental standards of house design and community wellbeing as the norm throughout the house building industry. These higher standards could then be applied to improving the large stock of substandard existing housing and to further improvement in aspects of sustainable construction more generally.

Ralph Rookwood, TCPA Vice-President
October 2003

Executive summary

There are examples of best practice in the UK that show that it is now possible to build houses which have zero carbon emissions. Water use is being radically reduced through innovative reuse and efficiency technologies. Renewable energy technologies are at a stage where they can play a major part in supplying domestic energy needs. New housing is being designed within communities that people like living in and which will be quality places to live for future generations.

That's the good news. The problem is that these examples are the exception rather than the rule when it comes to building new homes. This report aims to show how, through changes to the building regulations and the planning system, we can ensure that the significant amount of new housing which needs to be built in this country in the coming years adopts sustainability best practice and, in so doing, turn it into common practice.

The scale of the task is considerable. If everyone on the planet were to consume natural resources and pollute the environment as we currently do in the UK, we would need three planets to support us. The majority of new and existing homes in the UK has significant environmental impacts. For example, our homes contribute around 27 per cent of the UK's carbon dioxide emissions, and they have significant impacts in terms of use of natural resources such as timber and water. The overall "ecological footprint" of UK homes therefore represents a major impact on the global environment.

The government has gone some way towards recognising the environmental and social impacts of our homes. In February 2003 it released the *Sustainable Communities Plan: Building for the Future*[2], which sets out a number of policy directions intended to create "thriving sustainable communities". Similarly, in its *Energy White Paper*[3], the government sets out its aspiration to reduce carbon emissions from homes by 4-6 million tonnes a year by 2020. However, the two sets of regulatory frameworks that govern where and how homes and communities are developed – the planning system and the building regulations – are seriously inadequate for this purpose.

The Sustainable Housing Forum (SHF) welcomes the government's proposals to review Part L of the building regulations, as set out in the energy White Paper and the forthcoming reviews of national and regional planning policies. The aim of this report is to make clear recommendations, to policy and decision-makers, endorsed by a wide range of organisations, concerning how the regulations and planning policies should be reformed to ensure they deliver against the government's own sustainable development targets, and bring delivery of best practice in the design of sustainable homes and communities into the mainstream. Although this report concentrates on England, many of the recommendations will be of relevance to the devolved administrations in Wales, Scotland, and Northern Ireland.

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[2] *Sustainable Communities: Building for the Future, ODPM, February 2003 www.odpm.gov.uk*

[3] *Our Energy Future - creating a low carbon economy, February 2003 http://www.dti.gov.uk/energy/whitepaper/ourenergyfuture.pdf*

THE CURRENT SYSTEM

The Building Act and Building Regulations deal with detailed issues on an individual building level. They aim to ensure the health and safety of people in and around buildings and deal with issues such as conservation of fuel and power, ventilation, fire safety and access for all.

The planning system in England is designed to help ensure that suitable land is available for development in ways that accord with environmental, social, and economic policies, and that such development is consistent with the principles of sustainable development. Unlike the building regulations, which are prescribed centrally, the planning system has the opportunity to take a holistic view in ways sensitive to local circumstances and concerns.

THE PROBLEM

Some local authorities are already producing planning policies which cover sustainable design and construction in a comprehensive and consistent way. However, these policies have not been consistently and actively supported by central government and regional planners. This inconsistent interpretation of national planning policy is hampering the adoption of such innovation and good environmental design as the norm throughout the house building industry.

Currently the Building Act does not provide the power to address sustainable development issues. This fact is recognised by the Office of the Deputy Prime Minister (ODPM) in its recent response to the Select Committee report, *Planning for Sustainable Communities in the South East.*[4]

> *"... the powers in the Building Act under which Building Regulations are made do not allow sustainability to be addressed. To extend the powers in this way would require primary legislation, and to date Parliamentary time has not yet been found for this."*

In addition, the integrated pollution control mechanisms under the Environmental Protection Act 1990 and the Environment Act 1995 – which among other measures enable borough environmental health departments to designate Air Quality Management Areas – are ineffective. This is due in part to the variable levels of liaison and understanding between planners and environmental health officers. However, planners are also often unsure of how much weight they can place on factors such as air quality as a reason to refuse permission. Most planning departments view Air Quality Management Areas simply in terms of vehicle emissions, whereas in fact they should also use them to influence land uses, location, layout and detailed design issues such as materials and ventilation.

The result is that the current regulatory system, taking planning polices and design guidance together with the various building and environmental health regulations, is currently failing to address sustainability issues effectively.

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[4] *Government response to ODPM Select Committee Report on Planning for Sustainable Communities: Planning for sustainable communities in the South East, ODPM, July 2003. www.odpm.gov.uk*

Delivery of sustainable homes and communities requires a holistic approach. This is hampered by the lack of synergy between the three sets of controls resulting in confusion about which sustainability issues should be covered by whom when applications for new development are being processed. This often results in important sustainability objectives not being addressed at all.

This lack of synergy is compounded by the fact that historically the building control, planning, and environmental health departments come from different backgrounds. Due to the differences in the nature of their work, many departments work relatively autonomously and often there is little contact between them. Some local authorities have begun to address this by bringing their planning and building control departments together, making it easier for them to work together.

Another major issue is the lack of enforcement of both planning and building control. The general consensus seems to be that the enforcement powers given under the Building Act are adequate, but that the key issue is a lack of adequately trained staff to enforce them. Similarly, the majority of a planning enforcement officer's time can be taken up responding to reported breaches in Planning.

In order to address these issues and ensure that a robust set of Planning and Building Regulations are introduced which deliver against the government's own sustainability targets, the Sustainable Housing Forum makes the following recommendations for reform.

RECOMMENDATIONS

The following summary recommendations should be read together with the more specific recommendations in the individual chapters and the detailed matrix beginning on page 9.

- PPG1/PPS1 should be revised in order to make it clear that a primary objective of the planning system is to ensure development comes forward which achieves environmental, social and economic policy objectives in accordance with the principles of sustainable development, and to require planning authorities at all levels to promote sustainable construction and the highest standards of design in all new development. Other relevant PPGs should also be revised to reflect this requirement. Suggested wording for the most important PPGs in this respect is given in Appendix 5.
- Regional and local strategies should require that all developments achieve a minimum standard of BRE's EcoHomes "Very Good", or use an equivalent alternative standard.
- Government should undertake a fundamental review of the Building Regulations in the context of sustainable development.
- Accepting that fundamental overhaul of the Building Regulations will take some time to put in place, advantage should be taken of the significant opportunities for updating existing regulations (see specific recommendations in the matrix beginning on page 9) beyond the forthcoming review of Part L. A revised Building Regulation Approved Document relating to materials should be introduced.
- Building Regulations should be kept in line with EU environmental targets.

- There should be greater synergy between the Planning system and Building Regulations.
- Planning and Building Control departments should work more closely together within Local Authorities and mechanisms for addressing environmental health issues within planning strengthened.
- All regions should develop a programme of sustainable construction education, training, and awareness raising, delivered through a regional network for Planning, Environmental Health and Building Control officers and councillors.
- The UK government should set out to improve the positive role that planning can have in achieving sustainable development by raising its profile and addressing the negative image it currently has[5].

[5] *The TCPA's Putting Planning First Campaign is pressing for better integration of planning and planning related functions; increased status; and a positive role for planning in delivering sustainable development.*

DETAILED MATRIX OF SUSTAINABILITY ISSUES AND MECHANISMS

The matrix below demonstrates where and how existing regulations can be used to address relevant sustainability criteria (see the Introduction for a list of these). It also considers how the regulations should be expanded to encompass criteria which are currently overlooked.

[1]Recommendations made in bold are considered to be appropriate to be introduced into the Building Regulations framework without significant legislative change.

Issues	**Existing Legislative/Policy Mechanisms**			**Existing Initiatives**			**Recommendations**	
Criteria	**Planning**	**Environmental Health**	**Building Regulations**	**EcoHomes**	**Sustainability Checklist**	**Case Studies**	**Building Regulations**	**Planning Regulations**
Energy: CO_2 Emissions	PPG22 – Renewable Energy Gives guidance on the various types of renewable energy sources and how local planning authorities should include requirements for renewable energy in their plans.		Approved Document L1 sets compliance requirements for: Control systems. Commissioning. Energy efficient internal and external lighting. Dissemination of operation and maintenance information to occupants.	Credit given for: Lower than typical CO_2 emissions (using SAP calculations). Specification of Ecolabelled key electrical goods. Provision of clothes drying space. Provision of energy efficient external lighting.	Credit given for: Meeting CO_2 emission targets. Community-wide energy production (eg hydro, wind or CHP). Provision of energy efficient street lighting.	BedZED - Zero net CO_2 emissions from energy use. The development is designed to be low energy use and utilises a biomass CHP system and photo-voltaic panels. Hockerton - Zero net CO_2 emissions. Over-all the homes use just 10 per cent of the energy required for a typical house.	**• Increase in Building Regulations requirements to meet EU energy directive and Government targets for 20 per cent reduction in CO_2 emissions by 2010.[1]** **• Specification of energy efficient consumer goods in all new housing.[1]**	• Stipulation of increased energy efficiency requirements as part of planning conditions. • Requirement for percentage of energy from renewables for all new developments.
Energy: Insulation			Approved Document L1 requires: Compliance with target average U value for new buildings. Insulation of pipe work and ducts. Limitation of thermal bridging. Limitation of air leakage.	Credit given for: Exceeding Building Regulations target U value requirements (average U value).	Credit given for: Meeting EcoHomes requirements.	BedZED - Homes are highly insulated and utilise high thermal mass. Hockerton – Highly insulated external walls. Greenwich Millennium Village – 42 per cent improvement on Building Regulations. Watton Green – 30 per cent improvement on Building Regulations. Southwark – 32 per cent improvement on Building Regulations. *Note: The above improvements are based on 1995 Building Regulations requirements.*	**• Increase in Building Regulations requirements as above.[1]** **• Improvements in build quality to ensure air tightness requirements are met.[1]** **• Use of air permeability testing as means of compliance with Building Regulations rather than 'robust detail' approach.[1]**	

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Criteria	**Planning**	**Environmental Health**	**Building Regulations**	**EcoHomes**	**Sustainability Checklist**	**Case Studies**	**Building Regulations**	**Planning Regulations**
Materials: Low Environmental Impact				Credit given for: Specification of building materials with low environmental impact. Specification of sustainable timber within both building structure and finishing elements.	Credit given for: Meeting EcoHomes requirements for building materials and timber.	BedZED – Used reused and reclaimed materials. Greenwich Millennium Village and Ecopark - All use A rated material throughout.	**• Revision and expansion of the Building Regulations Approved Document covering materials to address environmental impact.[1]** **• Requirement for minimum per cent of A rated materials.[1]** **• Requirement for minimum per cent of all new timber to be from certified sustainable source (FSC or equivalent)[1]**	• Requirement to use materials from local sources where possible.
Materials: Recycling, Reuse and Waste	PPG10 – Planning and Waste Management Creates a policy framework for sustainable waste management which aims reduce the overall amount of waste produced and deal with waste in a sustainable manner. PPG03 – Housing Covers reuse of existing buildings.			Credit given for: Provision of recycling facilities.	Credit given for: Use of locally reclaimed materials. Provision of composting and chipping facilities for green waste.	BedZED – Excellent recycling and composting facilities. Greenwich Millennium Village, Watton Green, Ecopark and Southwark – Recyclable waste storage provided.	**• Provision of recycling and composting storage facilities in all new homes.[1]**	• Requirements for waste sorting and recycling on construction site and for development to help meet government target of 30 per cent recycling/composting of municipal waste by 2010.
Pollution: Ozone Depletion		Part IV Environment Act 1995 Monitored by many Local Authorities		Credit given for: Specification of insulation materials with ozone depletion potential of zero.	Credit given for: Meeting EcoHomes insulation requirements.	Greenwich Millennium Village, Watton Green, Ecopark, Valley Views and Southwark – All insulation has zero ODP.	*(From 2004 all insulation is to have zero ozone depletion potential.)*	

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Criteria	**Planning**	**Environmental Health**	**Building Regulations**	**EcoHomes**	**Sustainability Checklist**	**Case Studies**	**Building Regulations**	**Planning Regulations**
Pollution: NO_X emissions	PPG23 – Pollution Control Sets out the pollution control network for NO_X emissions.	Part IV Environment Act 1995 Monitored in Air Quality Management Areas (AQMAs) by Local Authorities Implications for planning applications		Credit given for: Specification of heating equipment with low NO_X emissions.	Credit given for: Meeting EcoHomes requirements for NO_X emissions.	BedZED, Greenwich Millennium Village, Watton Green and Ecopark – All use low NO_X heating.	• **Specify maximum NO_X emissions level for heating equipment.**[1] • Introduce NO_X emissions into Sedbuk database • Requirement for boiler manufacturers to specify NO_X level in standardised manner in product literature. • Closer working with environmental health	
Pollution: External Air Quality	PPG23 – Pollution Control Sets out the pollution control network for smoke, lead and SO_X emissions.	Part IV Environment Act 1995 Monitored in Air Quality Management Areas (AQMAs) by Local Authorities Construction and demolition impacts Implications for planning applications			Credit given for: Planting of trees and shrubs to help remove airborne pollutants.			• Requirement (as part of section 106 agreement) for planting of additional soft landscaping, trees, shrubs etc • Closer working with environmental health • Ability to cite air quality as a legitimate material consideration when assessing applications
Pollution: Ground and Water	PPG23 – Pollution Control Sets out the pollution control network for watercourses and sewers.	Responsible for monitoring discharges to 'Non-critical watercourses' and serving pollution notices on polluters.	Approved Document J sets out the requirements for fuel storage systems in order to prevent fuel escape and ground/watercourse pollution.					• Requirement that all developments comply with best practice guidance on pollution prevention.

