Future Foundations | building a better South West

A sustainable construction charter
for the region

FUTURE FOUNDATIONS
Building a better South West

What is Sustainable Development?

"Sustainable Development is about creating a better quality of life for everyone, now and for generations to come. It means recognising that our economy, environment and social well-being are interdependent."

What are the principles of Sustainable Construction?

Sustainable Construction is new building and refurbishment that promotes environmental, social and economic gains now and for the future.

It follows these basic principles:

01 Siting
Buildings should 'sit' appropriately in their surroundings – be sensitive in scale and style to the character of the existing natural and built environment, reuse previously developed sites, wherever possible, and develop locations already served by transport, communications and utilities infrastructure.

02 Materials
Construction should prioritise the use of local and natural/recycled materials.

03 Construction Techniques
The latest environmental techniques should be specified – to save energy, water and waste during a development's construction, operation and decommissioning phases.

04 ICT
Construction design and specification should maximise future ICT capacity.

05 Community Involvement
Communities should be informed about, and involved in, the planning and design of buildings in their area which should be safe, secure and accessible to all.

06 Local Sourcing
The use of local labour, training, design and creativity should be maximised to support local economies and minimise energy use in transportation/travel.

Why do we need a Charter?

The South West region adopted the Sustainable Development Framework – "A Sustainable Future for the South West" - in 2001. It provides a vision, guidelines and objectives for everyone in the region to improve our quality of life now and for future generations.

It has the endorsement of the South West Regional Assembly together with the support of other bodies including: Government Office for the South West, The South West Regional Development Agency, The Environment Agency, The Countryside Agency, The National Health Executive for the South West, English Heritage, English Nature, The RSPB, Friends of the Earth, The National Trust and the South West Association for Education and Training (SWAFET). The Framework was produced in consultation with these bodies (and many others) by Sustainability South West (SSW) the region's independent champion for sustainability in the region.

This Charter is one of a series of initiatives by SSW and its partners that seek to turn the aspirations of the Sustainable Development Framework into real change on the ground. The development of our region will involve a lot of new building and refurbishment. It makes good economic, social and environmental sense to set high construction standards for the benefit of all in the region. The Charter provides a set of sustainable construction principles and information on all the key elements of building for a better South West.

The more people/organisations who commit to this charter the closer we will get to achieving sustainability.

How this pack works

This pack is the first step in drawing out what the principles of Sustainable Construction might mean in practice. In the Charter folder you will find this introduction booklet, which also explains the Charter Pledge system, together with 17 topic-based information sheets outlining the key elements of Sustainable Construction. Each of these identifies some important questions we can ask before embarking on a project, examples of good practice, and signposting to helpful documents and organisations (these will be regularly updated – see 'Join In, Join Up' below).

How will the Charter work?

Everyone agrees that development in the South West should be planned and created in a sustainable way. The question is how do we actually achieve this?

This Charter offers you steps that you can take – one at a time. (see 'Making a Pledge')

At whatever level your organisation makes a pledge you will receive a certificate to officially recognise your pledge for the public to see.

What are the benefits of making a Pledge to this Charter?

You will be sending a clear signal to your clients, stakeholders, local taxpayers, peer professionals and the general public – that you care about the environment and you are aiming to help to improve quality of life in the South West.

There is plenty of legislation on the horizon which will require higher standards of environmental performance – by making a pledge you can show that your organisation is anticipating these changes and gaining a competitive advantage.

Your gains will include:

Saving money and improving competitiveness: sustainable practices are usually the most economic, either short term as in the case of re-using materials, or longer term as in reducing the energy costs of operating a building.

Staying ahead of legislation: the government and the EU are committed to sustainable development and are steadily introducing regulations which have these ideas at their root.

Improving your image with the public and gaining good will from other companies and organisations: consumer choice increasingly favours sustainable options and as a leading player, you will find some of the best partners will be of like mind and seek to work with you.

Who is the Charter for?

The answer is everybody – organisations large and small can make a difference:

Colleges and Universities – who educate trainee architects, planners, designers, engineers and others about the principles and application of sustainability.

Professional Practices – architects, landscape architects, engineers, quantity surveyors, planners who tell clients what is possible, what the options are and what it will cost, who specify materials and designs.

Developers – who seize opportunities to build projects, analysing the market and identifying opportunities, learning about client and community needs and aspirations.

Local Authorities - in a wide range of roles; as strategic planners, convening partnerships, setting local policy, leading the Local Plan, community strategy and village appraisal processes; as regulators in the planning system, building regulations, care facilities, education etc; as procurers of a significant range of services and investment.

Housing Associations – who procure social housing projects and can set a standard for sustainable houses and take a lead in integrating housing with other sustainable practices.

Contracting Firms – who choose how to carry out projects, how to dispose of waste, manage noise and disturbance, preserve valuable environmental assets as they work, employ local people and give them training, source local materials.

Regulatory Institutions – such as the Environment Agency, planning authorities, trading standards, health, safety and building regulation inspectors and OFSTED can ensure guidance and statutory documents explicitly include sustainability principles. In everyday work, they can apply these principles and encourage others to do so, showing the way.

Clients – a vast range of individuals and organisations including housing associations, teaching and health institutions, agents commissioning transport infrastructure as well as private companies and institutions, commissioning offices, factories, homes, shops, sports and cultural buildings – who can demand higher standards of planning for sustainability, without necessarily paying more for it.

Financial institutions – who lend money, underwrite developments and provide much of the incentive for the way a business is run or a development undertaken.

What does it mean to make a Pledge to the Charter?

Making a Pledge to this Charter involves taking the time to familiarise yourself with the ideas of sustainability and the principles and technical sections of this charter; looking at your current practices; and committing yourself and your organisation to do something about implementing sustainability.

At this stage, the Pledges work on the basis of trust. Organisations are not inspected and no assessments take place. The public, your clients and peers will judge your commitment by your actions. In time, it may be appropriate to assess projects for accreditation and/or awards for outstanding contributions.

How will it work?

There are three levels of commitment to the Charter – Level 1, Level 2 and Ambassador Level. (see Making a Pledge below)

Pledging your organisation to a level is both a statement of where you are and a commitment to improve.

Who is already involved?

A small group of organisations brought together by Sustainability South West have prepared the Charter and Technical Notes. These are:

The Construction Industry Council

Energy for Sustainable Construction (ESD)

The Environment Agency

The National Trust

The Somerset Trust for Sustainable Development

The South West Association for Education and Training (SWAFET)

The South West Regional Development Agency

Sustainability South West

The Western Partnership for Sustainable Development

Representatives have done their best to cover the right agenda. Of course, it is not perfect or comprehensive; it is a start. The Charter is deliberately conceived in a way that allows other experts and new discoveries to update the sections or introduce new ones. The Founder Organisations currently form a panel to monitor the Pledges and the development of the Charter.

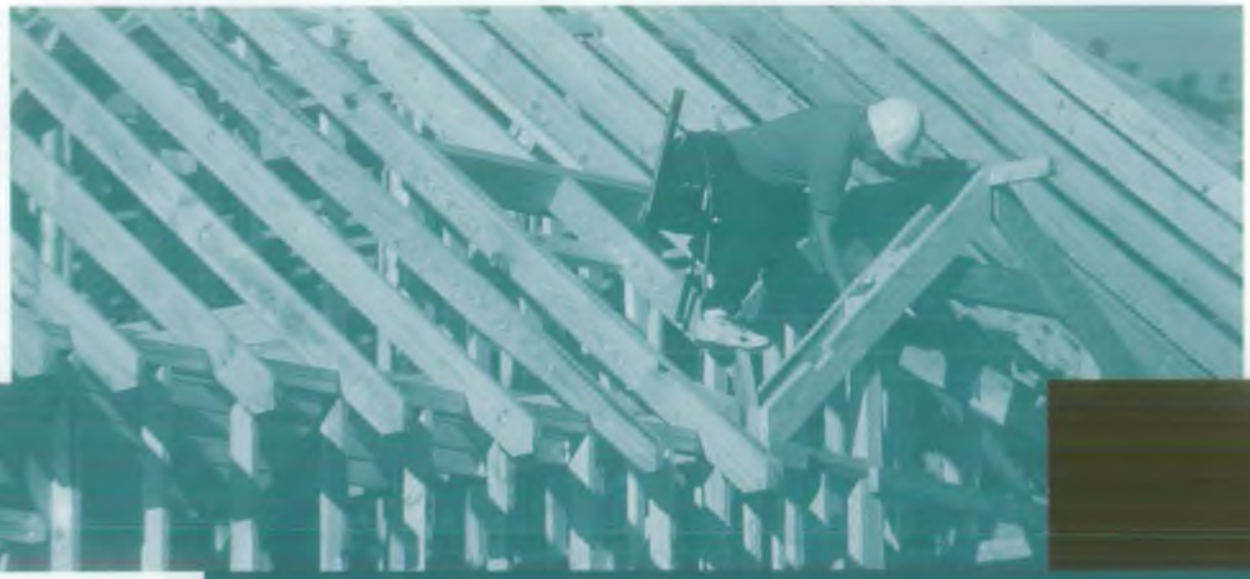
Join In, Join Up

There are two ways in which we need your support:

Bring us your expertise: if you have specialist knowledge or experience, read the relevant technical section and send us comments or corrections. You could suggest good examples of projects that embody principles of sustainability, or offer to join the Charter panel. Give us details of useful publications, websites, and organisations. We promise to update the Charter and acknowledge your contribution.

Make a pledge: stand up and be counted. Read the criteria for pledges and decide where you are now and where you would like to be. To check your eligibility, receive a Pledge Certificate and be invited to other events contact SSW (see details below).

Everyone who makes a pledge will be listed on the website and at events and in any publications.



Whichever level you are at, or aspire towards, for information on the Pledges, the Charter and its development, you should contact:

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Making a Pledge

Level 1 Pledge

This is the first step and the easiest to take. The pledge states:

My organisation will study the Principles and technical notes of this Charter and take a new look at our own activities against it.

Evaluate your status: Has your organisation obtained and shared these documents with colleagues? Do you know in what areas you could influence practices in construction projects?

☐ **Yes** You are a level 1 organisation

☐ **No** You should review your knowledge of sustainable construction

Level 2 Pledge

My organisation endorses the principles of sustainability in the Sustainable Construction Charter. We will audit our activity to assess compliance with the principles and each technical section.

Evaluate your status: Do you understand and agree with the Principles? Have you read and researched further technical areas relevant to your organisation? Have you audited your activity to find out where you could make improvements?

☐ **Yes** You are a level 2 organisation

☐ **No** You should audit your activity in relation to sustainable construction

Ambassador Level Pledge

My organisation has reviewed its activities in sustainable construction and will report publicly on its progress. We will champion Sustainable Construction practices and share our experiences with others.

Evaluate your status: Are you providing an annual report on your performance; has your report revealed examples of good practice in any area of sustainable construction? Are you willing to write about, publicise and advise on your experience or encourage other people to do the same?

☐ **Yes** You are an ambassador for sustainable construction

☐ **No** You should follow up the ideas and contacts in the technical notes to the Charter

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Revised January 2002

Sources of Help and Information

Free or Subsidised Expert Advice / Consultancy:

- Towards Greener Buildings, DETR funded, managed by BRE - Tel: 01923 664258.
- Energy Services Support Service, for advice and subsidised feasibility funding for CHP and local energy schemes (e.g. 75% of costs), some capital grants also available, via The Energy Saving Trust - Tel: 01908 558209.

Information and Advice Sources:

- Building a Better Quality of Life: A strategy for more sustainable construction, DETR, April, 2000.
- Building Research Establishment at http://www.bre.co.uk
- BRECSU, BRE, Garston, Watford. WD2 7JR. - Tel: 01923 664258, fax: 01923 664787
- BR Energy Conservation Support Unit (brecsuenq@bre.co.uk, http://www.bre.co.uk/brecsu/) produce best practice guides for: landlords, tenants, Councillors, homeowners, builders, developers, local authority offices, etc., covering energy consumption; affordable warmth; refurbishment; new build; insulation; heating, ventilation and light; low-rise flats and houses; high-rise, and multi-resident buildings, including nursing homes, etc.
- The BRE Centre for Sustainable Construction - Tel: 01923 664223
- The INTEGER project - Tel: 0181 876 7553 Construction industry and marketing led project integrating features of 'intelligent' housing with 'greener' housing.
- Centre for Alternative Technology at http://www.cat.org.uk/
- The Somerset Trust for Sustainable Development, Town Hall, Langport, Somerset. TA10 9PR. - Tel: 01458 259400 - http://www.sustainablehousing.org.uk extensive information, publications and seminar programme.
- Association for Environment Conscious Buildings (AECB), Nant-y-Garreg, Saron, Llandysul, Carmarthenshire, Wales - Tel: 01559 370908 admin@aecb.net, http://members.aol.com/buildgreen/index.htm.
- The Association of Environmentally Conscious Builders at http://www.aecb.net

Specialist Energy Organisations:

- The Energy Saving Trust http://www.est.org.uk
- ESD (Energy for Sustainable Development), Overmoor, Neston, Corsham, Wilts. SN13 9TZ - Tel: 01225 812102, esd@esd.co.uk - one of the world's leading sustainable energy companies, with experience of Combined Heat & Power (CHP) schemes, including within a development of over 200 houses in Kirklees (Huddersfield).
- Centre for Sustainable Energy, The CREATE Centre, Bristol - Tel: 0117 929 9950.
- Optima Energy - Tel: 0207 221 1388, providing specialist energy advice to a wide range of clients.

Reports and Publications:

- Green Building Handbook Vols. 1 & 2, by Tom Woolley, et al, published by Taylor and Francis, London. ISBN 0419 226 907. £29.95.
- DETR / Building Research Establishment (BRE) Best Practice Programme reports, CRC Ltd, 151 Rosebury Avenue, London. EC1R 4GB. - Tel: 020 7505 6622, crc@construct.emap.co.uk
- EcoHomes CRC (Building Research Establishment), price £25.00.
- The Green Guide To Housing Specification, BRE, April 2000, Anderson /Howard, £35.00.
- Towards Sustainable Housing: Building Regulations for the 21st Century, Robert Lowe and Malcolm Bell, Leeds Metropolitan University, 1998, ISBN 1-898883-12-2.

Useful Magazines / Journals

- Building For A Future, AECB Magazine.
- Clean Slate, CAT Magazine - information source with focus on increasingly mainstream 'alternative' technology; essential for the techniques and technologies of wind, solar, waste and water issues.
- EcoDesign magazine from the Ecological Design Association.
- The Green Building Digest, School of Architecture, Queens University Belfast. BT9 5BY. Tel: 01232 335466, e-mail: t.woolley@qub.ac.uk - quarterly publication.
- You Build - the magazine of the Walter Segal Self Build Trust.

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Where It's At

Site Appraisal

Sustainable construction starts well before the first stone or brick is laid, or even the first line on a drawing. The ability to 'understand' a site, and its surroundings, is a key skill. This will include thinking about how the site has been used in the past and could be used in the future.

The natural features of the site, any assets and value come next. Biodiversity, micro-climate, existing structures, aspect, views into and out of the site, local community needs, surrounding design styles, development patterns and neighbours, features above and below ground (eg archaeology, minerals, water), potential contamination, topography, the catchment context, and access to the site are all relevant. It makes sense to gather and analyse economic, community and environmental information about a site and its surroundings and to consider the historical context in which it sits prior to the design phase of the development.