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Criteria	**Planning**	**Environmental Health**	**Building Regulations**	**EcoHomes**	**Sustainability Checklist**	**Case Studies**	**Building Regulations**	**Planning Regulations**
Transport: CO_2 Emissions	PPG03 – Housing Provides housing specific guidance on public transport and parking. PPG13 – Transport Aims to promote more sustainable transport provisions. Requires housebuilders to plan developments to integrate public transport within developments to reduce car use.			Credit given for: Reduction in car use through good access to public transport. Close proximity to basic amenities with good pedestrian access. Provision of infrastructure for home office.	Credit given for: Provision of public transport. Control of parking spaces to reduce car usage. Provision of local employment. Close proximity to local amenities.	BedZED – Target of 50 per cent reduction in travel related fuel consumption over 10 years.		• Requirement for all new developments to produce a sustainable transport plan. • Planning condition that recommendations within transport plan are met.
Transport: Vehicle Alternatives	PPG13 – Transport Provides guidance on provisions for walking and cycling as well as provision of park and ride schemes and public transport.	Part IV Environment Act 1995 Requirement for each Borough to produce an Air Quality Strategy including measures to promote alternative fuel vehicles		Credit given for: Provision of cycle storage.	Credit given for: Provision of facilities for cyclists and pedestrians. Convenient and environmentally friendly transport	BedZED – Charging points for electric cars provided. Greenwich Millennium Village, Watton Green and Valley Views – Cycle storage.		• Minimum requirement for cycle storage areas for all new developments. • Transport plan (above) to consider the practicalities of car alternatives, car share schemes, additional public transport provision, LPG fuel at local filling stations etc.
Site Issues: Ecology	PPG09 – Nature Conservation Provides guidance on development of land including designated sites with respect to nature conservation and ecological protection.			Credit given for: Use of site with low ecological value. Protection of existing ecological features. Ecological enhancement.	Credit given for: Meeting EcoHomes requirements for ecology. Conservation and enhancement of bio-diversity. Native planting	BedZED and Hockerton – Provide specific wildlife habitats. Greenwich Millennium Village, Watton Green and Ecopark – All enhanced ecological value of their sites.		• Registered ecologist to be appointed on all new developments. • All sites to assess potential for ecological improvement with focus on local native species. • Planning to allow offsetting of areas of ecological value.

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Criteria	**Planning**	**Environmental Health**	**Building Regulations**	**EcoHomes**	**Sustainability Checklist**	**Case Studies**	**Building Regulations**	**Planning Regulations**
Site Issues: Land Use and Reuse	PPG02 – Green Belts Specific guidance on development controls within green belt areas. PPG03 – Housing Covers identification of suitable sites, reuse of land and the efficient use of land PPG23 – Pollution Control Provides guidance on the development of brownfield or contaminated sites.	Environment Act 1995 inserted a new contaminated land regime into the Environmental Protection Act 1990 'Suitable for Use' approach to the remediation of contaminated land		Credit given for: Efficient use of building footprint. Potential to review this issue in EcoHomes to possibly include credit for reused/ decontaminated sites.	Credit given for: Use of most appropriate site (as required by Planning or other strategic guidance). Reuse of previously developed or decontaminated sites.	BedZED, Integer, Greenwich Millennium Village, Watton Green, Valley Views and Southwark – All reused sites. Greenwich Millennium Village – Reclaimed contaminated land.		• Redefinition of land types to move away from 'greenfield' and 'brownfield' terminology and focus on ecological and amenity value of sites.
Water: Low Use/Demand Management				Credit given for: Specification of low water use fittings/appliances. Greywater and rainwater recycling within the house. Collection of rainwater for garden watering.	Credit given for: Meeting EcoHomes requirements for water use. Recycling of greywater for building and landscaping uses.	BedZED – Target of 33 per cent reduction in typical water consumption. Greenwich Millennium Village and Southwark – Water consumption of less than 40m^3/yr/bedspace.	**• Set maximum water consumption per bedspace for all new housing.[1]** **• Specification of low water use appliances in all new housing.[1]**	*• (Encouragement of greywater and rainwater recycling through reduced water rates.)*
Water: Flood Risk	PPG25 – Development and Flood Risk Guidance on developments and choice of suitable sites with respect to flood risks.			Credit given for: Reduction in surface water and roof run-off by provision of attenuation measures.	Credit given for: Choice of site not situated in Designated flood plain. Use of sustainable drainage systems to attenuate water run-off.			• Planning requirement for sustainable drainage systems on all new developments.
Health/ Wellbeing: Daylighting	Planners base local development control standards on BRE's 'Site Layout Planning for Daylight and Sunlight', 1991 to ensure new development does not obstruct daylight of existing property			Credit given for: Design to provide adequate daylighting.	Credit given for: Meeting EcoHomes requirements for daylighting.	BedZED, Hockerton and Integer – Buildings orientated to maximise natural lighting. Watton Green, Ecopark and Southwark – Achieve some credits for daylighting.	**• Introduce Building Regulations requirement for daylighting.[1]**	

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Criteria	**Planning**	**Environmental Health**	**Building Regulations**	**EcoHomes**	**Sustainability Checklist**	**Case Studies**	**Building Regulations**	**Planning Regulations**
Health/ Wellbeing: Internal Air Quality		No National guidelines on Indoor air quality. The National Air Quality Strategy lists 6 pollutants, 2 of which impact most on indoor air quality 1. Nitrogen dioxide 2. Particulates. Mainly from building service equipment and appliances Wide range of other pollutants from building materials	Approved Document F covers requirements for ventilation in domestic buildings. It sets out requirements for rapid ventilation (openable windows), background ventilation (trickle vents) and extract ventilation (fan or passive stack).	Consider introduction of this issue into future EcoHomes versions.		BedZED – Specification of allergy and formaldehyde free internal finishes. Hockerton – Use of non-toxic materials to reduce health hazards.	**• Specification of non-toxic, non-allergy materials in all new housing.[1]** **• Requires Indoor Air Quality Standards**	
Health/ Wellbeing: Noise Transmission	PPG24 – Planning and Noise Provides guidance on noise mitigation measures and restriction of noisy developments. Focuses on site related noise issues	Environmental Protection Act 1990 and PPG24 Deal with construction noise New noise sources can be controlled, but in retrospect after nuisance is caused.	Approved Document E covers the attenuation of sound between dwellings. It sets requirements for wall and floor construction and detailing for junctions to limit the transmission of airborne and impact sound.	Credit given for: Provision of sound insulation to minimise transmission of sound between dwellings.	Credit given for: Meeting EcoHomes requirements for sound insulation.	BedZED, Greenwich Millennium Village, Ecopark, Valley Views and Southwark – Exceed Building Regulations requirements.	**• Increase enforcement of Building Regulations sound insulation requirements (including retrospective changes).[1]**	• Need for closer liaison with environmental health and building control
Health/ Wellbeing: Private Outdoor Space	PPG1 Encourages SPGs to be produced giving more detailed design guidance - many have local residential amenity standards PPG17 : Planning for open space, sport and recreation			Credit given for: Provision of at least partially private outdoor space (garden, roof terrace, balcony etc).	Credit given for: Provision of green space/landscaping. Access to green space (eg play, amenity space).	BedZED, Greenwich Millennium Village, Watton Green, Ecopark, Valley Views and Southwark – All provide private space, either gardens or roof terraces.		• Requirement for provision of communal gardens as a minimum.
Equity			Approved Document M3 sets out the requirements for the provision of disabled toilets within dwellings.					• Minimum percentage of housing to be designed as 'lifetime homes' with facilities for the elderly.

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Access for all	Disability Discrimination Act 1995 later incorporated into planning legislation Requires planning authorities to draw attention of developers to the provisions of the Act and to British Standards for disabled access		Approved Document M2 covers provisions for access for the disabled. This covers the following: Means of access into the building. Provision of adequate circulation space within the building. Provision of accessible light switches and socket outlets. Provision of lifts for the disabled.					• All housing to be designed to DDA requirements.
Safety and Security	Circular 5/94 on Planning Out Crime 'By Design' – Urban Design in Planning Design Supplement to PPG3		Approved Document B sets out the requirements for fire safety. It covers: Provision of means of warning and escape. Prevention of internal fire spread. Prevention of external fire spread. Provision of access and facilities for the fire services. Approved Document J sets out the safety requirements for combustion appliances and fuel storage systems to prevent risk from fire. Approved Document K sets out the requirements for prevention of falling, collision and impact. It covers: Guidance on design of stairs, ladders and ramps. Protection from falling. Vehicle barriers and loading bays. Protection from collision with open		Credit given for: Design of housing to "Secured by Design" standards. Use of police advice in estate layout. Provision of security lighting and cameras. Provision of public telephones. Visible (overlooked) parking and walkway areas.	BedZED, Greenwich Millennium Village and Watton Green – External security lighting.	• **Motion detection security lighting (low energy fittings) to be provided to all housing.** [1]	• All housing to be designed to "Secured by Design" standards

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Criteria	**Planning**	**Environmental Health**	**Building Regulations**	**EcoHomes**	**Sustainability Checklist**	**Case Studies**	**Building Regulations**	**Planning Regulations**
			windows. Protection against impact and trapping by doors. Approved Document N sets out the safety requirements with respect to glazing. It covers: Protection against impact. Manifestation of glazing. Safe opening and closing of windows, roof lights etc. Safe cleaning of windows, roof lights etc.					
Community: General	PPG03 – Housing Covers issues such as landscaping and green amenity space. Refers to: PPG17 – Sport and Recreation				Credit given for: Community consultation and support. Community involvement. Integration within existing community or identity of new community. Enhancement of existing area. Provision of information pack to existing homes and businesses.	BedZED – Constructed to allow residents to live in a sustainable way in accordance with Sutton Local Agenda 21.		• Community consultation required for all new housing developments. • Provision of new community facilities where possible, community centre, playgroup, amenity space etc.
Community: Employment	PPG4 Industrial and Commercial Development and small firms.				Credit given for: Enhancement of employment and training prospects for local people.			• Employment of local residents during construction works where possible.
Community: Business Opportunities	Need for Community Plans and links to planning introduced by Local Govt. Act 2000				Credit given for: Demonstrating that development will bring economic prosperity to the local community.	Hockerton – Developed its own community business to provide employment for community members.		• Promotion of community businesses and appropriate mixed use.

Issues	Existing Legislative/Policy Mechanisms			Existing Initiatives			Recommendations	
Criteria	**Planning**	**Environmental Health**	**Building Regulations**	**EcoHomes**	**Sustainability Checklist**	**Case Studies**	**Building Regulations**	**Planning Regulations**
Flexibility	Better Places to Live: Design Supplement to PPG3							• Housing to be designed to allow future flexibility e.g. home working, change in family circumstance etc.
Procurement						BedZED and Hockerton - Materials procured locally wherever possible.		• Procurement of locally produced products where viable.
Value For Money	PPG12 and PPG6 Competitiveness and viability of development and town centres a material consideration							• Developments to be procured on best value not minimum cost basis, use of whole life costing.

Introduction

There are examples of best practice in the UK that show that it is now possible to build houses which are so energy efficient that they do not require a central heating system. Water use is being radically reduced through innovative reuse and efficiency technologies. Renewable energy technologies are at a stage where they can play a major part in supplying domestic energy needs. New housing is being designed within communities that people like living in and which will be quality places to live for future generations.

That's the good news. The problem is that these examples are the exception rather than the rule when it comes to building new houses. This report aims to show how, through building regulations and the planning system, we can ensure that the significant amount of new housing which needs to be built in this country in the coming years adopts environmentally sustainable best practice and, in so doing, turn it into common practice.

The scale of the task is considerable. If everyone on the planet were to consume natural resources and pollute the environment as we currently do in the UK, we would need three planets to support us. The majority of new and existing homes in the UK have substantial environmental impacts, with our homes contributing around 27 per cent of the UK's carbon dioxide emissions. Domestic energy use is projected to rise by 6 per cent by 2010. UK homes also have significant impacts in terms of use of natural resources, such as timber and water, and the use of toxic chemicals in building materials which can pose health risks for the occupants as well as environmental impacts on wildlife. The overall "ecological footprint" of UK homes therefore represents a major impact on the global environment.

In addition, the way homes are planned has a major impact on how society functions. Homes planned in relation to jobs and community facilities, and designed around high quality public transport can help reduce use of private cars. Similarly, well-planned developments can help to create a sense of community, and reduce crime and anti-social behaviour.

The government has gone some way towards recognising the environmental and social impacts of our homes. In February 2003 it released the *Sustainable Communities Plan: Building for the Future*, which sets out a number of policy directions intended to create "thriving sustainable communities". The Plan's goal of tackling the current housing crisis in the south-east by building some 200,000 new homes by 2016 offers a massive opportunity to develop homes with far higher environmental standards than is currently the case. Similarly, in its *Energy White Paper,*[1] the government sets out its aspiration to reduce carbon emissions from homes by 4-6 million tonnes a year by 2020.

Changes in design and construction will be needed in any case, in order to achieve the expansion in building rates set out in the Sustainable Communities Plan. If these changes also raise the environmental standards, two important objectives could be achieved. However, the two sets of regulatory frameworks that presently govern where and how homes and

[1] *Our Energy Future – creating a low carbon economy, February 2003*
http://www.dti.gov.uk/energy/whitepaper/ourenergyfuture.pdf

communities are developed – the planning system and the building regulations – are seriously inadequate for this purpose.

WHAT ARE THE KEY ISSUES THAT NEED TO BE CONSIDERED?

The following list covers the key sustainable development criteria relevant to housing projects; the list is not intended to be exhaustive but to provide an overview of the main issues that should be considered. The criteria are categorised into the three commonly recognised areas of sustainability: environmental, social and economic, but it should be noted that many of the criteria may overlap into several areas.