Key Questions

- Have you checked on the provisions of the development plan (structure, unitary and local plans)? ☐
- Has an appraisal of the site (including economic, social, cultural and environmental issues) and its setting been done? Has it been summarised in a clear schematic diagram and shared with the planning authority and other interested parties? ☐
- Have you been able to explain clearly how your development will maximise the opportunities and overcome the constraints of the site and its surroundings? ☐
- Have appropriate archaeological and historic appraisals of the scheme taken place? (eg a watching brief at the groundwork stage or more ongoing assessment) ☐
- To what extent have the community and its representatives and other specialist interest groups been involved in survey and analysis of the site and the proposed design? ☐
- Have other options for development of the site been considered and is there a clear justification (in sustainable development terms) for the chosen option? ☐

Benefits

- 'Understanding' the site and its surroundings will benefit the design of the development - now and for the future
- A clear demonstration of how the development makes best, sustainable use of the site and its surroundings will improve the chances of success with the local planning authority, the local community, and site neighbours
- Expensive mistakes and unnecessary waste will be avoided (eg through appropriate incorporation of existing structures)
- The appraisal may bring up exciting new ideas and opportunities

Case Studies

- National Trust Model Brief
- BSRIA Environmental Code of Practice for Construction Projects
- Marconi Huts, Bass Point, The Lizard, Cornwall - detailed site, historic and materials investigation (contact the National Trust)
- Bristol City Council - Planning Department's 'Sustainability Assessment System' for planning applications

Sources of Help and Information

- PPG 1 - Annex A, Handling Design Issues
- European Council of Town Planners - Good Practice Guide on Planning for Sustainable Development
- Good Design in Planning - Lincoln City Council (Section 2.5 - Site Appraisal)
- Planning for Sustainable Construction and Development: A guide to positive planning for 21st century buildings and development by Steve Charter, Somerset Trust for Sustainable Development, 2001. £25.00
- Sustainable Settlements, by Hugh Barton, Geoff Davis and Richard Guise (University of the West of England) and Tony Hams (the Local Government Management Board), 1995. ISBN 0 7488 9796 8. £26.00
- Planning for Sustainable Development: Towards Better Practice, Department of the Environment, Transport and the Regions
- 'Sustaining the Historic Environment: new perspectives on the future' produced by English Heritage, 23 Savile Row London W1X 1AB in March 1997
- www.architecture.com - Guidance for Recommended Design Stages. Also available in hard copy from RIBA (Tel: 020 7307 3677).
- Quality of Life Capital approach - www.qualityoflifecapital.org.uk

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The Sense of Place

Landscape, Biodiversity, Cultural Heritage and Recreation

The South West Region is rich in special landscapes, biodiversity and cultural heritage. These assets underpin many of the region's recreational attractions and are appreciated as a crucial element of the South West economy.

Development has the potential to work in harmony with these assets - watching our step, conserving key features, sometimes needing to change and move on, always keeping a rich mix to share with visitors. For example, a new development might allocate some land for a wildlife habitat and can adopt existing historic and cultural features to establish an identity for new or existing communities. In the South West, we are acutely aware of the economic and social benefits of 'getting it right' for the environment. "Development", in this context includes the immediate site, its context (above and below ground, upstream and downstream, aesthetic and cultural), and the structures on the site (buildings, earthworks, infrastructure, landscaping).

Key Questions

- Does the development respond to the landscape and cultural heritage of the area and, wherever possible, enhance the surroundings? ☐
- Does the development affect local wildlife habitats? Is there a Plan for long-term management of those habitats? Are there natural 'treatments' for products of the development? (eg Sustainable Drainage Systems (SuDS), reed beds for drainage water, composting of organic materials, etc) ☐
- Are features that are worth keeping, for example, mature trees, shrubs or hedges, ponds & wetlands, historic buildings, street furniture, archaeological resources, cultural landscapes and features treasured by local people, being sufficiently integrated into overall project design? Are they being protected during construction of the development? Can any of these features be enhanced? ☐
- Have the impacts (positive and negative) on nearby buildings and archaeological sites been considered? Could once redundant historic buildings be incorporated into the development? ☐
- Have you thought about leaving undeveloped land, or restoring previously developed land, as formal or informal play space, allotments, community or education facilities or wildlife habitats etc? Could this link local features together? ☐
- Have you planned for soil protection during development, so that topsoil is conserved and subsoil is not compacted, disturbed or drained causing problems later on? ☐

Revised January 2002

Benefits

- Healthy and inspiring places in which to live, work and play
- Rapid identification by new occupiers with their cultural and natural environment
- Involvement of the community - existing or new - in management of their own sustainable environment
- Local wildlife and historic features valued and protected, with gains beyond the development site
- Reduced vandalism
- Lower maintenance costs

Case Studies

- Taunton Riverside

Sources of Help and Information

- An Environmental Prospectus for South West England - contact the Environment Agency, Tel: 01392 444000
- ECTP Good Practice Guide for Sustainable Development
- A Biodiversity Guide for Planning and Development Sectors in the South West - ALGE and SW Biodiversity Partnership
- Developing Naturally - A Handbook for Incorporating the Natural Environment into Planning and Development - Mike Oxford
- Valuing Our Environment - a study of the economic impact of conserved landscapes and of the National Trust in the South West. Tourism Associates 1999
- National Trust Wildlife & Buildings practice notes

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Make the Connection

Movement and Communication

How people and goods get to and from a new development strongly influences its sustainability. A greenfield location can mean that cars and lorries are the only viable means of access. Equally, the distances to other destinations can be great.

In these instances, traffic generated can outweigh any improvements in other aspects of sustainability, such as an energy efficient structure. Whether the development is residential or commercial, it is important to "design in" the means for use of alternatives to travelling one person per car - such as carsharing, public transport, cycling and walking. Working with/for users of the development, Green Travel Plans can be devised to help minimise impact. Designing in ICT infrastructure may reduce the need to travel for business, shopping and services, and may assist telecommuting. Live and work, mixed use schemes are more sustainable than developments of one use, such as large housing estates or retail complexes, since they reduce the need to travel.

Key Questions

- How will people get from home to work and other destinations? Will they have to own a car to get there? ☐
- Are there alternatives to car use? eg rail, a local bus, safe cycleway or footpath ☐
- How easy will it be for residents/users to find out about the alternatives? eg will public transport information, including timetables, be provided with house-sale details ☐
- How easy will it be to use alternatives? eg information, maps and signs, safe path and cycleways timetables, car pools and lift-sharing ☐
- What might encourage them to use alternatives at least some of the time? eg rapid routes for buses, park and ride users, car-sharers ☐
- What will prevent them from using alternatives? eg lack of information, cost, inconvenience ☐
- Could property values be enhanced by connecting with transport and communications infrastructure? ☐
- Is there cabling/ISDN near or likely to be near by? Could there be new links? ☐

Benefits

- Less motorised travel means less air pollution, less contribution to global warming, less respiratory disease and early deaths
- More walking and cycling brings health benefits and is cheaper and safer
- Less cars and lorries mean less accidents
- Public transport is more socially inclusive and the more people use it, the more viable it is and can invest for higher quality
- Less travel gives people more time for themselves and for their community
- Less vehicles on the roads reduces stress from noise, congestion, worries about safety and health
- Less traffic reduces severance between communities divided by roads and rail lines
- Your health, your community, your pocket and your environment all benefit

Case Studies

Before Wessex Water built their new headquarters in Bath, they asked their employees how they intended to travel to the new site. As a result, they commissioned a bus stop outside the main entrance and run regular buses to Bath Spa railway station. The buses were fitted with cycle racks, which meant that commuters were able to combine cycle, train and bus travel to get to work. In addition, after consultation with the transport regulator, closed circuit cameras were fitted to the buses so that drivers could ensure that bikes were secured safely.

Sources of Help and Information

Much public transport information is now available on the web. The entire national rail timetable is searchable at www.railtrack.co.uk, there are local bus timetables such as Bristol's at www.firstcityline.co.uk. Ridesharing can be supported by dedicated software to match lifts to those needing a ride, as described at www.liftshare.com. Measures to encourage cycling are described by Cycle West, at www.cyclewest.org.uk, and by SUSTRANS at www.sustrans.org.uk. The SUSTRANS site also provides detail about the National Cycle Network. General information is available from Transport 2000, tel: 020 76130743.