Environmental criteria

- ecology – wildlife habitats and biodiversity;
- energy – reduce energy consumption/CO_2 emissions, promote use of renewable energy;
- health and wellbeing – internal air quality, thermal comfort, daylight, sound insulation;
- land use – appropriate use and reuse of sites, decontamination;
- materials – reduce environmental impact, resource depletion and waste;
- pollution – air, water, climate change, ozone depletion;
- transport – implementation of a sustainable transport policy to increase alternative transport provision and to reduce car use and the need to travel;
- water – improve water management centrally and in buildings to reduce water demand and flood risk.

Social issues

- access – people with mobility or sight problems, deaf people;
- community – consultation, employment;
- equity – gender, race, religion;
- safety and security – reduce crime, increase personal safety.

It should be noted that there are a number of more specific social issues which may be considered as part of sustainable housing development and some of these are listed in Appendix 1. However, as the focus of this report is predominantly on the environmental standards of housing, these are not covered in detail.

Economic Issues

- flexibility – prevent obsolescence, increase future flexibility;
- procurement – procurement route, partnering, materials and so on;.
- value for money – best value not lowest cost, whole life costing.

Further details on each of these issues are given in Appendix 1.

The recent WWF-UK report *One Planet Living in Thames Gateway*[2] shows clearly what needs to be done and why. The details of how it can be done in practice need careful attention. In particular, under the heading "Through Regulatory Reform", it calls for:

- fiscal incentives;
- sustainability at the heart of all planning decisions;
- fundamental review of building regulations.

PURPOSE OF THIS REPORT

This report will consider in detail:

- the changes that should be made to the planning system, at the national, regional and local level, if the government is to succeed in delivering against its own targets;

- where and how changes should be made to the current building regulations, in the short term within the existing legislative framework, and over the longer term through the introduction of new primary legislation. As the matrix of sustainability issues and mechanisms demonstrates (see page 9), major opportunities exist to introduce changes to the current regulatory framework without significant legislative change.

These changes in the regulatory frameworks controlling new construction will not, of course, be effective in practice unless they are part of a wider and more comprehensive set of changes aimed at supporting and encouraging the implementation of more sustainable forms of development. This wider set of changes will also have to include such major issues such as:

- changes in financial frameworks and incentives;
- more and improved training programmes to provide the relevant new skills for both professionals and operatives;
- an active public information and marketing programme to create a widespread awareness of both the need for the changes proposed, but also the benefits to be realised.

This report has deliberately taken a narrower focus, dealing only with sustainable housing and the changes needed in the relevant regulatory systems in order to establish where early progress can be made. Its recommendations are designed to take full advantage of the opportunities that now exist because of the concurrent changes happening in planning, in the Building Regulations, and in the expansion of housing output.

[2] *http://www.wwf.org.uk/filelibrary/pdf/thamesgateway.pdf*

Part One: Raising the design standards for housing

INTRODUCTION

The aim of this chapter is to:

- summarise the current statutory framework for regulation of new housing and its effectiveness;
- identify projects where improved quality has been delivered;
- recommend current tools and measures that can help in this process;
- recommend changes to the Building Regulations.

WHAT ARE THE REQUIREMENTS UNDER CURRENT LEGISLATION AND POLICIES?

At present, developers are expected to work within the regulatory framework of the *1990 Town and Country Planning Act* (at national, regional and local levels) and the *1984 Building Act*, with its supporting Building Regulations.

Planning is primarily designed to help ensure that suitable land is available for development in ways that accord with environmental, social and economic objectives. The existing legislation aims to allow development where it is required while ensuring that the character and amenity of the area is not adversely affected by new buildings or alterations to the use of existing buildings or land. Further discussion on the planning system is provided in Part 2.

The Building Act and the Building Regulations deal with more detailed issues on an individual building level. They aim to ensure that the health and safety of people in and around buildings is not adversely affected by providing functional requirements for building design and construction. They also deal with issues such as conservation of fuel and power, ventilation, fire safety and access. Compliance with Building Regulations is checked by building control bodies including Approved Inspectors and local council building control departments. Developers are required by law to obtain building control approval. Environmental Health covers a wide range of public health, nuisance, hazards, and pollution issues, including advising planners on contaminated land and remediation issues.

In addition to the above legislation, there are a number of UK government initiatives that must be complied with.

Local authorities are required to prepare community strategies which should contribute to achieving sustainable development in their areas. This is an important umbrella strategy for ensuring that everything they do has sustainable development principles at the heart, and builds on the work undertaken in many councils under the banner of Local Agenda 21. However, there is little evidence that these strategies have helped to ensure that new housing is required to satisfy essential sustainability development criteria.

At the Rio Summit it was agreed that emissions of greenhouse gases should be stabilised in an attempt to mitigate the threat of climate change. The Kyoto Protocol, an agreement to cut

emissions, was agreed in December 1997. Under this, industrial nations agreed to reduce their collective emissions of greenhouse gases by 5.2 per cent from 1990 levels by the period 2008 to 2012. This global cut in emissions is to be achieved by differential reductions for individual countries and the UK has committed itself to a 12.5 per cent reduction, although it has also set its own domestic target of a 20 per cent reduction by 2010.

The Decent Homes plan was introduced in November 2001 and sets a government target of bringing all social housing up to a "decent" standard by the end of 2010. The general standard of housing should be improved to ensure that it meets the statutory minimum required. In addition, other targets have been set, such as ensuring that a reasonable degree of thermal comfort is achieved and that modern facilities and services are provided.

The *Sustainable Communities: Building for the Future* action programme was introduced by the government in February 2003 in order to achieve a step change in policies for delivering sustainable communities. The programme sets out the policies, resources and partnerships required to effect this change. In addition to the parent document, individual documents have been produced which set out the specific requirements and targets for each of the English regions.

Recognising the threats from climate change and the need for the UK to work towards greater energy efficiency, the DTI published the energy White Paper *Our energy future – creating a low carbon economy,* in February 2003. This recognises the environmental threat of climate change, the decline of the UK's indigenous energy supplies and the need to update and replace much of the existing energy infrastructure. It identifies four goals for UK energy policy:

- a reduction of 60 per cent in CO_2 emissions by 2050;
- maintenance of reliable energy supplies;
- promotion of competitive energy markets both within and outside the UK;
- adequate and affordable heating for all homes.

SUSTAINABILITY TOOLS

There are numerous tools and assessment methods available for designing and building more sustainably and the choice is often confusing. Some of the key tools that may be used to exceed current regulatory requirements are listed below.

The Housing Corporation, in association with other partners, has been involved in developing a number of tools and indicators that may be used to assess sustainability:

- The *Housing Quality Indicators*[1] were developed to allow funding bodies to evaluate different schemes against a fixed brief and enable them to take design decisions resulting in better quality housing while minimising cost implications. The system provides a measurement and assessment tool designed to allow all potential or existing housing schemes to be evaluated on the basis of quality rather than simply on cost. The quality rating derived by using the system does not provide a direct correlation with financial value and does not set out minimum standards. From April

[1] *www.hqiuk.com/*

2001 it has been a requirement of the Housing Corporation that all new developments utilising social housing grants use the Housing Quality Indicators.

- The Housing Corporation's *Toolkit of Sustainability Indicators*[2] was designed to help staff involved in all aspects of developing and managing social housing to assess the sustainability of its demand. The toolkit is structured to help its users choose and use its indicators appropriately.
- *Sustainability Works*[3] is an online tool which provides guidance to those involved with sustainable housing development and regeneration. It offers a framework for organisations to set sustainable development policies and targets and provides information on best practice and research. It also allows proposals to be assessed against benchmarks such as the Building Research Establishment's (BRE) EcoHomes (see below for further details), the Housing Sustainability Toolkit and Housing Quality Indicators.
- Sustainable Homes has produced *Foundations for the Future*[4], which sets out a strategic framework for sustainable development for housing associations and provides a checklist which will enable associations to highlight key areas that need to be addressed and suggest action to improve sustainability.

BRE has also produced the following tools[5]:

- EcoHomes is an environmental assessment method for housing and is the homes version of BREEAM (BRE Environmental Assessment Method). It may be used to assess new, converted or refurbished homes and gives an overall rating of PASS, GOOD, VERY GOOD or EXCELLENT. Since April 2003 the Housing Corporation has required all new projects it funds to achieve an EcoHomes PASS rating and this is set to increase to a requirement of VERY GOOD by 2006. English Partnerships also requires a minimum BREEAM or EcoHomes rating of VERY GOOD for all developments on its land.
- The *Green Guide to Housing Specification* is an environmental profiling system for building materials and components used in housing. It is a simple reference guide on the environmental impacts of these construction materials providing A, B and C ratings for their impacts over the life of a building. The material rating system used in the guide is adopted within EcoHomes assessments where the use of A rated material will obtain credits.
- The *Sustainability Checklist for Developments* has been designed for use by those involved in the planning and/or building of sizeable developments, from estates to urban villages and regeneration projects. It provides advice and guidance at the detailed estate/site level and focuses on the sustainability aspects relating to buildings and infrastructure. The South East England Development Agency (SEEDA) and

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[2] *www.housingcorplibrary.org.uk/HousingCorp.nsf/AllDocuments/5D35D65C488FA68A80256AB9003E8B75/$FILE/sustain2.pdf*

[3] *http://www.sustainabilityworks.org.uk/*

[4] *http://www.sustainablehomes.co.uk/foundations-for-the-future.htm*

[5] *www.bre.co.uk/breeam*

BRE have also produced a *Sustainability Checklist for Developments in the South East*, which takes into account regional concerns and case studies.

Other organisations have produced the following tools:

- Arup's SPeaR[6] (Sustainable Project Assessment Routine) is a tool developed in the private sector. It is a qualitative and visual tool (rather than a scoring system) that benchmarks schemes against best practice across a range of sustainability criteria and produces diagrams to show the results.
- Locally, some authorities have also compiled indicative sustainability checklists for assessing planning applications; examples include Nottingham, Leicester, Rushmoor, Gloucestershire, Bath and North-east Somerset, Enfield, Brent, Merton, Ealing, Richmond and Haringey.
- *Energy Efficiency Best Practice in Housing*[7] is a government-funded programme managed by the Energy Saving Trust. It promotes energy-efficient technologies and techniques to a variety of stakeholders involved in the refurbishment and construction of housing, through a combination of publications, training, advice and specialised consultancy. The Energy Saving Trust hopes that the best practice of today will be the minimum standard of tomorrow.

OTHER INITIATIVES

WWF launched its *One Million Sustainable Homes*[8] campaign at the World Summit on Sustainable Development in 2002. This aims to gain a commitment from the private and public sectors to develop a million sustainable homes in the UK by 2012 by removing the perceived barriers. This includes both new and refurbished homes.

The Housing Forum[9] was set up by Rethinking Construction to promote change and improvement in the housing sector. The Housing Forum has run a number of different working groups, including one on sustainability which published *The e factor: Six Guiding Principles in Improving Sustainability in Housebuilding*,[10] which reports on the application of sustainability issues in housing construction.

EXAMPLES OF CURRENT BEST PRACTICE

Numerous projects demonstrate that current regulatory requirements can be exceeded with great success. Some of these projects have been considered in detail in this report in order to learn where improvements to the current system should be made. General best practice developments have been considered along with EcoHomes rated projects and those with zero CO_2 emissions. The case studies considered are listed in more detail in Appendix 2.

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[6] *www.arup.com*

[7] *http://www.est.org.uk/bestpractice*

[8] *www.wwf.org.uk/sustainablehomes/wwf.asp*

[9] *www.thehousingforum.org.uk/hf*

[10] *www.thehousingforum.org.uk/rc/publications/reports/HF_E-Factor.pdf*

While some developments have been constructed with environmental issues in mind because of requirements being placed on the developers, many of the current 'best practice' projects have been essentially voluntary or as a result of the efforts of committed local authorities, such as the London Borough of Sutton. Such flagship projects are an ideal opportunity to showcase new technology and methods of construction, but it is also important to consider the broader picture.

For example, energy is often (quite rightly) the primary focus of many developments in relation to environmental standards. While it should be recognised that no project can deal with all the issues as, quite frequently, there will be defining features beyond the developer's control, it is important to ensure that as broad a perspective as possible is taken to the potential impacts of a development.

Projects such as Hockerton (in Nottinghamshire) and BedZED (in the London Borough of Sutton) have made great achievements in terms of creating developments that have zero net operational CO_2 emissions. Both these developments have also considered and dealt with many of the other key sustainability issues, but this is not the case in all projects.

This issue is also highlighted by the comparison of projects assessed using EcoHomes. Generally projects scoring GOOD would be expected to have a reasonable all round performance. However, there is no reason why projects scoring GOOD (or even PASS) could not excel in certain areas. For example, a project assessed as achieving GOOD by scoring very well in building fabric insulation and by using "A" rated construction materials, may well be deficient in performance in other areas of the assessment.

Specifying a rating of PASS or GOOD could allow developers to cherry-pick the issues which they could easily deal with whilst neglecting other areas. However, a rating of VERY GOOD or EXCELLENT would require developers to consider all of the issues and ensure that housing has a high all round performance without being overly prescriptive.

HOW IS THE CURRENT SYSTEM WORKING?

Historically, building control and planning departments come from different backgrounds and this affects the way they work together. As outlined earlier, building control stems from a public health, or health and safety background and the department is used to having a fairly rigid framework of legislation, which they are responsible for enforcing. Planning departments come from a town planning background and are primarily concerned with the broader issue of land use and the (quite often) subjective decisions involved in this.