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All Together Now

Sharing Information

For sustainable construction to become a reality, there are two communication tasks to complete:

- **Let everybody know what we mean by sustainable construction; and**
- **Show how sustainable construction can contribute to environmental, social and economic goals**

Another way of looking at the awareness and understanding of sustainable construction is:

- How sustainable construction can affect each household, internally
- How sustainable construction affects us externally as members of the wider community, whether at neighbourhood, village/town, regional, national or international levels

Key Questions

These questions can help us evaluate the extent to which we now, or might in the future, contribute to sustainability through our approach to construction:

For the individual/household

- When you moved into your home, did you think about: ☐
  - i How well it fitted into the surroundings?
  - ii Whether it saved energy - cutting the cost of your bills?
  - iii How much water would be used? eg in maintaining a big garden or having a bath rather than a shower
  - iv The feasibility and benefits of walking/cycling to work, school, shops etc?
  - v Whether you need that amount of space and could maintain it cost-effectively?

- Can you connect the method of construction and location of your home to issues like saving energy and water, reducing pollution and congestion, maintaining a peaceful environment and preserving green space? ☐

- Can you make any changes now which could help? ☐

- Do you or could you join with neighbours in action which might lead to achieving sustainable construction, ie as a member of an amenity or similar society; or in helping in the preparation of village design statements or community appraisals? ☐

Key Questions cont.

For the Construction Industry

- Do you tell clients about the benefits they can get from sustainable construction and could sell on to consumers? (eg more attractive and individual appearance from local materials, ease and cheapness of maintenance, reduced energy needs, less pollution and improved accessibility) ☐
- Could you contribute to the understanding and awareness of other professionals, clients and consumers of what sustainable construction means? (eg by supporting the aims and objectives of the House Builders' Federation) ☐
- Do you support initiatives which increase public awareness of examples and benefits from sustainable construction? (eg the Architecture Centre in Bristol) ☐

Benefits

The benefits of increasing public and professionals' awareness of sustainable construction include:-

- Awareness of increased competitiveness
- Higher standards of construction
- Conservation of scarce resources, reduced waste and reduced pollution
- Public demand for more sustainable homes and workplaces
- Wider perception of the local, regional and international benefits of sustainable construction
- A more saleable property

Case Studies

- Poundbury, which has received considerable public exposure

Sources of Help and Information

- DETR: Agenda 21 Initiatives "Think Globally, Act Locally" (1994)
- DET (COI) "Helping the Earth Begins at Home" Series of pamphlets (1994)

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Projects Are For People

Community Engagement

Sustainable developments will involve people and communities in their planning, design and construction. This does not mean a professional team assessing the site, working out a design and presenting a proposal at a public meeting a week after the planning application is made. Rather, developers as project promoters are expected to start by considering what local communities' needs are, who will be affected by the project and how they can best be involved in decision making.

By seeking early involvement, developers ensure that they understand local opportunities and that the final project will be well-designed, desired and welcomed. Most representatives of the community will be unaware of the range of sustainable techniques now available. The developer and his/her professional team can share this knowledge or facilitate technical aid.

Key Questions

- Are there processes in place to enable all sections of the community to actively participate in decisions about the project? ☐
- Is there active recognition of any differences between sections of the community and methods of consensus building, negotiation and resolution? ☐
- Will special efforts be made to reach traditionally excluded groups? (eg the young, disabled, women, minority ethnic communities) ☐
- Has the information about sustainable construction principles and options been produced and made accessible to everyone in the community? ☐
- Is there 'community technical aid' available to community groups wishing to develop their own sustainable construction plans? (this may include access to professional advice from planners, designers, surveyors, engineers, architects/landscape architects) ☐

Benefits

- Plans for new developments will benefit from knowledge in the community about any local creative/design/construction skills, sources of local building materials and any local health/environmental/safety issues
- Community input will aid local distinctiveness and promote a positive sense of ownership of any new development
- Initial community involvement can be developed for future maintenance/management plans where appropriate
- Assisting the recruitment of local people as part of the labour force of the development project

Case Studies

- Please share your knowledge and information on case studies in the region through the Future Foundations website (www.futurefoundations.co.uk)

Sources of Help and Information

- South West Forum - c/o Community Council of Devon, County Hall, Exeter, EX2 4QB Tel: 01392 382822
- A Guide to Sustainable Construction for Village Halls and Community Buildings, by Steve Charter, Somerset Trust for Sustainable Development. A comprehensive guide suitable for professionals and the general public. £10
- Building the 21st Century Home: The Sustainable Urban Neighbourhood, David Rudlin & Nicholas Falk, Architectural Press, ISBN 0 750625287, price £19.99
- You Build - the magazine of the Walter Segal Self Build Trust
- The Community Development Foundation (CDF), 3rd Floor, Goodbard House, Infirmary Street, Leeds, LS1 2JS (www.cdf.org.uk)
- The Neighbourhood Renewal Unit at www.detr.gov.uk
- Rural Community Councils -

AVON:	Community Action, Tel: 01275 393837
CORNWALL:	Rural Community Council, Tel: 01872 273952
DEVON:	Community Council, Tel: 01392 382533
DORSET:	Community Action, Tel: 01305 250951
GLOUCESTERSHIRE:	Rural Community Council, Tel: 01452 528491
SOMERSET:	Community Council for Somerset, Tel: 01823 331222
WILTSHIRE:	Community First, Tel: 01380 722475

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In Expert Hands

Training and Skills Development

Construction activity in the South West region involves new-build development (including currently some massive regeneration projects) as well as refurbishment and the preservation of one of the richest heritages of historic buildings. Yet contractors and developers are finding that regionally, as well as nationally, there is a shortage of both skilled construction workers and construction training capacity.

Colleges now face the challenge of meeting the needs of the construction industry for a better skilled workforce as well as responding to the growing importance of sustainability issues for the sector. Sustainability must be embraced by construction trainers so that it becomes a part of mainstream thinking, building on the current sustainability expertise and examples of good practice in the region. The shortage of specialist craftspeople, to service the heritage sector, also presents opportunities to develop new courses (eg thatching, cob-walling). By addressing the construction skills deficit now we avoid paying for it later. Learning organisations can set an example to other sectors by examining their own policies on new development to assess relative sustainability.

Key Questions

General:

- Is sustainability awareness-raising part of your organisation's staff induction and development policy? (eg waste recycling schemes, encouraging car-sharing) ☐

If you deliver construction training:

- Does the training you provide take account of the visual and environmental impact of developments as well as the effects on local communities? ☐
- Does the training address the sustainability of using and transporting local materials and the use of traditional methods? (eg dry-stone walling, wood-framing) ☐
- Do you promote careers in construction to the local labour force (including women, disabled students, ethnic minority students, older learners) - highlighting the whole range of possibilities within the industry? (eg building, architecture, heritage) ☐

If you commission buildings:

- Is sustainability part of your own estates policy and contracting rationale when selecting architects/developers for a project? ☐
- Are your contractors recruiting locally and training their workforce in sustainability skills? ☐

Revised January 2002

Key Questions cont.

If you plan or construct buildings:

- Do you take account of sustainability, including recruiting local labour where possible and ensuring that your workers are qualified and engaged in training? ☐

- Are your employees trained in: ☐
  - Green building principles/sustainable construction?
  - Construction techniques relevant to the heritage sectors?