As a result of these differences, many building control and planning departments work relatively autonomously. Some local authorities have combined the two departments and this is undoubtedly an improvement, making it far easier for staff to work together. Generally however, while there is often early contact between the two departments – for example when building control may provide technical advice to the planning department to enable it to set planning provisions – beyond this there is often little contact. What contact there is may have been diminished by the introduction of Approved Building Inspectors, which has forced many building control departments to become more focused on fee-earning work and perhaps stifled some of the informal dialogue between the two departments.

Another problem is that the Building Act, as it stands, does not provide the power to address sustainability through the Building Regulations, and to do so would require a change in primary legislation. This fact is recognised by the Office of the Deputy Prime Minister (ODPM) in its recent response to the Select Committee report, *Planning for Sustainable Communities in the South East.*[11]

> *"... the powers in the Building Act under which Building Regulations are made do not allow sustainability to be addressed. To extend the powers in this way would require primary legislation, and to date Parliamentary time has not yet been found for this."*

While this is something that the Building Regulations Division at the ODPM is keen to progress, so far it has been unable to secure a slot for such a Bill and, even given this, it is inevitable that any significant change in the Regulations will take some time to implement.

A Sustainable Building Act is undoubtedly something to be working towards. However it is also very important to have a firm view on how environmental standards could generally be raised in the short to medium term, and ample scope exists for this as shown in the matrix earlier in this report. In addition, accepting that the Building Regulations have the ability to tackle specific issues (such as energy use) in a very focused way, it may be that the planning system is more able to integrate some of the broader issues of sustainable homes and communities as referred to in the next section.

The Planning Directorate at the ODPM is undertaking a general review and update of all existing Planning Policy Guidance. This is due to be completed within the next three years. In addition, the current draft Planning Bill[12] places a statutory duty to promote sustainable development and, subject to it being passed through the House of Lords, will result in the expansion of the current requirements for sustainable development in PPG1[13]. However, while inclusion of such a clause (Clause 38) in the Bill is welcomed, it does not go far enough in meeting the definition of sustainable development set out earlier.

Again, much of this legislation may take some time to implement and there are more direct means of introducing sustainability requirements into new construction projects. One way of doing this – which is already being used by the Property and Construction Panel (formerly the Government Construction Clients Panel), English Partnerships and the Housing Corporation, to varying degrees – is the use of established assessment methods such as BREEAM and EcoHomes. This enables a general standard of construction to be dictated without being prescriptive as to exactly how this should be achieved. An advantage of the use of such tools is that it removes much of the responsibility of checking compliance from already overstretched local authorities.

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[11] *Government response to ODPM Select Committee Report on Planning for Sustainable Communities: Planning for sustainable communities in the South East, ODPM, July 2003. www.odpm.gov.uk*

[12] *The Planning and Compulsory Purchase Bill is currently going through Parliament and is due to become law mid-2004*

[13] *Planning Policy Guidance 1: General Policy and Principles (1997)*

In the case of the above organisations, it is a relatively easy step to build in such requirements as a condition of funding, but such "proxy" methods of compliance may also be built into Planning Conditions or Section 106 agreements.[14] This was successfully achieved for the first time on a housing project by North Somerset Council, where outline planning permission for the Ashlands development in Portishead required that all houses receive a minimum of a GOOD rating under EcoHomes.

One potential barrier not yet discussed is that of enforcement. There is little point in increasing environmental standards for housing if there is no infrastructure in place for checking whether these have been met and enforcing requirements where they have not. The general consensus appears to be that the enforcement powers given under the Building Act are adequate, but that the key issue is having sufficient trained staff to enforce them. One concern voiced by Newcastle City Council (in its response to the ODPM's review of the planning enforcement system) is that the lion's share of enforcement officers' time is taken up responding to reported planning breaches rather than in an orchestrated effort to enforce planning requirements. This situation needs to be addressed.

There is also concern regarding the existing requirements for compliance with Building Regulations. The new Approved Document L, *Conservation of Fuel and Power*, now requires testing to satisfy compliance with air tightness requirements in most non-domestic buildings. In housing, compliance may still be satisfied through use of standard details given in the Stationery Office publication, *Limiting thermal bridging and air leakage: Robust construction details for dwellings and other similar buildings*. The effectiveness of this method of compliance is subject to site workmanship and can be rendered almost useless if the quality is poor. In recognition of this problem the recently revised Approved Document E, *Resistance to the Passage of Sound,* currently requires testing to satisfy compliance.

Environmental Health, through integrated pollution control mechanisms, has an important role to play in dealing with issues such as contaminated land, air quality, noise, water and pollution from construction and demolition. However, the current regulations are inadequate unless better links are forged between the planning, building control and environmental health structures. This would help to prevent the wider issues relating to pollution control from falling between the gaps between planning, building control and environmental health.

RECOMMENDATIONS

Specific recommendations for each of the key sustainability issues are given in the matrix. Some more general recommendations are given below:

- The government must undertake a fundamental review of the Building Regulations in the context of sustainable development.
- Accepting that fundamental overhaul of the Building Regulations will take some time to put in place, advantage should be taken of the significant opportunities for

[14] *Section 106 of the Town and Country Planning Act 1990. This allows local planning authorities to negotiate with developers to require them to pay for infrastructure relating to the development, for instance, affordable housing or road improvements. However, this can extend to address sustainable development issues.*

updating existing regulations (see matrix) beyond the forthcoming review of Part L. Existing regulations should be upgraded to keep in line with UK sustainable development targets such as:

  - 20 per cent CO_2 emission reduction by 2010 and 60 per cent by 2050.
  - 30 per cent municipal waste recycling by 2010.
  - Commitment to procure timber from independently certified, well managed sources, such as those with Forest Stewardship Council (FSC) certification or equivalent.
- Building Regulations should be kept in line with EU environmental targets.
- A revised Building Regulation Approved Document relating to materials should be introduced[15]. This should require the use of materials with low environmental impacts and reused/recycled materials. The toxicity of materials should also be considered. This could be trialled by introducing requirements for minimum percentage of all new construction materials being "A" rated through the *Green Guide to Specification*.
- More onerous performance targets for homes should be imposed through the Building Regulations system. Wherever appropriate these should be enforced through independently accredited testing rather than the "robust details" approach.
- Additional funding, resources and training (where required) should be provided to local authorities to allow more stringent enforcement of existing and future housing standards.
- There should be greater synergy between planning, building regulations and environmental health

[15] The current 'Materials and Workmanship, Approved Document to support regulation 7(2000)' does not adequately address the environmental impact of construction materials. This document should be expanded, revised and re-introduced as a new 'Part' to ensure that practitioners give it the same consideration as the other Approved Documents.

Part Two: Planning for sustainable buildings

The Town and Country Planning system regulates the development of land across England and Wales. It is designed to balance competing objectives and is ideally placed to address issues of sustainable development and sustainable construction, as is recognised to a limited extent in the current wording of Planning Policy Guidance 1 (PPG1). The box below sets out the existing arrangements for the planning system and those proposed by the government, as set out in the Planning and Compulsory Purchase Bill and associated reforms.

Tier	Existing Arrangements	Proposed New Arrangements
National	▪ Planning Policy Guidance (PPG)	▪ Planning Policy Statements (PPS) ▪ National Policy Statements
Regional	▪ Regional Planning Guidance (RPG) ▪ Regional Sustainable Development Frameworks	▪ Statutory Regional Spatial Strategies (RSS) ▪ Regional Sustainable Development Frameworks
Sub-Regional	▪ Sub-Regional Elements of RPG	▪ Some Sub-Regional Strategies
County	▪ Structure Plans ▪ Minerals and Waste Local Plans	▪ Minerals and Waste Development Frameworks
Local	▪ Local Plans ▪ Community Strategy	▪ Local Development Frameworks ▪ Statements of Community Involvement

A review of planning policy and supplementary guidance in early 2003 identified many examples of good practice among local planning authorities in England[1]. A growing number of local authorities are producing policies which cover sustainable design and construction in a comprehensive and consistent way. However, many of these local initiatives are not experiencing support and encouragement from government regional offices consistent with recent government policy which seeks to promote sustainable construction[2].

The Sustainable Housing Forum believes there is an urgent need to strengthen the planning system, at national, regional and local levels, in ways which complement a strengthened set of Building Regulations and which would actively advance the effective use of the planning system in achieving more sustainable forms of development.

THE ROLE OF PLANNING IN ACHIEVING SUSTAINABLE DEVELOPMENT

A traditional objection to increasing the role of planning in promoting sustainable development is that it is a profession concerned solely with land use issues, and that building techniques, choice and source of materials are best dealt with by Building Regulations. However, as Part

[1] *J. Davies and S. Charter (2003), Review of Local Plan Policies, South Somerset District Council & STSD*

[2] *Sustainable Communities: Building for the Future, ODPM, February 2003 www.odpm.gov.uk.*

One explains, Building Regulations are prescribed centrally, are more narrowly focused, and have a role in ensuring minimum standards. Planning, on the other hand, has the opportunity to take a holistic view in ways sensitive to local circumstances and concerns. Planners need to be able to consider the full range of sustainability issues.

It has been recognised by parliamentary committees and other bodies in recent discussions on sustainability issues, and the proposed changes in the planning system (including the draft Planning and Compulsory Purchase Bill), that a broader perspective is needed – something the planning system is ideally suited to providing. There has been frequent mention of the crucially important role that planning should play if there is to be effective progress towards more sustainable forms of development. What has not been spelled out is just what practical changes are needed in order for this to happen.

The main justification for involving the planning system in determining anything more than issues of land use and location is the need to advance quality design, in environmental and social terms. However, identifying sustainability issues that can legitimately be covered in development plan policy is still a contentious issue and has led in some cases to conflicts with, and formal objections from, regional planners and the Secretary of State. In addition, the resources needed for achieving good quality design are substantial. Therefore, from practitioner's point of view, there is need for a clearer national planning framework.

A stronger and clearer policy lead from government is needed in all the relevant planning guidance, but particularly in PPG1, making the achievement of sustainable development a primary function of the planning system.

The planning system also needs to allow flexibility as a complementary measure to more prescriptive planning policies. The proposed Statements of Development Principle[3], included in the Planning Bill, are one way of achieving this and could potentially be a key vehicle for delivering sustainable development. Such flexibility will be important for those occasions where developer proposals are actually more radical than those being promoted by the LPAs (Local Planning Authority), and will allow development proposals to take into consideration commercial and locational realities.

PPG12[4] identifies a range of issues that can currently be covered in development plans. However, this list is by no means exhaustive and there are many issues not specifically identified – for instance, minimising the use of resources in construction, and the promotion of waste reduction and recycling in construction. For this reason, formal objections are often recieved to innovative policies which promote sustainable construction[5]. PPG12 should be amended accordingly and a presumption in favour of approval for on-site renewable energy production, unless there are compelling reasons for refusal.

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[3] These will take place of master plans and outline planning consent, requiring developers to produce proposals in consultation with LPAs and local communities.

[4] Planning Policy Guidance 12: Development Plans (1999)

[5] The London Borough of Merton's attempts to include a policy in its development plan requiring employment developments over a certain size to generate 10 per cent of their energy requirement from renewables has received continued objections from the Government Office for London.

The government is increasingly seeing the planning system as a key player in meeting its commitments to sustainable development and emissions reduction targets. However, the present planning system has neither the financial resources nor, in many cases, the skills necessary to carry out this function adequately[6]. Therefore, sustainable construction has been left to voluntary action by housebuilders – a situation that will not result in sustainable housing moving from the margins to the mainstream.

In addition, the energy White Paper committed the government to examine *"how to bring consideration of the use of renewables and energy efficiency in developments more within the scope of the planning system...and in a way that does not impose undue burdens on developers"* (Para 4.31). This could potentially include extending the scope of Planning Obligations and a presumption in favour of on-site renewable energy production in new developments. The UK Business Council for Sustainable Energy, for example, has argued that *"guidance for the development of housing and other buildings should require that, wherever possible, new developments include some form of sustainable energy generation within their design[7]"*.

If the construction industry is to modernise, become more efficient and respond to the challenge of sustainable development, it must be backed up by strong planning policies which require developers to build strong sustainability credentials into new developments. This will create a level playing field in which developers can compete, and a clear lead to local authorities that would reduce their exposure to legal challenges.

THE CHANGES NEEDED NATIONALLY

Clear national guidance is also needed to remove the barrier to progress that is arising in some regions through the inconsistent interpretation of national policy by regional government offices. Notably, in the South West the Government Office has blocked several attempts to introduce innovative sustainable design and construction policies[8]. And although Government Office for London has been generally supportive of borough attempts to innovate policy and local guidance, the London Borough of Merton's proposed policy on renewable energy has twice received objections[5].

The government's existing good practice guidance on sustainable development and the planning system[9] began to lay the foundation for considering issues beyond land use issues. For instance, it states that:

"Planners should discuss specific criteria for energy efficient design with building control officers and also with local developers and architects."

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[6] *The Government and others, including the Royal Town Planning Institute, are beginning to positively address the skills issue. For instance, through the Egan Review of Skills, due to report later this year.*

[7] *'Planning for Sustainable Energy: A UKBCSE Policy Paper'. December 2002*

[8] *Government Office for the South West objected to the sustainable construction policy in the South Somerset District Council Local Plan in 2002. Other objections to innovative proposed policies have occurred in North Devon and Poole.*

[9] *Planning for Sustainable Development: Towards Better Practice, DETR 1998*

The following criteria as set out in the existing good practice guide, though conceived for housing, would apply similarly to other types of development:

- internal layout to… maximise passive solar heating;
- use of atria, conservatories and porches to enable natural ventilation and conservation of heat;
- layout of windows, doors and roof lights;
- provision for recycling of rainwater, and domestic waste on site to be made feasible;
- provision for active solar systems;
- use to be made of material with reduced energy inputs (e.g. sustainable produced timber), low maintenance needs, and locally manufactured or recycled (e.g. bricks.)[10]

However, with the exception of a limited number of authorities, most planners and developers are either not even aware of this document, or their legal teams do not consider this "good practice guidance" to have the same status as PPGs. The government needs to review such documents and assess how they can be given greater status, and improve awareness of their contents.

Recommendations for reform

In order to remedy this situation, action is needed on four fronts:

1 The government needs to make clear statements, verbally and within PPG1, that planning has a central role in sustainable design and construction and give local planning authorities the financial and human tools and resources to do this. Local authorities should be able to use fiscal incentives ("carrots") as well as imposing "sticks" on developers.
   - forward planning should be seen as a central delivery tool for sustainable construction, bringing together related functions such as Building Regulations;
   - by giving a more positive role to planning more people will want to engage with planning processes and aspire to become planners;[11]
   - the planning system needs to allow flexibility as a complementary measure to more prescriptive planning policies. The proposed Statements of Development Principle, included in the Planning Bill, are one way of achieving this.

2 The *Planning for Sustainable Development (1998)* document should be expanded, updated and packaged as a new good practice companion guide to PPG1. This approach has been successfully used with the design supplements to PPG3 and the access to town centres supplement to PPG6. The revised good practice companion guide should set out comprehensive criteria on which planning applications will be judged in relation to sustainable development. A detailed list of the sustainability criteria that should be addressed through the planning framework can be found in the matrix beginning on page 9.

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[10] *(paras.5.5.16-5.5.17)*

[11] *TCPA's Putting Planning First Campaign is pressing for better integration of planning and planning related functions; increased status; and a positive role for planning in delivering sustainable development.*

These include:

- energy efficiency
- renewable energy and local energy sources
- source of materials used
- waste management
- pollution and waste during construction and demolition
- operational pollution control (such as air quality, noise, light pollution)
- transport generation
- biodiversity
- landscape protection
- water resources use and management
- health and social impacts of design and layout
- mixed uses

3 Central government needs to ensure that there is consistency across the regions, and be supportive of attempts to innovate in local planning policy. This will need to be addressed in the revised PPG1[12] supplement (mentioned in the previous recommendation).

4 The skills of planners and decision-makers must be improved to enable them to fully and knowledgeably address sustainable constructions issues.

THE CHANGES NEEDED REGIONALLY

All regional strategies are obliged to address sustainable development, but need to do so in ways that fully take into account what is needed for delivery at the local level. Regional strategies must state clearly that local authorities must encourage and promote sustainable housing and construction, but that individual local authorities should determine what is appropriate according to local circumstances, government guidance, and the policy and SPG precedents set by other authorities.

Regional Planning Guidance (RPG) primarily sets out broad strategic spatial planning issues indicating key growth centres and transport corridors. Its primary role in relation to sustainable housing design and construction is to give strong support to the principles behind it, and to call for local development plans to set out more detail on how sustainable housing design and construction should be promoted. For instance, RPG for the South East (RPG9, 2001) includes reference to sustainable design issues (see para.5.9, policies INF2, INF4 and M1), as does the draft London Plan. The draft London energy strategy goes further by calling for at least one zero-energy development in every London borough by 2010.[13] This is a lead that could be followed by other regional bodies.

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[12] *Planning Policy Guidance 1: General Policy and Principles (1997)*

[13] *Greater London Assembly (2003) Green light to green power*

In addition, the current plethora of plans at regional level (RPG/RSS, Regional Economic Strategies, Regional Sustainability Frameworks, etc.) can lead to confusion. Therefore, not only should regional strategies have explicit policies on sustainable development, but one plan should be primary, with the others informing it. Ideally it should be RPG that assumes this role. This is critical for the successful coordination of planning at regional level.

To support progress on sustainable housing, sustainable development should be defined *in planning terms* in RPG, i.e. in a way that breaks sustainable development into the terminology and concepts that are familiar to and useable by the local and sub-regional layers of the planning system. Revision to PPG1 is likely to include a definition. Regional strategies should have a more regionally specific interpretation.

Therefore:

Sustainable Housing	=		Sustainable location
		+	Sustainable layout
		+	Sustainable landscape
		+	Sustainable design and construction

The above definitions have integrity as practical *planning-based* definitions of sustainable development and sustainable housing, with sustainable design and construction identified as essential components of sustainable development. Such definitions are needed in all regional strategies to ensure consistency of terms and objectives.

Regional strategies must promote the creation of sustainable communities. They should encourage a mix of uses, provision of community facilities, a range of employment, reduced transport demand, as well as sustainable design and construction issues. They should, however, also consider local and regional resource use and resource cycles, such as use of waste products in construction and the use of important primary resources in construction which have led to regionally distinctive buildings.

Following enactment of the *Planning and Compulsory Purchase Bill*, RPG will be replaced with statutory Regional Spatial Strategies (RSS), effectively giving more power to regional strategies. The SHF supports this as a positive step.

Recommendations for reform

- regional strategies must address sustainable development in ways that ensure delivery at local level in ways appropriate to local circumstances;
- in order to avoid confusion, one regional plan should be primary over the others (preferably this should be RPG/RSS);
- regional strategies should not look at sectors in isolation, but should aim to create sustainable communities in line with the government's *Sustainable Communities Plan*.
- regional planning policies should require that all developments achieve a standard which is equivalent to BRE EcoHomes VERY GOOD or in SPG develop an equivalent local standard which includes additional local issues and concerns. An

advantage of the use of such tools is that it removes much of the responsibility of checking compliance from already overstretched local authorities.

THE CHANGES NEEDED LOCALLY

Once the national and regional policy framework is clear and leaves no room for doubt, local policies can be put in place which address changes at three levels:

1. Development Plans (Local Development Frameworks, under provisions of *Planning and Compulsory Purchase Bill*);
2. Permitted Development Rights (to be supplemented by Local Development Orders, which will allow local authorities to grant permission for specified types of development in all or part of their area under provisions of *Planning and Compulsory Purchase Bill*);
3. Supplementary Planning Guidance.

Local policies should reflect regional strategies and national planning guidance, and therefore clearly set out a planning-based definition of sustainable development and good design, which incorporates sustainable construction within the local context. Following the criteria set out in the revised supplement to PPG1, a development plan (or LDF) should have clear policies on:

- **Sustainable development:** this should incorporate sustainable housing and construction as key components of sustainable development. Therefore:

Sustainable Development	=	Sustainable location
	+	Sustainable layout
	+	Sustainable landscape
	+	Sustainable design and construction

- **Good design:** this should define in detail what good design means at the local level, and should incorporate sustainability issues. Therefore:

Good Design	=	Aesthetics
	+	Functionality
	+	Location, layout and transport
	+	Landscape and ecology
	+	Sustainable building design

- **Sustainable housing and construction:** this should incorporate the component elements of sustainable design and construction that are detailed in national planning guidance.

Box One

Aesthetic = sensitivity to the surrounding built and natural environment
Liveability = a building that works well and feels good for its users
Adaptability = long life, loose fit – buildings that can easily adapt to suit changing needs
Location, layout and transport = designing sustainable settlements and neighbourhoods
Landscape and ecology, includes sustainable drainage systems, sustainable agriculture and rural land use, and biodiversity
Sustainable building design = very high energy and water efficiency; healthy and pollution-free; local and low environmental impact materials; waste minimisation

Planning is designed to balance competing objectives and is the best system to reconcile some of the tensions within sustainable construction, such as the trade-off between adaptability and energy use.

A number of planning authorities have begun to integrate sustainable design into planning policies and guidance. The London Borough of Enfield is one such authority, which stated in its proposed Planning Policy Statement, *Securing Sustainable Design and Construction in Development* (2003), that:

> *"... where a planning application fails to show that sustainability in design and construction has been satisfactorily addressed, then the application will be deemed to have failed to demonstrate good quality design. It will thus be rejected, consistent with Government guidance contained in the following Planning Policy Guidance Notes:*
>
> - *PPG1 General Policy and Principles, February 1997, para. 17.*
> - *PPG3 Housing, March 2000, paragraph 63."*

Currently there is much practice which has been developed in voluntary and supplementary guidance (SPG), including the Energy Efficiency Best Practice Programme[14]. SPG has so far tended to encourage developers to undertake an assessment against a set of questions (for examples of SPG see Appendix 3). However, an increasing number of local planning authorities have followed the BRE EcoHomes standard as the best set of standards against which developments can be judged (see previous chapter).

Local development plan (or LDF) policies should require that all developments achieve a standard equivalent to BRE EcoHomes VERY GOOD. This would allow planning authorities either to identify EcoHomes in SPG, or develop an equivalent local standard which takes into account local issues and concerns. Similarly, conditions attached to planning consents could play a major part in revolutionising the overall sustainability of new homes and would provide an additional tool to an amended set of Building Regulations.

With these changes there would be less reliance upon voluntary mechanisms such as Section 106 agreements (Planning Obligations), pioneered by North Somerset and Cambridge City

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[14] *This is the UK government's principal energy efficiency information, advice and research programme for professional organisations involved in all aspect of housing. The Energy Saving Trust took over responsibility for the programme in May 2001. For more information see www.est.org.uk/bestpractice*

councils, or the policies of public sector landowners such as English Partnerships, where legally binding agreements have been drawn up to guarantee construction to EcoHomes VERY GOOD standard.

Local planning authorities must create planning frameworks that integrate sustainable design and construction into:

- Development Plan (or LDF) policies;
- an SPG for sustainable design and construction;
- Development Briefs/ Statements of Development Principle for major sites.

This would mean that development plans (or LDFs) would address sustainable construction (as a whole or through its component parts) as part of a package of sustainable development policies that "comprehensively and consistently" (PPG 12, Para. 4.4.) address the major environmental issues (see earlier list).

Strengthening sustainability standards for specific sites (local planning authorities will be able to do this through site specific Development Briefs once the Planning Bill is enacted) is essential, since typically larger sites represent at least 50 per cent of all housing that will be built in any plan period. They can represent more than 80 per cent of the site-specific housing allocations identified in development plans (or LDFs) – and their environmental and social effects will last for decades.

Local authorities, the RTPI and other relevant bodies should ensure an adequate programme of training and education for communities, planning and other relevant staff, and politicians. While the shortcomings have been recognised and action has begun[15], a more comprehensive programme is needed which addresses skills and training gaps across the board, including the need to raise awareness and expectation of house buyers regarding quality design. Ideally this should be available as part of a regional programme of sustainable construction, education and training delivered through regional networks.

Recommendations for reform

- Local policies should clearly set out a planning-based definition of sustainable development and good design, incorporating sustainable construction within the local context.
- Development Plans (or LDFs) should have policies which set out the basis on which planning applications will be judged in relation to sustainable development. The criteria should be comprehensive and set out in a companion guide to PPG 1.
- SPG should identify EcoHomes VERY GOOD or an equivalent locally specific standard for new housing.
- Local authorities, the RTPI and other relevant bodies should develop training and education programmes for communities, planning and other relevant staff.

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[15] Government has recently committed £3.8 million over the next three years to properly resource the national Planning Aid service; the RTPI Education Commission has addressed education of planners; and Egan is currently reviewing skills more generally.

KEY OVERALL RECOMMENDATIONS FOR THE PLANNING SYSTEM:

1. A revised PPG 1, which makes clear that planning is able to address the full range of sustainable construction and design issues and so remove any ambiguity about the legitimacy of local policies. A good practice companion to PPG1 should also list criteria by which developments will be judged to be sustainable developments incorporating a comprehensive range of environmental, social and economic issues.
2. Clear and unequivocal regional strategies which require local plans to define sustainable development in terms of location, layout, landscape, design and construction
3. All local development plans (or LDFs) should adhere to the sustainable development criteria as set out in the revised good practice companion guide to PPG1.
4. Regional planning policies which encourage local planning authorities to go beyond simply developing stronger local plan policies in promoting sustainable construction: using SPG or planning conditions for instance.
5. Regional strategies should identify resources and resource cycles which are important for sustainable construction and locally distinctive buildings. For example, promoting the use of Planning Gain (Section 106) or SPG.
6. Regional planning and Local Development Plan (or LDF) policies to require that all developments achieve a standard which is equivalent to BRE EcoHomes VERY GOOD standard or in SPG develop an equivalent local standard which includes additional local issues and concerns. An advantage of the use of such tools is that it removes much of the responsibility of checking compliance from already overstretched local authorities.
7. All regions to develop a programme of sustainable construction education and training delivered through a regional network for planning officers and councillors.
8. The government must make it clear that the planning system is a central element in meeting its sustainable development and carbon dioxide emissions reduction commitments. This will require greater integration and status for planning.
9. There is a need for more comprehensive pollution control, which will only come about as a result of better linking of environmental health with the planning system and building control.

Appendix 1

KEY SUSTAINABLE DEVELOPMENT CRITERIA RELEVANT TO NEW HOUSING

The following list covers the key sustainable development criteria relevant to housing projects along with a brief description of each. The list is not intended to be exhaustive, but to provide an overview of the key issues that should be considered. The criteria are categorised into three main areas – environmental, social and economic – but it should be noted that many may overlap into several areas.

ENVIRONMENTAL CRITERIA

Ecology

The protection of biodiversity and other key ecological features, for example trees and streams, is an important part of sustainable development. As pressure on land use becomes greater, it is increasingly important to protect and enhance existing plant and wildlife habitats. This should ensure the preservation of our natural species, many of which are already in decline.

The reuse of existing sites will help to preserve remaining wildlife habitats and other areas of high ecological value, as well as reducing the current pressure to build in high-risk areas such as floodplains or areas of potential water shortage. Wherever houses are constructed there is always the risk that, no matter how environmentally benign the building or development itself, it may present a threat to local ecology or areas of natural beauty. In order to develop sustainably, we must aim to minimise the damage to existing local ecology and, where possible, enhance it.