Benefits to you

- Sustainable building practices (eg waste recycling, energy conservation, local sourcing) and 'sustainability awareness' will soon be quality criteria for the industry
- By implementing sustainability now you will be ahead of Government legislation
- Skilled staff, trained in sustainable practices, are more likely to approach problem-solving creatively and to take account of 'futurity issues' - just the staff you need to be successful!
- Training with wide career-progression opportunities will be attractive to all ages and abilities
- The maintenance and development of a high class built environment in the South West will support other industries such as travel and tourism
- Raising local skill levels reduces unemployment and encourages people to stay in their communities

Case Studies

- Somerset College of Arts and Technology and other Somerset colleges are working with the Somerset Trust for Sustainable Development to embed sustainability into construction training
- Plymouth College of FE and Filton College Bristol have new buildings which have 'designed-in' 'green' principles. Both colleges are active in sustainability education though the Econet
- Weymouth College has a well-established stone-masonry course which trains students who work on cathedrals and other important historic buildings all over the UK and abroad

Sources of Help and Information

- Filton Econet, tel: 0117 9092260, email: info@filtoneconet.co.uk
- Construction Industry Training Board (www.citb.org.uk), SW area office tel: 01392 444900
- Learndirect (www.learndirect.co.uk), tel: 0800 100 900 for info on local courses
- Learning and Skills Council (www.lsc.gov.uk), tel: 0870 9006800 (general helpline)
- Regional Development Agency, tel: 01392 214747
- The Regional Assembly, tel: 01823 270101 for Local Authority and council contact info
- The Create Centre, Bristol - educational resource including library on sustainable construction

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Work It Out

Using Local Labour in Construction

Construction projects depend on the availability of a skilled workforce and employment of local people in these projects plays an important part in protecting and strengthening the local economy. Local Labour in Construction aims to increase the number of local people working on construction sites, especially in areas where local people might otherwise miss out on construction jobs created by such opportunities. Clients and developers can make a difference by committing to local labour and requesting their contractors do likewise. Clients and developers should be asking contractors whether they have addressed the following points when tendering for a contract:

Key Questions

- Are local operatives encouraged to register with the Construction Skills Certification Scheme? ☐
- Are trainees employed in accordance with the National Working Rule Agreement for the building and civil engineering industry? ☐
- Has a register been compiled, listing any sub-contractors that have been employed from outside the area stating the reasons for not employing a local sub-contractor? ☐
- To what extent are 'small works' identified, such as clearance, basic landscaping, maintenance and other peripheral aspects of the main contract, which might be carried out by community based initiatives to assist in the creation of new employment opportunities or new businesses? ☐
- Is there a clearly stated equal opportunities policy, to ensure that no job applicant or existing employee is treated less favourably on the grounds of sex, race, disability, religious belief, or by any other requirement which cannot be shown to be justifiable? ☐
- To what extent has a detailed analysis of the work packages been undertaken to identify the maximum number of training places which could be integrated into the project? ☐

Revised January 2002

Benefits

- Income of local people increased, especially those in greatest need
- Skill levels and employability of local people improved
- Greater sense of local ownership and pride in the project
- Local economy benefits from circulation of income earned on site

Case Studies

- Penny Jones, ON-SITE, Bristol, Bordeaux Quay, Canons Road, Bristol BS1 5UH, Tel: 0117 9349455
- Stephanie Ward, SEECON, Eastleigh Business Centre, Wessex House, Upper Market Street,
- Eastleigh, SO50 9FD, Tel. 01703 615367

Sources of Help and Information

- Local college and training providers - Tel: Learndirect 0800 100 900 for more info
- South West Regional Development Agency, Tel: 01392 214747
- Employment Service
- Construction Industry Training Board (www.citb.org.uk), Tel: 01392 444900
- Learning and Skills Councils

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Neighbourhoods of Distinction

Use of Local Materials

Using local materials in construction can contribute to the relative sustainability of a new building or development and automatically leads to local distinctiveness. The use of local resources has contributed so much to the diverse and attractive character of the region's towns and villages.

The South West has an excellent range of examples, from granite structures in Cornwall, to cob and thatch in Devon, to a variety of limestone, willow and reed in the rest of the region.

It has to be acknowledged that present day economics make the use of local materials more difficult in those areas where easily worked local stone is not available. Sometimes the environmental costs and benefits of using local versus non-local materials have to be balanced. Where local materials are scarce, for instance, it may not be appropriate to channel them into large-scale development. Nevertheless there could be more sensitivity shown in the choice of materials for modern building, for instance in the colour of bricks and by avoiding unnecessary additions which are not typical of an area. More adventurous, sustainable approaches such as timber-framing and building with straw bales are inexpensive, easy to maintain and good for insulation.

Key Questions

- When adding to a building can materials which match or blend with the existing construction be used? ☐
- When does such an approach become pastiche and be better replaced with a new development which is more individualistic and contrasting? ☐
- How much more expensive would local sourcing of materials be? How much more expensive would sourcing of traditional materials be? What would be the benefits? Reduction in public opposition? An easier planning application? ☐
- Does your organisation have the appropriate level of expertise to make effective decisions about sustainable materials and design? Do you know where you can get help and advice if required? ☐
- Have you assessed the impact which the proposed buildings and their materials wil have on the existing built environment? ☐
- Could existing buildings on the site, which perhaps capture something of the local character, be re-used in the new development? ☐

Key Questions cont.

- Are you prepared to encourage, organise and finance "Planning for real", Village Design Statements etc. so that local people can become involved in the design process, and feel greater ownership of their surroundings and place in the community?

Benefits

- The use of local materials enhances the environment, the sense of place and local identity, creating more community pride in the built environment rather than opposition to change
- The local economy is improved with more jobs and synergy between local businesses in construction, and better success for local firms
- The use of local materials and goods mean less freight is travelling by road
- Many traditional materials involve less processing and therefore less industrial waste and pollution

Case Studies

- Oaklands Park, Dawlish
- New development at Abbotsbury

Sources of Help and Information

- Village Design: making local character count in new development. Countryside Agency, 1996
- Areas of Local Distinctiveness: Devon Conservation Forum
- Common Ground (www.commonground.org.uk) - various publications Tel: 01747 850820

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Time and Time Again

Recylability and Renewability of Building Materials

Architects consider the suitability of materials for buildings in terms of strength, aesthetic value, durability and adaptability. We also need to consider the impact of the choice of material on the environment, the economy and the community. Re-using building materials, such as stone, has a long history. It avoids the energy and expense of quarrying and cutting. However, recycling of building materials for re-use can encompass potentially all materials.

Exciting re-use of glass, metals, stone, brick, concrete and wood are emerging, partly in response to environmental pressures but also as a cheaper alternative. We are also more likely now to think about whether a material is easily renewable or not. Renewable means continuously produced in the environment (eg through coppicing and planting) and sustainable. Renewable materials include wood based products, natural fibres – such as wool, straw or hemp. Aggregates or petroleum-based products are not renewable because they are produced over millennia and we use them much faster than we can replace them. Some hardwoods fall in the same category.

Key Questions

- Which materials are proposed for use in the building? Can any be replaced by recovered or recycled materials? ☐
- Can the materials proposed for construction be obtained from a sustainable source, that is, renewable? Will they be? ☐
- Could the materials to be used in construction be recovered and recycled at the end of the life of the building? Is there a plan to do so? ☐
- Are the materials used safe to be released into the environment after use with no harmful effects - eg pollution? ☐
- If any of the materials are intended to be sourced from unlisted buildings - will a check be carried out to assess whether these buildings ought to be preserved/refurbished anway for their inherent heritage qualities? ☐

Benefits

- Renewable and recycled materials are usually cheaper
- Energy is saved from production and transport
- Pollution from production and transport is reduced
- Materials can be sourced locally, helping the local economy
- Materials may contribute to the character, aesthetic value and sense of place of the development
- Seeking recycled and renewable materials and sustainable sources will promote ingenuity, creativity and innovation