Damage can be minimised either by selecting a site of low ecological value or by developing a site in such a way as to protect the most important ecological attributes. Indeed, housebuilding need not reduce the ecological value of a site and may enhance it in many cases. There will always be some temporary disturbance to the local ecology, but wildlife will return once the construction is complete provided that there is the right habitat available for it to do so.

Energy

All buildings use energy in their construction due to the extraction of raw materials, manufacture and transport of materials and components and assembly on site. In their life cycle, buildings use energy in a number of different ways:

- in construction;
- in operation, for lighting, heating and power;
- for demolition, recycling and disposal.

The largest proportion of energy used is for the operation of the building.

We are able to design and build housing that has very low energy usage but this requires commitment and persistence. Energy efficiency measures are most cost-effective when installed in new homes (or those being renovated) and when existing equipment that has reached the end of its useful life is being replaced. Particular attention should be given to reducing heating,

domestic hot water and lighting loads as well as ensuring that these services are maintained to ensure energy efficiency.

Health and wellbeing

In the UK, people spend on average around 90 per cent of their time in buildings, or within the built environment. Buildings make a major contribution to our quality of life because of the environment they provide for work, leisure and home. They should provide a healthy and comfortable environment and provide appropriate amenities for the activities carried out.

The availability of external space around, or close to, the home is one key aspect affecting the quality of life of the occupiers.

Indoors, the key issues are air quality, daylight and transmission of noise (one of the most common causes for disputes between neighbours is noise).

Land use

Research carried out for the UK government, based on 1995 household projections, has shown that by the year 2016 about 12 per cent of England could be in urban use, compared with 10 to 11 per cent in 1991. More intensive use of the land available can create sustainable communities and reduce the need for car travel, although it should be noted that the benefits of building at higher densities decrease dramatically above certain densities and can lead to reduced quality of life unless care is taken to guard against the loss of green space, urban quality and privacy. In common with most developed countries, many city centres in the UK suffer from dereliction, and maintenance of vibrant and viable town centres is an important issue.

Pollution in the form of contaminated land is a potential risk to human health and wildlife. The use of previously built on and contaminated sites is to be encouraged where appropriate in order to relieve the pressure on undeveloped land. But it is important that contaminated sites are decontaminated in line with statutory regulations to ensure that any health risks are either removed or reduced to within acceptable limits.

Materials

Buildings are a major consumer of resources, both during their construction and in their operation. During their lifespan they occupy land, consume minerals, fossil fuels and other natural materials and generate waste. When they are demolished, some material may be reused or recycled but the remainder goes to landfill sites or incineration causing more pressure on land and potential pollution.

The manufacture and use of building materials has a significant impact on the environment as well as project costs. Conventional building materials often use large amounts of energy in their manufacture and some are not healthy to live with and use. Many products are difficult to dispose of safely and, when they *are* disposed of, have adverse effects on the environment.

The appropriate selection of more sustainable building materials is critical if these impacts are to be minimised. A key part of the selection of the materials is the use of life cycle assessment to establish the overall impact of the material “from cradle to grave”.

Pollution

Airborne pollution in the form of CFCs and HCFCs has been causing significant damage to the ozone layer, although these gases are now being phased out. The release of carbon dioxide (CO_2) and other gases into the atmosphere is contributing to the so-called greenhouse effect, leading to climate change. The release of nitrous oxides (NO_X) from the combustion of fossil fuels also contributes to climate change and, on a more local level, to the production of acid rain. The effects of climate change, ozone depletion and acid rain can be reduced by the introduction of low NO_X boilers, reduction in energy consumption (occupational and transport) and the specification of CFC- and HCFC-free construction products.

Waterborne pollution due to pollutant run-off into watercourses and oceans can be reduced by the introduction of interception measures such as separators or oil interceptors within building and infrastructure drainage systems and the use of sustainable urban drainage.

Transport

The transport of people between buildings accounts for 22 per cent of national energy use (based on 1996 figures), while freight transport, about half of which is building materials, is responsible for 10 per cent of UK energy use. Energy use for transport is growing by approximately 4 per cent a year, mostly owing to the increase in personal transport.

Energy use and CO_2 emissions from transport largely depend on the relative location of home, workplace and general amenities such as shops and schools, as well car parking availability. Consequently, transport energy use is markedly lower in areas well served by public transport.

Transport has other detrimental impacts on the public. In areas of high transport usage there is likely to be a corresponding increase in congestion, noise and air pollution which may have an adverse effect on the health of local inhabitants. There is also an increased risk of road accidents, especially in residential areas.

House builders should aim to encourage greater use of public transport and other alternatives to the private car, such as walking and cycling. This can be best achieved by providing nearby local amenities, siting buildings near to public transport and providing facilities for cyclists. Working from home also reduces transport demand, and providing adequate space and infrastructure for a home office should help to encourage this.

Water

The UK's population has remained relatively stable since the 1960s, yet we use 70 per cent more water per person than 40 years ago. As much as 64 per cent of treated water is used in households and the increase in demand is mainly the result of using water-intensive appliances such as washing machines, dishwashers and power showers, as well as bathing. Despite our perception of the UK having excessive amounts of rain, there are predicted shortages of water in five out of 10 UK water regions by the year 2009 if present usage patterns continue. In some areas demand is already close to exceeding supply.

There are many ways to reduce our demand on mains water, including reducing water usage, using alternative sources of water such as rainwater, and recycling the water that we use in our homes. These practical measures are most effective if implemented at the design stage.

SOCIAL CRITERIA

Access

Access for all, regardless of disability, is an important issue in sustainable development and it is important that this extends not only to housing but also to the external environment. The final part of the Disability Discrimination Act comes into force in 2004 and requires all businesses and public service providers to make permanent physical adjustments to their premises.

In addition to access to housing, external items such as lighting, street furniture and paving should be designed to ensure accessibility to the physically and visually impaired.

Community issues

All buildings have some impact on the community they are in, and the built environment as a whole has an effect on a far larger scale. Crime and dereliction have led to the deterioration of many of our urban (especially inner city) environments and has inevitably led to the degeneration of those communities. The avoidance of this is a key factor to be tackled when considering sustainable development.

The relative locations of different buildings, the use of buildings for a range of purposes and the creation of clearly defined areas are all important in improving our communities. Externally, the visual impact of buildings is another key issue affecting the quality of towns and cities and, although this is difficult to quantify, does improve the quality of life for the people living within a community.

At present, the construction industry has a major skill shortage that will only worsen if there is not more recruitment into the industry. The use of local labour not only ensures that the industry will get these recruits, but also means that local employment increases and ensures that more money is ploughed back into the community. With the majority of construction companies employing fewer than seven people, recruiting on a local level should be achievable in most areas.

Equity

Equity is essentially fairness. The consideration of equity should aim to ensure that everyone has similar rights, opportunities and the basic needs to maintain an acceptable quality of life are met. This should be regardless of socio-economic group, gender, ethnicity, religion, sexual orientation, disability or other differences. In the context of housing developments these issues should be taken into account to ensure that all relevant requirements have been considered and factored in.

Safety and security

Site safety is an important aspect of any construction project and consideration should be given to safety during the early stages of design to ensure that key safety risks are designed out wherever possible.

Safety and security issues should also be considered in the occupation of housing and developers should ensure that homes may be operated and maintained as simply and safely as

possible. Consideration should also be given to the external environment which should be also be designed to be safe and secure. Issues such as road safety, lighting and general home security should all be considered.

There are also a number of more specific social issues which may be considered but have not been covered in detail in the report. These are:

- community empowerment;
- environmental awareness of residents;
- local strategic partnerships;
- mix of tenure and community;
- resident involvement in management;
- service design and delivery;
- tackling social exclusion;
- tenant support (existing and new)

ECONOMIC CRITERIA

Flexibility

With lengthening life expectancies and more diverse family units, there are increasing benefits to be gained from designing housing that can be adapted to changing needs over time. While few people will wish to remain in the same house throughout their lives, many move purely due to change of circumstances, which may not be beneficial in the long term.

Similarly, if buildings are designed to be flexible in use then changes in circumstance, whether economic or otherwise, can be accommodated without the need for significant redevelopment. This can ensure that buildings have long and useful lives even if the purpose for which they were originally built changes. Designing for future flexibility is not easy to define, but it is an issue that should be considered by designers and means of improvement incorporated wherever possible.

Procurement

It is important that developers find the appropriate method of procurement by which to deliver their buildings. This will often depend on the type of developer – e.g. public or private. There are a number of different procurement routes which could be used such as Public Private Partnerships and Private Finance Initiatives. Many developers are using the partnering procurement route and reaping economic benefits. If a construction team can develop a culture of trust and cooperation, this promotes a more positive attitude towards projects and reduces conflict.

The issues surrounding procurement do not just apply to the project itself, but also to the procurement of materials and labour. Wherever possible materials with a low environmental impact should be specified.

Value for money

All too often construction projects are let on the basis of least cost rather than best value. Value for money is the optimum combination of whole life costs and quality (or "fitness for purpose") to meet the users' requirements.

Whole-life costing is a procedure that assesses the cost of an asset over its lifetime and takes into consideration initial capital and future costs, including operational cost, maintenance costs and replacement/disposal costs at the end of its life. As operating costs usually far outweigh initial capital costs this process is vital to any occupier in improving overall efficiencies. A minimal increase in capital cost can achieve very significant savings over the average 60-year life of a building.

Useful tools

Web links relating to the tools mentioned in the report are listed below:

- Housing Quality Indicators, www.hqiuk.com/
- Toolkit of Sustainability Indicators, www.housingcorplibrary.org.uk/housingcorp.nsf/AllDocuments/5D35D65C488FA68A80256AB9003E8B75
- Sustainability Works, www.sustainabilityworks.org.uk
- Foundations for the Future, www.sustainablehomes.co.uk/
- EcoHomes, http://products.bre.co.uk/breeam/ecohomes.html
- Green Guide to Housing Specification, www.brebookshop.com/details.jsp?id=29629
- SPeAR (Sustainable Project Appraisal Routine), www.arup.com/environmental/HTML/WhatWeDo/SPeAR.htm
- Sustainability Checklist for Developments, http://projects.bre.co.uk/envdiv/planning_sustainability/
- Sustainability Checklist for Developments in the South East, www.sustainability-checklist.co.uk
- Energy Efficiency Best Practice Programme, http://www.est.org.uk/bestpractice/

HOUSING CASE STUDIES

The following case studies have been used in the preparation of Part 1. Further details of each are given in Appendix 2.

Zero CO_2

- *BedZED,, Surrey,* BioRegional Development Group, Peabody Trust, Bill Dunster Architects
- *Hockerton Housing Project, http://www.hockerton.demon.co.uk/*

Best Practice

- *Greenwich Millennium Village, Phase 1,* Greenwich Millennium Village Ltd (joint venture with Countryside Properties plc, Taylor Woodrow Capital Developments Ltd, in association with English Partnerships)
- *INTEGER, Alpine Close, Maidenhead,* Maidenhead & District Housing Association

EcoHomes "EXCELLENT"

- *Watton Green, Castle Vale, Birmingham,* Focus Housing, Castle Vale Community Housing Association, Sustainable Homes
- *EcoPark, Thamesmead,* Gallions Housing Association, Willmott Dixon Housing

EcoHomes "GOOD"

- *Valley Views, Netherley, Liverpool,* Riverside Housing
- *Lindon Grove, Southwar,* Wandle Housing Association, London Borough of Southwark Habinteg Housing Association, Countryside Properties

Appendix 2 – Case Study Information

BedZED – Zero CO_2 Emission Development

Issue	COMMENTS
Developer	Peabody development in partnership with BioRegional Development Group, designed by Bill Dunster Architects.
Size of Development	Mixed housing and commercial development of 82, one to four bedroom flats and houses, with 1,695m^2 of workspace.
Energy	
CO_2 Emissions	No net CO_2 emissions from energy use: low energy and renewable fuel, including biomass CHP and PVs.
Insulation	Highly insulated concrete and block walls and concrete floors to provide high thermal mass.
Other	To complement solar heating, heat generated by everyday activities, eg cooking will be collected in vents to warm fresh air for dispersal throughout home.
Materials	
Timber	All timber from local well managed woodlands, or Forest Stewardship Council certified woodlands.
Life Cycle Analysis	Wherever possible, natural, recycled or reclaimed materials were used, products with low embodied energy and those that did not associated with habitat destruction. However, some materials have been chosen for thermal performance, and these have high embodied energy.
Other	Excellent recycling and composting facilitates.
Pollution	
Ozone Depletion	Most of the insulation used has zero ODP (however, the insulation used for the roof was blown with HCFCs).
NO_X Emissions	The CHP plant used to provide heating and hot water has very low levels of NO_X.
Transport	
CO_2 Emissions	Target set for 50 per cent reduction in fossil-fuel consumption by private car use over next 10 years (compared with conventional development). Points for charging electric cars provided.
Car Alternatives	Legally binding green travel plan promoting alternative methods of transport – site served by train, tram and bus routes. Secure bicycle storage provided.
Other	Car pool system in place. The provision of workspace and shared office facilities will encourage local and home working, reducing the need for transport.

Issue	COMMENTS
Site Issues	
Ecology	Biodiversity addressed throughout the site. Existing features on site have been retained. Features of building have been design to encourage wildlife (bat boxes). Wetland area designed by Wildfowl and Wetlands Trust.
Land Use	Previous land use – disused sewage works. Site adjacent to development a former landfill site – transformed to green space, ponds and lavender fields.
Water	
Low Use	Target to cut water use consumption of typical household by 33 per cent. Water-efficient appliances, rainwater and grey water recycling for toilets and irrigation.
Flood Risk	Hard standing areas laid with porous blocks over gravel to minimise surface run-off.
Health and Wellbeing	
Daylighting	Buildings are oriented to maximise passive solar gain.
Internal Air Quality	Paints, floor coverings and finishes provide allergy and formaldehyde-free solutions for a healthier home.
Noise Transmission	The party walls are of dense concrete block construction with plasterwork on both sides with a performance above Building Regulations.
Other	Private open space created through sky-gardens on the workspace roofs.
Other Issues	
Safety and Security	External security lighting provided (maximum wattage of 16w per lamp).
Community Issues	Constructed to enable residents to live in a sustainable way. It complements the London Borough of Sutton's Local Agenda 21 principles, in association with the local community.
Procurement	As much material as possible was sourced from within 60km of site, selected from renewable or recycled sources wherever possible.
Value for Money	Residential units - £930/m^2 Workspace units - £752/m^2 Community space - £636/m^2 Residential savings – annual heating and energy costs to be 25 per cent of comparable home.