Case Studies

- Materials information exchange (www.bre.co.uk/waste). This Internet based exchange is designed to match the suppliers of building waste material with potential users during the short and critical time when it becomes available at one site and is needed on another. Due to the low value of the materials being replaced by recycled product, the service has remained free and largely self-maintaining. It allows for waste products to be advertised by geographical location so you can search for a product or advertise that a product is wanted by area. A searchable database holds info on current research, publications, web links etc
- Penamayne Court, St. Ives - re-use of dressed granite (Architects: Poynton Bradbury Wynter Cole)
- Penwith Housing Association scheme, Penzance - use of reclaimed granite from demolished buildings (Architect: Rodda Lloyd Associate)
- Holwell, East Down - recycled newsprint used as roof insulation (Architect: Clive Jones Associates)
- Bristol City Council - sustainable timber use policy (see www.bristol-city.gov.uk)

Sources of Help and Information

- Building Research Establishment - www.bre.co.uk
- Building the Future: a guide to building without pvc, including alternatives to pvc: suppliers guide, Greenpeace with the Association for Environment Conscious Buildings. Free. Suppliers list included, and cites local government research that indicates reduced costs by avoiding PVC
- The Green Guide To Specification: a guide to environmental performance of building materials and components, N Howard, D Shires and M Sinclair, BRE, 1998, Normal price £35
- The Whole House Book: Ecological Building Design and Materials, by Pat Borer and Cindy Harris, published by CAT, 1999 - £29.95
- South West Industrial and Commercial Waste Minimisation and Recycling Directory - Environment Agency. A free guide to companies that offer recycling services. It lists wastes in alphabetical order - together with the companies who can recycle them and the areas they cover. It also lists contact details for waste exchange services and local green business clubs. Contact the Environment Agency general helpline (0845 933 3111) for more information

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Save Your Energy

Energy Efficiency in Construction and Operation

People are increasingly aware of the way using cars influences global warming. In fact, the major contributor to the CO2 emissions is the use of non-renewable energy during the construction and use of buildings. So sustainable construction can make a big difference to our impact on energy consumption and climate change.

Energy efficiency in sustainable construction covers: energy used to create the building material; energy used to put the building up; and energy consumed in the building over its useful lifetime and its decommissioning. In checking our energy efficiency we have to look at all three aspects.

Key Questions

- Are the building materials you use maximising the use of recycled materials? ☐
- Does their production use a lot of energy, that is non-renewable? eg manufactured using heat or electricity from fossil fuels ☐
- Will these materials conserve natural warmth and minimise losses of heat? ☐
- Do windows and atriums create uniformly high daylight levels with the means to control glare and direct solar gain? ☐
- Are the proposed heating and lighting systems inherently low energy use, for example, make use of condensing gas boilers, have lighting loads less than 2 W/m^2/100 lux and specific fan powers less than 1 W/l/s? ☐
- Does the building design make use of natural ventilation, exposed thermal mass, effective solar shading and low internal gains from lighting and equipment and effective night ventilation to minimise the need for mechanical cooling systems? ☐
- Does the design ensure that the building meets the good practice air leakage rate of 5 m^2/hour per m^2@ 50 Pa for commercial buildings? ☐
- Does the design and fit-out of the building provide usable and effective controls and practice effective energy management so that the building can live up to its design intent? ☐

Key Questions cont.

- How will the use of these controls be communicated to owners, tenants and other users of the building? ☐

Benefits

- Energy cost savings
- Improved Economy by improving occupant satisfaction and hence productivity, which also leads to an enhanced asset value
- Lower Environmental impact from reductions in CO2 emissions

Case Studies

- Dyfi Eco Park: the award winning light industrial park. The development represents an exemplar in energy and environmental performance (see article Cohen RR, "Triple E for Developers", Building Services Journal, February 2000)
- Tolvaddon Energy Park - Incorporates an earth energy system to provide heating, has a grey water recycling system, a low energy lighting system and increased insulation, considerably reducing CO2 emissions. (Further details from the RDA - 01382 214747, www.southwestrda.org.uk)
- Photovoltaic system on 8 existing houses in Dartington, Devon - A Government funded scheme, reducing electricity bills by 25 - 30% (Further details from - www.cholwell.org.uk or 01823 762628)
- Life Guard Hut, Bantham - A Heritage Lottery Funded project delivering 100% electricity needs of building (Further details from - www.cholwell.org.uk or 01823 762628)
- Environment Agency offices, Bodmin - A contemporary link between two older buildings designed to be thermally efficient by use of a turfed roof with recycled newspaper insulation and natural air-flow
- Great Western Hospital, Swindon - Carillion Building (www.carillion.co.uk)

Sources of Help and Information

- Energy for Sustainable Development, contact Dr Robert Cohen, robert@esd.co.uk, 01225 816646
- Cholwell Energy Systems Ltd - www.cholwell.org.uk , e-mail: cholwell@aol.com - particularly for integrated photovoltaic systems and wind power
- Energy Saving Trust - www.est.org.uk
- Association for the Conservation of Energy - www.ukace.org
- Design advice is available via the Environment and Energy Helpline Tel: 0800 585794
- Green Construction - www.greenconstruction.co.uk
- Environment & Energy Management Team, GOSW. Tel: 0117 900 1800 or www.oursouthwest.com

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Lighten Up

Natural Light and Darkness

Artificial lighting consumes energy and 30% of every household's contribution to CO^2 emissions comes from lighting and appliances. Street lighting is also a substantial consumer of energy. If you look at a satellite image of the UK taken at midnight you will see a pattern of urban light visible from a substantial height above the planet. Many people regard this as a form of pollution.

It is argued that too much lighting may affect human health and may cause disruption to animal and plant life. Much lighting is certainly misdirected or excessive. On the other hand, street and security lighting can help community safety.

Sustainable construction should reduce the use of artificial light, maximise the use of natural light, minimise light pollution, but also ensure community safety.

Key Questions

- Has the development, including landscaping, been designed to make best use of natural light whilst ensuring that passive solar gains are not excessive? ☐
- Have external lights been installed which prevent the emission of light above the horizontal? (eg with full cut-off or ultra low-profile housings) ☐
- Have automatic on/off switching systems and intensity controls for internal and external lighting been installed in the building(s)? ☐
- Has a policy to use low energy light bulbs been adopted? ☐
- Has 'overlighting', particularly during night hours, been avoided? ☐

Benefits

- Appropriate use of natural light will improve the performance of a building over its lifetime
- Energy bills and CO^2 emissions will be reduced
- Appropriate, but not excessive, levels of lighting will still provide adequate safety
- Use of natural light is likely to provide a better working and living environment and protect human health

Case Studies

- Haute Vallee School, St Helier, Jersey - use of wind towers, thermal mass, passive solar heating, external shading and good daylighting (architecture plb - www.architectureplb.com)
- O'Sullivan House, Salcombe, Devon - use of natural light and ventilation (Stan Bolt Architect)
- Weil Hackett, Mylor Creek - large areas of glazed wall and roof (Poynton Bradbury Wynter Cole Architects)
- Tolvaddon Energy Park, Cornwall - use of low energy lighting systems (Contact RDA - www.southwestrda.org.uk)

Sources of Help and Information

- BRESCU Guide 1999
- Countryside Commission/DETR, Lighting in the Countryside - Towards Good Practice, 1997
- Dept. of Transport - 'Road Lighting and the Environment'
- Institution of Lighting Engineers, Guidance Notes for the Reduction of Light Pollution,1997 and Urban Lighting Guide: A Guide to Good Urban Lighting. (n/d)
- British Astronomical Association's Campaign for Dark Skies, Incorporating Lighting Clauses in Your Local Plan
- RTPI Introductory Guide to Planning & Environmental Protection at www.rtpi.org.uk/eandp/pub/environment/guide/index.html

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Good Vibrations

Noise

Noise is a sound that is undesired by the recipient. The legal definition of noise also includes vibration. Noise is the largest single cause of complaint to local authorities. Surveys by the Building Research Establishment have shown that over half of the homes in England and Wales are thought to be exposed to noise levels exceeding the World Health Organisation's recommended daytime level of 55 decibels.

The Council for the Proctection of Rural England (1995) claims that between 1960 and 1990 there was a 21% decrease in the area of England that could be described as tranquil. There is some evidence that the 'noise-day' is getting longer as development patterns and lifestyles change. Noise contributes to stress, especially in urban areas, and may damage health and increase aggressive behaviour.

Tranquility is a good indicator of quality of life and sustainable construction should minimise noise production and reduce the impact of noise.

Key Questions

- Are there ways to minimise noise during construction of the development? What are they? Will they be used? ☐
- Has the development been designed to minimise the impact of noise, generated by use of the building - on people in the building, or living and working close to the site? ☐
- Has the development been designed to ensure that the impact of noise generated outside the site (including traffic attracted to the site) is kept to a minimum? ☐
- Has a plan or strategy been produced that includes tranquillity as a key factor in the achievement of a good quality environment? ☐
- Have any noise reduction strategies been monitored for effectiveness? ☐

Benefits

- A tranquil environment, retained or created, improves quality of life
- Less complaints and stress for residents, neighbours and visitors of new developments

Case Studies

- Woodside Animal Centre, Phase 1 , Elfordleigh (near Plymouth) - the building itself acts as a noise barrier and is heavily insulated to reduce noise (McCarthy Taylor Architects Ltd)

Sources of Help and Information

- PPG24 - Planning and Noise (1994)
- CIRIA guide to assessing and managing noise on construction sites
- BRE - Managing noise on construction sites
- CPRE - Tranquil Areas Maps
- EC Green Paper on Noise Pollution (COM(96)540)
- Noise Act 1996
- EC Draft Framework Directive on the Assessment and Management of Environmental Noise
- BS4142 - Method for rating Industrial Noise Affecting Mixed Residential and Industrial Areas, 1997
- RTPI Introductory Guide to Planning and Environmental Protection

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Every Drop Counts

Water Resources

Water is essential for life. We demand more and more water, but the amount of water is limited and treatment costs are high. To be sustainable we must reduce water use and improve water quality to look after our health and that of the environment. In the South West we depend on surface and underground sources for our drinking water. We also need water to generate energy, grow crops, harvest fish, run machinery, carry waste and for a great deal more.

All human activities and their by-products have the potential to pollute water. Pollutants can enter surface or groundwater directly, may run off the land or be deposited from the atmosphere. Pollution can be made worse by certain weather conditions. In 1998 the South West had the second largest number of pollution incidents in the country. The use of Sustainable Drainage Systems (SuDS) can reduce rates of surface water run-off, recharge groundwater, protect and improve water quality and benefit wildlife.

Key Questions

- Can clean or used water discharged from a developed site be reduced and how can its quality be improved? ☐
- By how much has the development reduced the use of water compared to previous standards: by 10 - 40%, 40 - 70%, 70 - 100% ? ☐
- Does the development include features (including educational) that help change people's behaviour to save water? ☐
- Has a water meter been installed and is it working correctly? ☐
- Have measures been introduced to reduce use of water? (eg repair leaks, change valve systems to reduce flows, install flush control/waterless WCs, collect and reuse rainwater) ☐
- Have measures been taken to ensure that any potential pollution will be prevented? (eg identifying drainage systems, bunding of storage areas, supervision of deliveries) ☐

Benefits

- Consumers' understanding is improved and their environmental impact reduced
- Water is conserved, thereby reducing the costs of both drinking water and constructing new storage facilities
- Water quality improved and the costs (environmental, social and economic) of treating water and clearing up pollution avoided

Case Studies

- Eden Project - use of Sustainable Drainage System in the construction of roads to reduce surface water run-off and protect water quality
- Residential development at Glebe Field, Georgeham, nr. Barnstable - use of Sustainable Drainage System in the construction of roads, for adoption by Devon County Council. (Contact - North Devon Homes, Pearce Construction - 01271 345261, Michael Smith Architects - Tel: 01271 379050).
- Holwell, East Down - use of low flush WCs
- Wolfardisworthy Sports and Community Hall - Low water use appliances, rainwater collection for WCs and waterless urinals
- National Trust - Towards a Waterless Estate - Purbeck Estate, Dorset has replaced conventional toilets with waterless or low flush WCs, reducing water use by 97% (Winner of Environment Agency/Water UK Water Efficiency Award)
- Bristol Zoo 'Green Audit - The Water Message' Water efficiency measures reduced water use by 42% (shortlisted for Environment Agency/Water UK Water Efficiency Award)
- Wessex Water Headquarters, Bath - rainwater and surface water is collected in large holding tanks beneath landscaped areas, with grey water used for irrigation and 95% of toilet flushing. Porous paving in the car park allows surface water to percolate into the natural water table
- Studland study centre
- Botallack Counthouse
- Blandford Water Market 2000 - awareness raising amongst consumers
- The Create Centre, Bristol - sustainable drainage system in carpark and rainwater reuse for toilet cisterns

Sources of help and information

- Environment Agency web site - www.environment-agency.gov.uk
- Water Companies in the region - free water efficiency audit service and advice
- Conserving water in buildings - Publication available from the Environment Agency, Demand Management Centre (0845 933 3111). Contains comprehensive advice on conserving water
- Sustainable Drainage Systems - further details available from Construction Industry Research and Information Association - Tel: 020 7222 8891, www.ciria.org.uk

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Waste Not, Want Not

Saving Money and Minimising Waste

The UK has a Waste Strategy that sets out a hierarchy of approaches to waste management. First, try to reduce waste production, then reuse or recycle waste, and finally dispose of waste responsibly. The amount of waste in the South West is growing and far too much goes to landfill sites. The business and public sectors have a major role to play in reversing these trends.

Waste minimisation is about being efficient. By preventing waste and emissions at source, all organisations can increase output and profit, whilst protecting the environment. Few companies know how much waste costs their business and how much it costs the environment or human health. The real cost of waste can be 5-20 times that of the cost of disposal. Typically it costs 4% of a businesses' turnover, although it can be as much as 10%. The ability to minimise waste is, therefore a critical element of sustainable construction. Remember:

True cost of waste

Disposal costs + Purchase costs of materials + Costs of materials not used (incl. quality losses and off-cuts) + Handling/processing costs (incl. transportation) + Management time + Lost revenue + Any potential liabilities (incl. pollution) = **Much more than you realise!!**

Key Questions

- Do you collect information about waste generated by your activities, work out the scope for savings, and know your legal obligations? ☐
- Do you aim to move up the waste hierarchy by using targets for the reuse and recycling of material and continually minimise your production of waste? ☐
- How can you minimise waste during construction of development, for example by re-using building materials? ☐

Benefits

- Reducing the need for new disposal facilities
- Savings in costs, increasing profit
- Reduced risk of pollution and prosecution
- Benefits to the environment through reducing the use of raw materials, saving energy and reducing pollution
- Stakeholders (clients, planning authority, local community) for whom environmental performance is increasingly important are more engaged and enthusiastic

Case Studies

- Horizon South West - www.horizonsw.org.uk - regional co-ordination for waste minimisation organisations, environmental networks and green business clubs
- Holwell, East Devon - use of recycled newsprint in the roof space
- Skip it, Torquay
- Environment Agency offices, Bodmin, Cornwall - use of recycled newspaper as insulation
- Wessex Water Headquarters, Bath - One of the most successful innovations of this development was the segregation of waste on site to enable recycling of 70% of all waste, with a net (landfill tax) saving of £15,000 of construction costs
- Eden Project, Cornwall - all topsoil has been fabricated on site using material excavated from the site mixed with organic material

Sources of Help and Information

- Environment & Energy Helpline - Tel: 0800 585794
- National Centre for Business and Sustainability - advice on cost savings by improving environmental performance (www.thenbs.co.uk)
- Sustainable Business section of www.oursouthwest.com
- Dti Construction Best Practice Programme - www.cbpp.org.uk
- Envirowise - www.envirowise.gov.uk
- South West Industrial and Commercial Waste Minimisation and Recycling Directory - Environment Agency. A free guide to companies that require recycling services. It also lists contact details for waste exchange services and local green business clubs. Contact the Environment Agency general helpline Tel: 0845 933 3111 for more information
- Business Links - www.businesslink.co.uk
- PPG23 - Planning and Pollution Control
- Egan Report, Rethinking Construction, DETR
- Environment Agency website - www.environment-agency.gov.uk
- www.sustainmagazine.com - wide variety of articles, advice and products

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For further information contact:

Sustainability South West 4th Floor 100 Temple Street Bristol BS1 6AE

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Safe and sound

Safe Developments

Sustainable developments aim to reduce the risk of accidents to users, passers-by and those involved in building them. Ideally, they promote feelings of safety, relaxation or stimulation as appropriate. Design has a huge part to play in ensuring these goals are met. For example, building designs that incorporate features which enhance safety for those with disabilities or people with young children will be popular with users and be durable. Building developers should also consider incorporating design-features which have been shown to discourage crime - another way of ensuring the well-being of the users of a particular site/building.