Hockerton Housing Project - Zero CO_2 Emission Development

Issue	COMMENTS
Developer	Hockerton Housing Project

Issue	COMMENTS
Size of Development	4 three-bed and 1 four-bed self-built earth sheltered homes.
Energy	
CO_2 Emissions	Net Zero CO_2 emissions – houses use just 10 per cent of energy consumed by a conventional house. Hot water produced efficiently via a heat pump – using just 25 per cent of traditional energy levels. Low-energy appliances and light bulbs. Wind turbine.
Insulation	High insulation to all external surfaces (non-CFC expanded polystyrene – 300mm).
Other	Solar store buffer zone between inside and outside. Earth covered roof, rear wall and end walls (500mm depth). Low heat loss double and triple glazed windows (low argon filled). Mechanical ventilation and heat recovery system.
Materials	
Life Cycle Analysis	Minimal embodied energy, environmental policies of manufactures.
Pollution	
Ozone Depletion	Non-CFC expanded polystyrene insulation used.
Site Issues	
Ecology	Reed bed forms wildlife habitat.
Land Use	Previously agricultural land.
Water	
Low Use	Low flush WCs, flow restrictor showerheads, detergent-free clothes washing (removing the need for second rinse).
Other	All water is sourced and treated on site and stored in underground tanks. (Sewage treated onsite via reed bed).
Health and Wellbeing	
Daylighting	Houses are south-westerly facing to maximise sunlight and warmth. Glazed frontal roof allows winter sun to penetrate to the rear of the buildings. Conservators promote good levels of natural daylight.
Internal Air Quality	Use of non-toxic materials to minimise environmental and health hazards.
Other Issues	
Procurement	Local suppliers where possible. Hockerton developed its own community business to provide employment for

Issue	COMMENTS
	community members.
Value for Money	Average cost £485/m^2.

GREENWICH MILLENNIUM VILLAGE – Best Practice Example

Issue	COMMENTS
Developer	Greenwich Millennium Village Ltd.
Size of Development	
Energy	
CO_2 Emissions	16.31 kg/m_/yr.
Insulation	42.88 per cent improvement in Building Envelope performance.
Other	Drying Space Tidy-dri. Fridges and fridge/freezers are A-rated. Dishwasher is B-rated. Washer/dryer is D-rated.
Materials	
Timber Building	Timber from suppliers covered by Government Licence and UKWAS.
Life Cycle Analysis	A-rated materials from the *Green Guide to Housing* were used for the walls, landscaping and garden fencing.
Other	Internal storage bins for separating waste.
Pollution	
Ozone Depletion	No ozone depleting substances.
NO_X Emissions	NO_X class 5 boilers.
Transport	
Car Alternatives	Cycle store for 50 per cent of units and cycle racks in underground car park. Within 500m of bus stop and tube station, with frequent service Safe pedestrian access to local amenities.
Other	Space and facilities for a home office have been provided.
Site Issues	
Ecology	The site was contaminated and was of low ecological value. Advice from an ecological advisor was given. The development increased the ecological value of the site.
Land Use	The footprint has a ratio of between 3.5 and 12, with the units in blocks of up to

Issue	COMMENTS
	10 stories and lower blocks ranging from 3 to 5 storeys.
Water	
Low use	The average water consumption is 38.11m^3/bed/yr.
Health and Wellbeing	
Daylighting	The flats do not meet the criteria of BS8206, part 2.
Noise Transmission	Party wall type 4, 1 credit awarded.
Other	All units have access to a private space.
Other Issues	
Safety & Security	Safety lights are 50W and controlled by PIR.

INTEGER, ALPINE CLOSE, MAIDENHEAD, BERKS – Best Practice Example

Issue	COMMENTS
Developer	Maidenhead and District Housing Association with INTEGER architectural consultants Bree Day Partnership
Size of Development	19 flats and 8 houses
Energy	
CO_2 Emissions	Renewable energy has been integrated using: Solar panels for water heating, Photovoltaic panels to generate up to 20kw of electricity (surplus electricity is sold back to the Grid).
Insulation	Highly insulated using recycled cellulose - Energy awareness, by increasing the insulation levels beyond current requirements, eg current wall 'U'-Value is 0.45 w/m^{2O}C, Integer aims to construct to 0.19 w/m^{2O}C.
Other	Low energy systems, lighting and appliances.
Materials	
Timber	Timber-framed buildings are clad with sustainable Western Red Cedar.
Life Cycle Analysis	Recycling of existing buildings on-site to use as crushed fill for roads and paths *(infrastructure)*. Sustainable materials, low-embodied energy materials.
Other	Prefabricated frames were delivered to site and combined bathrooms and kitchens pods were then incorporated. Reducing the amount of waste on site by careful management.

Issue	COMMENTS
Site Issues	
Ecology	Covering the roof with Alpine Sedum to manage rainwater run-off (this also creates a mini habitat for wildlife).
Land Use	The site was originally used as a hard surfaced car park, with 166 precast concrete garages built on the land.
Water	
Low Use	Using low flush toilets and water efficient taps to conserve water. Using grey-water recycling from baths, showers and hand-basins to flush the toilets. Covering the roof with Alpine Sedum to manage rainwater run-off (this also creates a mini-habitat for wildlife).
Flood Risk	Collecting rainwater and storing this underground to provide a communal supply for watering gardens. Green Roof reduces drainage of excess water by up to 90 per cent during infrequent precipitation periods, therefore reducing drainage system design and assisting in reducing surge on the local authority's system.
Health and Wellbeing	
Daylighting	Good solar orientation: To the south-east facing elevation of the houses a lifestyle-enhancing Solar Space is provided off the living room. Being a two-storey glazed space, it provides a thermal buffer during the winter and assists in the thermal air movement of the Passive Stack ventilation system during the summer.
Other Issues	
Flexibility	All services are located in a vertical core, including hot-water cylinders and ventilation ducts, making it easier for maintenance as there is just one easily identifiable and accessible service duct. A dedicated home office workspace, with data, telecom and power outlets encourages home-working, reducing the need to travel to work.

WATTON GREEN, CASTLE VALE ESTATE, BIRMINGHAM - EcoHomes 'EXCELLENT'

Issue	COMMENTS
Developer	Prime Focus for Castle Vale Community Housing Association.
Size of Development	Mixture of 11 detached and terraced houses
Energy	
CO_2 Emissions	Energy-efficient (7 credits) - operational energy requirements reduced to less than 30kgCO_2/m^2/year. Low-energy lights were fitted in all habitable rooms.

Issue	COMMENTS
	Passive ventilation along with highly efficient boilers.
Insulation	High levels of insulation - 30 per cent improvement to the Building Regulation requirements.
Other	Provision of drying space.
Materials	
Timber	4 credits were achieved for timber being procured from managed sources.
Life Cycle Analysis	Five out of the six building elements achieved maximum credits under the *Green Guide to Housing* Specification (13 credits).
Other	Maximum credits were achieved for providing internal storage bins for recycling and the scheme being served by a local authority recycling collection scheme.
Pollution	
Ozone Depletion	4 credits were achieved for reduction of HCFC emissions. The factory-built timber cassette system included cellulose insulation with zero ozone depletion potential.
NO_X Emissions	Serroli Arena 30C low NO_X boilers achieved 3 credits, having emissions of less than 70mg/kWh.
Transport	
Car Alternatives	Public transport (bus runs through the estate). Proximity to local amenities. Secure cycle storage (provided in the garden shed). Provision of two electricity points and two telephone sockets support the provision of a home office.
Site Issues	
Ecology	Providing native planting in gardens increased the overall ecological value of the site.
Land Use	Brownfield site.
Water	
Low Use	The installation of 6-litre WCs, aerated taps, a standard-sized bath and a garden water butt achieved credits for reducing water consumption to less than or equal to $40m^3$ per bedspace per year.
Health and Wellbeing	
Daylighting	A credit was achieved for daylighting by designing in accordance with British Standard 8206 part 2.
Noise Transmission	A credit was achieved for sound insulation to party walls exceeding the levels set out by Building Regulations.

Issue	COMMENTS
Other	Open space through rear gardens.
Other Issues	
Safety & Security	Security lighting (security lighting was a maximum of 150w and was fitted with daylight and movement sensors).
Value for Money	Approximately 10 per cent in excess of a standard scheme (2001).

Ecopark – EcoHomes 'EXCELLENT'

Issue	COMMENTS
Developer	Gallions Housing Association and Willmott Dixon Housing
Energy	
CO_2 Emissions	Low level of energy consumption, plus the use of low energy light fittings.
Insulation	Maximum credits achieved.
Other	Rotary drier provided in each back garden. Information is provided on purchasing energy efficient white goods. External lighting is designed to accommodate compact fluorescent lamps and are adequately controlled with sensors or timers.
Materials	
Timber	Government certification scheme or PEFC - Timber Building elements, 2 credits. Government certification scheme or PEFC - Timber Finishing, 1 credit.
Life Cycle Analysis	This development has used materials which have been given an 'A' rating, i.e. the roof, external and internal walls and timber windows.
Other	Internal and external storage bins have been provided to encourage recycling of household waste.
Pollution	
Ozone Depletion	All materials within the floors, walls, roofs and hot water cylinders have zero ozone depleting substances.
NO_X Emissions	Vaillant Ecomax 613 boiler is a Class 5 appliance.
Transport	
CO_2 Emissions	The site is within 500m of an appropriate transport node.
Car Alternatives	Some cycle storage is provided.

Issue	COMMENTS
Other	Well served by current local amenities. As the whole area is developed, the local plan shows a new local centre being constructed even nearer to the site. No home office provisions have been made.
Site Issues	
Ecology	The design team has enhanced the site by designing in the features recommended by a member of the AWTC. Ecological enhancement of 9+ natural species hectares
Land Use	All the buildings are two storeys so do not achieve this credit.
Water	
Low Use	Average water consumption is 42.61m^3/year encouraged through low flush (4/2.5ltr) toilets and aerating taps etc.
Health and Wellbeing	
Daylighting	Good natural daylight due to large windows.
Noise Transmission	Good sound insulation in the walls. Also having no party floors gives an automatic credit.
Other	Each home has a private garden.

VALLEY VIEWS – EcoHomes 'GOOD'

Issue	COMMENTS
Developer	Riverside Housing
Size of Development	14 units, semi detached and terraced houses.
Energy	
CO_2 Emissions	Average CO_2 emissions – 30.979 $kgCO_2/m^2$/year.
Insulation	Very good performance.
Other	Each home has been provided with a rotary dryer. Outbuilding lighting only accommodates CFL luminaries and the security lighting has automatic day light cut-off and movement detecting shut-off devices.
Materials	
Life Cycle Analysis	The roof and walls are A-rated in the Green Guide to Housing Specification
Pollution	

Issue	COMMENTS
Ozone Depletion	There are no ozone-depleting materials in the roof, wall or floors.
NO_X Emissions	The emissions from the boiler exceed 150mg/kWh, so no credits are awarded.
Transport	
CO_2 Emissions	There is a regular bus service which is within 500m of the development. There is a safe pedestrian route to a post box, grocery shop, chemist and other local facilities helping to reduce the reliance local residents have on their cars.
Car Alternatives	Cycle storage is available in a lockable back garden shed.
Other	The necessary space and services are provided to enable residents to work from home.
Site Issues	
Ecology	The existing site is defined as of low ecological value as it previously comprised mainly buildings, hardstanding, paving and roads that were demolished within the last few years.
Health and Wellbeing	
Daylighting	Good daylight.
Noise Transmission	Party walls perform better than prescribed by the Building Regulations.
Other	Secure individual gardens.

SOUTHWARK – EcoHomes 'GOOD'

Issue	COMMENTS
Developer	Lindon Grove Partnerships
Size of Development	107 units – mixture of bungalows, houses and flats up to 5 storeys.
Energy	
CO_2 Emissions	The development is predicted to achieve CO_2 emissions of 27.38kgCO_2/m^2/yr.
Insulation	The U-values are predicted to be 32 per cent higher than the target U-value (under 1995 part L building regulations).
Other	Security lighting is provided with daylight cut-off switches and movement detectors.
Materials	
Life Cycle Analysis	The roof receives an 'A' rating in the *Green Guide to Housing* Specification.
Other	Internal provision for the storage for recyclable waste.

Issue	COMMENTS
Pollution	
Ozone Depletion	There are no ozone depleting materials in the roof, wall, floors or hot water cylinder.
NO_X Emissions	The emissions from the boiler are less than 150mg/kWh.
Transport	
CO_2 Emissions	Bus stop with a frequent service is located within 500m of the site.
Car Alternatives	There is a safe pedestrian route to a post box, grocery shop, chemist and other local facilities helping to reduce the reliance local residents have on their cars.
Other	The necessary space and services are provided to enable residents to work from home.
Site Issues	
Land Use	The site was originally hard landscaping, which will be replaced by a mixture of hard landscaping (30 per cent) and buildings (70 per cent). This gives a change in the ecological diversity index of zero.
Water	
Low Use	The water consumption is less than $40m^3$ per bedroom per year.
Health and Wellbeing	
Daylighting	Daylight is adequate in habitable rooms (with the exception of the kitchen).
Noise Transmission	Party walls and separating floors are better then prescribed by the building regulations.
Other	All properties have a private or semi-private outside space.

Appendix 3

PLANNING POLICIES FOR SUSTAINABLE DEVELOPMENT, WHO'S DOING IT ALREADY?

The following examples of good practice can help guide the development of new stronger policies under local development frameworks.

1. Regional Policies

Draft London Plan (June 2002):

Policy 4B.6: *Sustainable Design and Construction*
The Mayor will and boroughs should expect future developments to meet the highest standards of sustainable design and construction ...(examples of measure then listed) *Policy 4B.21: Sustainable design and construction can reduce the consumption of resources, cut greenhouse gases and contribute to the good health of Londoners.*

Draft energy strategy (January 2003)

Policy 5: *Developments such as BedZED in Sutton show that it is possible to integrate energy efficient design with renewable energy production, to deliver a zero-carbon building with an attractive living environment. The Mayor believes there should be at least one zero-carbon development along the lines of BedZED in every borough by 2010. In order to achieve this, he expects each borough to identify at least one suitable site for such development by 2005.*

Regional Planning Guidance for the South-east (RPG9)

Published in 2001, RPG9 managed to include some statements and references to sustainable design issues:

Para. 5.9: *The design of individual developments will be a major influence on the extent to which they are sustainable. Aspects of sustainable design include:*

- *Use of waste prevention and minimisation techniques;*
- *Installation of pollution abatement technology to reduce emissions to air and water;*
- *Control measures for surface water drainage as close to its source as possible;*
- *Building design which facilitate the use of renewable energy;*
- *Energy efficient installations, including passive solar design for buildings and improved insulation;*
- *Water-efficient installations, including the use of grey water systems;*
- *Use of renewable and recycled materials during construction and design to facilitate recycling systems, including combined heat and power and community heating schemes; and*
- *Use of 'soft' construction and maintenance techniques harnessing natural processes.*
- *Such measures are cited, for example, in chapter 10 of this guidance.*

Policy INF2: *Development Plans should:*
a (iii) promote the introduction of water conservation measures & sustainable urban drainage solutions. Detailed SPG or site specific development briefs can help facilitate adoption of these measures.
Policy INF4: *Development Plans should:*
a (ii) promote energy efficient measures as part of the design & form of development and
(iii) encourage energy efficient technology such as CHP to form part of major new build or redevelopment proposals.
In addition:
b (iii) using their development control & building regulation processes… local authorities should seek to influence the design of new development to incorporate use of renewable energy heating or power systems.
Policy M1: *In addition:*
b (ii) all those concerned with new development need to consider the resource implications and how construction materials with be secured at the least environmental cost…
(iii) major development and regeneration initiatives… present significant opportunities for utilising alternative construction methods and substitute materials…

2. Development Plan/UDP policies – adopted and on deposit

- Devon County Council
- Leicester City Council
- London Borough of Sutton
- Leeds City Council
- Lincoln City Council
- London Borough of Brent
- London Borough of Enfield
- London Borough of Merton
- Kingston Upon Hull
- City of Westminster Council

3. Draft or Adopted Guidance/SPG

- Bristol – Sustainable Development Guide for Construction
- Enfield a) Policy Statement *Securing sustainable design and construction in development*; ii) Sustainable Design and Construction Guides for a) Developers, b) Householders
- Brent SPG on Sustainable Design, Construction and Pollution Control (adopted) and draft Householders guide
- City of Westminster SPG on Sustainable Buildings
- Camden, Green Buildings Guide
- Merton SPGs Vol1: Life Cycle Cost Analysis, Vol 2: Solar Energy, mini-guides and Householders guide
- Surrey Design Guide – *a strategic guide for quality built environments* – includes SD&C
- Leicester City Council City Wide SPG – *Energy Efficiency and Renewable Energy in Developments*

- Kent and Cambridge – SPG on Sustainable Development, accompanied by use of a checklist
- South Hams DC Draft SPG on *Requirements for Sustainable Development for Large Sites* and for Smaller Sites

Appendix 4

There follows a list of key quotations from national planning policy guidance and best practice, currently being used by some planning authorities to support policies on energy and water efficiency, climate change, healthy buildings, waste and pollution minimisation, and other aspects of sustainable design and construction.

GUIDANCE

PPG 1: General Policy and Principles

PPG1, paragraph 15:

Good design should be the aim of all those involved in the design process and should be encouraged everywhere. Good design can help promote sustainable development; improve the quality of the existing environment; attract business and investment; and reinforce civic pride and a sense of place...

PPG 1, paragraph 19:

…Design policies should focus on encouraging good design and should avoid stifling responsible innovation, originality or initiative…

PPG 3: Housing

The Government's Objectives identified in PPG3 include the following:

5 The Government intends … that there should be greater choice of housing … New housing and residential environments should be well designed and should make a significant contribution to… improving the quality of life.

6 Local planning authorities should:

- provide wider housing opportunity and choice and a better mix in the size, type and location of housing than is currently available, and seek to create mixed communities;
- promote good design in new housing developments in order to create attractive, high-quality living environments in which people will choose to live.

Creating mixed communities – influencing the type and size of housing

10. The Government believes that it is important to help create mixed and inclusive communities, which offer a choice of housing and lifestyle. It does not accept that different types of housing and tenures make bad neighbours…

PPG3: Paragraph 46

To promote more sustainable residential environments, both within and outside existing urban areas, local planning authorities should promote:

- Development that is linked to public transport;
- Mixed use development;
- A greener residential environment;
- Greater emphasis on quality and designing places for people; and
- The most efficient use of land.

PPG3: Paragraphs on Designing for quality

56. … recognising that new building technologies are capable of delivering acceptable built forms and may be more efficient. Local planning authorities should adopt policies which:

- promote designs and layouts which are safe and take account of public health, crime prevention and community safety considerations;
- focus on the quality of the places and living environments being created and give priority to the needs of pedestrians rather than the movement and parking of vehicles;
- promote the energy efficiency of new housing where possible.

PPG3: Paragraph 63:

In determining planning applications, local planning authorities should reject poor design particularly where their decisions are supported by clear plan policies and adopted supplementary guidance…

PPG 11

Another short but important reference is PPG 11 paragraph 14.2:
An energy efficient pattern of development and energy efficient buildings will form an essential part of the UK's response to international climate change agreements and sustainable development strategies.

PPG 12: Paragraph 4.4

Development plans should be drawn up in such a way as to take environmental considerations comprehensively and consistently into account (either as policies/proposals or as part of the explanatory memorandum/reasoned justification of plans).

Paragraph 4.4: Environmental Considerations for Development Plans

- Energy conservation and the efficient use of energy, global climate change, and reduction in greenhouse gases;
- Air quality and pollution;
- Noise and light pollution;
- Policies for … flood defence and land drainage issues;
- The need to protect groundwater resources from contamination and over exploitation;
- The environmental effects of unsustainable or poorly controlled waste management.

PPG13: Renewables

This PPG can be used to support the inclusion of a desire to see renewable generation integrated into major housing developments.

According to these elements of national policy guidance, limited policies on sustainable building design complement Building Regulations and should appear alongside policies to encourage sustainable energy systems and sustainable landscaping.

This view is clearly in accord with the many councils (including the Greater London Authority) that have adopted or have on deposit policies and SPG on the role of sustainable design and construction in achieving sustainable development.

BEST PRACTICE GUIDANCE

Planning for Sustainable Development: Towards Better Practice, DETR, Chapter 5

Energy: Climate change is one of the greatest environmental threats facing the world today with potentially far reaching disruptive effects on human society, the global economy, human health and the natural environment...

- Energy efficiency policies can contribute to sustainable development by reducing greenhouse gas emissions.
- Action by planning authorities to increase energy efficiency can complement building regulations and the wide range of DETR and Department of Trade and Industry initiatives…
- The areas in which planners can be particularly influential are combined heat and power schemes (CHP), site layout and, to a limited degree, building design...

Planners should discuss specific criteria for energy efficient design with building control officers and also with local developers and architects.

The following criteria, though conceived for housing, would apply similarly to other types of development:

- Internal layout to… maximise passive solar heating;
- Use of atria, conservatories and porches to enable natural ventilation and conservation of heat;
- Layout of windows, doors and roof lights;
- Provision for recycling of rainwater, and domestic waste on site to be made feasible;
- Provision for active solar systems;
- Use to be made of material with reduced energy inputs (e.g. sustainable produced timber), low maintenance needs, and locally manufactured or recycled (e.g. bricks.) (paras.5.5.16-5.5.17)

Appendix 5

AMENDMENTS TO PLANNING POLICY GUIDANCE TO PROMOTE SUSTAINABLE CONSTRUCTION

PPG 1 : General Policy and Principles

Para 5. The *Strategy* recognises the important role of the planning system in regulating the development and use of land in the public interest. A sustainable planning framework should:

- provide for the nation's needs for commercial and industrial development, food production, minerals extraction, new homes and other buildings, while respecting environmental objectives;
- use already developed areas in the most efficient way, while making them more attractive places in which to live and work;
- conserve both the cultural heritage and natural resources (including wildlife, landscape, water, soil and air quality) taking particular care to safeguard designations of national and international importance; and
- shape new development patterns in a way which minimises the need to travel
- ***promote design and construction of buildings which conserve energy and resources and promote health.***

Para 15. Good design should be the aim of all those involved in the development process and should be encouraged everywhere. Good design can help promote sustainable development, ***including sustainable design and construction***; improve the quality of the existing environment; attract business and investment; and reinforce civic pride and a sense of place. It can help to secure continued public acceptance of necessary new development.

PPG 3 : Housing

Para 2. Local planning authorities should:

- plan to meet the housing requirements of the whole community, including those in need of affordable and special needs housing;
- provide wider housing opportunity and choice and a better mix in the size, type and location of housing than is currently available, and seek to create mixed communities;
- provide sufficient housing land but give priority to re-using previously-developed land within urban areas, bringing empty homes back into use and converting existing buildings, in preference to the development of greenfield sites;
- create more sustainable patterns of development by building in ways which exploit and deliver accessibility by public transport to jobs, education and health facilities, shopping, leisure and local services;
- make more efficient use of land by reviewing planning policies and standards;

- ***make more efficient use of energy and resources by promoting design and construction which contributes to sustainable development***;
- place the needs of people before ease of traffic movement in designing the layout of residential developments;
- seek to reduce car dependence by facilitating more walking and cycling, by improving linkages by public transport between housing, jobs, local services and local amenity, and by planning for mixed use; and
- promote good design in new housing developments in order to create attractive, high-quality living environments in which people will choose to live.

Para 56. New housing development of whatever scale should not be viewed in isolation. Considerations of design and layout must be informed by the wider context, having regard not just to any immediate neighbouring buildings but the townscape and landscape of the wider locality ***and the impact of construction on energy and resource use***. The local pattern of streets and spaces, building traditions, materials and ecology should all help to determine the character and identity of a development, recognising that new building technologies are capable of delivering acceptable built forms and may be more efficient. Local planning authorities should adopt policies which:

- create places and spaces with the needs of people in mind, which are attractive, have their own distinctive identity but respect and enhance local character;
- promote designs and layouts which are safe and take account of public health, crime prevention and community safety considerations;
- focus on the quality of the places and living environments being created and give priority to the needs of pedestrians rather than the movement and parking of vehicles;
- avoid inflexible planning standards and reduce road widths, traffic speeds and promote safer environments for pedestrians; and
- promote the energy ***and resource*** efficiency of new housing ~~where possible~~.

PPG 12 : Development Plans

Para 4.4. Environmental Considerations for Development Plans

- energy conservation and the efficient use of energy, global climate change, and reduction in greenhouse gases (PPG22 on renewable energy, PPG13 on transport and reducing the need for travel);
- ***energy and resource use and the impacts on health of construction and design of buidlings***
- air quality and pollution (PPG23 on planning and pollution control, DETR *Air Quality and Land Use Planning* guidance note, issued under cover of DETR Circular 15/97);
- noise and light pollution (PPG23);
- the need to sustain the character and diversity of the countryside and undeveloped coasts (PPG7 on the countryside, PPG20 on coastal planning);

- conservation and enhancement of wildlife habitats and species, including the promotion of biodiversity and environmental enhancements to meet biodiversity action plan targets (PPG9 on nature conservation);
- the impact of development on landscape quality (PPG7);
- policies and proposals for the improvement of the physical and natural environment in urban areas, including sustaining the character and vitality of town centres, making provision for tree planting and open spaces and the general re-vitalisation of urban areas (PPG6 on town centres and retail developments, PPG3 on housing);
- the need for better urban design, including the appearance of proposed development and its relationship to its surroundings (PPG1);
- policies which help preserve the built and archaeological heritage (PPG15 on the historic environment, PPG16 on archaeology);
- policies for coastal protection, flood defence, and land drainage issues (PPG20 on coastal protection, DoE Circular 30/92 and advice from Environment Agency on flood protection and land drainage issues);
- the need to protect groundwater resources from contamination or over-exploitation (advice available from Environment Agency);
- the environmental effects of unsustainable or poorly controlled waste management and mineral extraction, processing and tipping operations (PPG10 on waste disposal and management, and Mineral Planning Guidance (MPG) Notes);
- the need to avoid development on unstable land (PPG14); and
- policies designed to secure the conservation and enhancement of the natural beauty and amenity of the land, including tree and hedgerow protection and planting (PPG7).

PPG 22 : Renewable Energy

Para 24. Structure plans and UDPs Part I must have regard to national and regional policies (including Strategic Planning Guidance for Wales). Authorities preparing these plans should include their general policies and proposals on ***promoting*** and providing renewable energy in their areas, including the general location of any individual project likely to have a significant effect on their areas.

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For further information about the Town and Country Planning Association log on to **www.tcpa.org.uk**

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