Buildings which are easy to find your way around and include soothing aspects such as planting allow people to focus on the activity in hand rather than obstacles or concerns. Construction planning and procedures must also consider the safety of construction workers, other people on site and neighbours. CDM and H&S Regulations will ensure adequate protection for all in most instances, but sustainable development requires the greatest possible care in precautionary and preventative measures.

Key Questions

- Has the design of the development and its relation to its surroundings been appraised for effects on the safety of individuals? Has this been shared with the local planning authority and the local community? ☐
- Has a site hazards risk minimisation plan been prepared for the construction period? (to include wastes, fuels, chemicals, materials, structures, fencing etc) ☐
- Has a site/building operators manual been prepared covering risks and safety issues? ☐
- Has the site/building been designed to minimise exposure of individuals to harm? (eg night time lighting, landscape design, accessibility to transport, site warden) ☐
- Has the interaction between safety and other issues been considered? (eg the conflict between security lighting and local tranquility and darkness, between security and access) ☐

Benefits

- Avoidance of risk and hazardous events
- Health and safety for occupiers and users
- Insurance and claims cost advantages
- Popular buildings and areas
- Positive focus on the activities in and around the building
- Reduced stress
- Social inclusion as all groups can use the development

Case Studies

- The Considerate Constructors Scheme, Tel: 01920 872837

Sources of Help and Information

- Secure by Design
- Health and safety regulations

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Breathe Easy

Health Benefits from Sustainable Design and Materials

From Feng Shui to sick building syndrome, we are interested increasingly in whether buildings can affect our health. Experts have now linked the increased use of synthetic materials, chemicals, and levels of toxins in our built environment to specific cancers, allergies and respiratory diseases such as asthma. Paints, carpets and wood treatments can all lead to unwelcome exposure to foreign chemicals and particles. Poor design of buildings has also led to increased reliance on artificial light and poor natural ventilation. In some areas poor building design can mean that people can be exposed to radon gas. We now realise that large numbers of people are being affected, costing the national economy dear.

In addition, manufacturing processes involved in the chemical industry often lead to undesirable pollution or are very reliant upon fossil fuels, creating more damage to the environment and to people's health. Given the cost of clearing up and compensation, seeking sustainable alternatives makes good sense all round. A more intelligent approach to designing, living and working in buildings is to use materials and methods that we know are safe, which do not pollute and destroy our environment, and for us all to remember that the true environmental and health costs are not on the price tag. Alternative products and building techniques like this are on hand and we can bring them to bear by asking the right questions:

Key Questions

- Does the design show how a healthy indoor environment will be maintained for the occupants? To what level of detail? For example, can the occupants access fresh air and natural daylight, can they control the temperature and humidity, simply without overcomplicated controls? ☐
- Are materials specified, and can you ensure they will not have health hazards associated with them? (eg formaldehyde in processed wood products, pesticides in carpets) ☐
- Have you considered whether future occupants might have specific health problems associated with allergies, respiratory disease, chemical sensitivities, physical needs, exposure to radon gas etc? ☐
- Have potential emissions from the development been assessed for their potential harm to human health and to animals and plants? ☐
- Have monitoring and preventative measures been put in place? ☐

Benefits

- Better places to live and work
- Accessibility to all buildings by all people
- Buildings that users can control simply
- Reduced sickness and time off due to sick building syndrome
- Reduced pollution to our environment
- Reduced occurrences of allergies and asthma related problems

Case Studies

- Wessex Water - New Operations Centre, Bath

Sources of Help and Information

- Association for Environment Conscious Building 01559 370908, website www.aecb.net
- Centre for Alternative Technology Tel: 01654 702400 www.cat.org.uk
- Pesticide Action Network Tel: 020 7274 8895 www.pan-uk.org

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Forecast Changeable

Responding to Climate Change and "Future proofing"

Climate change is a fundamental threat to our quality of life. The causes of climate change may be disputed but the change is undeniable. We need to learn how to live with unpreventable change and to minimise future damage. Currently, our ability to adapt to climate change is being out-paced by changes to the climate. New techniques are required if we are to "future proof" ourselves from the worst effects of climate and other change.

"Future proofing" can be achieved by undertaking risk assessments of sites, structures, materials and their use, and minimising exposure of people and community assets to climatic and other hazardous events. We must seek 'win, win, win' solutions that do not put a future burden on people and their environment. Sustainability involves taking a preventative approach as well as planning ahead for adaptability.

Key Questions

About the location of development -

- Is the location at risk from flood, erosion, subsidence, instability, storm, drought, pollution, or health hazard? If so, can the development be located elsewhere? ☐

- What are the implications for the environment, for the economy and for the community of protecting a development from risk? (eg will flood protection be cost-effective? will it destroy valuable habitats? will it induce flooding elsewhere?) ☐

- Will the proposed new use of the site increase greenhouse gas emissions or create other effects which could set off a chain of unacceptable events? (eg carbon released from soil/peat/vegetation clearance, surface run-off causing erosion or flooding elsewhere, contaminants in soil, silt or water being re-mobilised to cause new pollution etc) ☐

About the design of the development -

- Has the design of the building taken into account the potential impact of climate change? (eg flooding, subsidence, driven rain, wind exposure, solar gain and UV exposure) ☐

- How long is the building likely to last and how appropriate will the design be over this time period? Is it compatible with anticipated changes and increased risk at this location? Is the building or its function readily removable, adaptable or easy to dismantle? ☐

Key Questions cont.

- Has the selection of materials and fittings (eg paints, finishes, water supply, drainage, roofing systems etc) taken into account potential climate change and other hazards? ☐

- Has information been supplied to potential occupants/purchasers about risks affecting the site and about mitigation/avoidance measures? ☐

Benefits

- Coping better with climate changes
- Less impact on the climate from new developments and activities
- Development of new "future proof" design and construction skills
- Creative use of new or more effective materials and practical forms of development
- Heightened public awareness of the importance of climate change and thus greater motivation to stop actions that cause climate change
- Increased public awareness of risk and emergency planning procedures; development of new information systems to enable avoidance of risk by house and property purchasers

Case Studies

- Wessex Water New Operations Centre, Bath
- Eden Project, St Austell, Cornwall
- Tolvaddon Energy Park, Cornwall
- Environment Agency Laboratory, Starcross, Devon
- National Trust Porlock Bay land management project
- Sea Defence Scheme, Minehead - use of soft and hard elements to deal with sea level rise

Sources of help and information

- C-CLIF web site (www.c-clif.co.uk)
- South West Regional Sustainable Development Framework - Theme 3
- Environment Agency website information on flood risk and environmental health, by postcode "What's in your backyard" (www.environment-agency.gov.uk/yourenv)
- BRE publication - potential implications of climate change in the built environment
- National Trust climate change policy & adaptation strategies (www.ntenvironment.com/html/env_iss)
- Planning Policy Guidance note 25 - Development and Flood Risk
- Intergovernmental Panel on Climate Change (www.ippc.ch/)

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