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ask the 'green' question

when buying,
building or
renovating
a home in
south east
queensland



HOUSING QUEENSLAND



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contents

This booklet is for people wishing to buy, build or renovate a home in South East Queensland and make it more 'green'. It contains basic information that will enable the reader to ask important questions of architects, designers, builders, real estate agents and anyone else involved with buying, building or renovating homes.

 **3** what does being 'green' mean?

 **6** making an informed decision

 **7** asking 'green' questions

8 choosing a location

9 site works

10 home design

13 materials

14 furnishings

15 appliances

17 using water

18 in the garden

20 for the more advanced

 **21** 'green' basics

22 sustainability

23 energy

24 earth

25 water

26 safety

27 health and product selection

27 money

28 natural capital

28 buying 'green'

 **29** the ENERGEX energy efficient house – on the road to sustainability

 **31** your quick-reference check list

 **32** further information



what
does
being
'green'
mean





what does being 'green' mean?

Everything we do has an environmental impact. Usually that impact is small. However, when all our small impacts are added together, the total impact can become substantial. So, by becoming aware of our own impacts, and those of others, we can start to make a difference.

Being 'green' means different things to different people; there is no one right answer. When business and government talk of being 'green' they mean being sustainable (see *sustainability* on page 22). For them, it's about changing the way they do business. For individuals, being 'green' is about making informed decisions, lessening negative impacts, and moving toward a more sustainable lifestyle.

Being a 'green' home owner is about making decisions that minimise the environmental impact of your home. As homes can be major consumers of resources, the sustainability of your home affects you, the community and the wider environment.

And the first step? Start thinking about the impact of the home you want. Do you know what the impacts of choosing a poor site are? Did you know there can be big differences in the energy used by the same home design on different blocks? Have you ever considered how the chemical smell coming from a new wall covering might affect your health?

And the answers to all your questions? You can do much to help yourself. Use the libraries (Local, State, Government Department or University). Try the Internet – it's a useful source of quick information. Talk to friends, tradespeople and professionals – see what they know.

Some of the information you collect may be contradictory. If so, think about where the information came from. Is it factual, with lots of technical data, or is it advertising material promoting a product? Does the organisation supplying the information appear credible - what is their reason for supplying the material? How true do you think the information is?

it's
about
sustain-
ability





making an informed decision

Before you begin buying, building or renovating your 'green' home, think about some basic points that might help you make a decision. Things like:

Purpose

Try to decide exactly what you want the home (or product) to do for you. If you can define your needs early, it will be easier to explain what you're after when you talk to others. Do you know how many rooms you need? Do you need a place close to transport? And so on.

Cost

'Cost' comes in many forms. There is financial cost, but there are also other costs like time, resources, environment, health, and social. In juggling 'costs' try to think not only about the dollar cost to you, but the wider costs to both the community and environment.

Durability

A well made product should last longer than a poorly made one. By using a long lasting product that doesn't damage easily you will ultimately use less resources. Often such products are more expensive to buy in the first place but save you money over time.

Safety

The home or product must be safe to use. It should not break easily, nor should it have any toxic parts that could endanger you, your family or the environment. If possible, try to buy products that have been manufactured under healthy and safe conditions.

Locally made

Buying products and materials made locally keeps the community you live in prosperous. Local jobs are retained, money tends to stay in the area, and the sense of community is maintained. Transport costs are reduced because products are not moved over great distances.

Legal

Many products, including homes, are governed by rules and regulations. Make sure what you want and what you do is within the law.

-  choosing a location
-  site works
-  home design
-  materials
-  furnishings
-  appliances
-  using water
-  in the garden
-  for the more advanced

asking 'green' questions





choosing a location

What was the site previously used for?

If the site was previously part of a forest, flood plain, marsh or good quality farming land you might be encouraging poor land use by local authorities or developers. The land might also contain chemical remains of previous industrial or farming processes – has this been checked? Ask a solicitor about the various checks that can be done, including 'contaminated land'.

Is the site part of an existing settlement?

Having a home amongst other homes and businesses (in-fill) is more sustainable than building on undeveloped ('greenfield') sites. In-fill homes can make use of existing systems like public transport, water and sewerage. Greenfield sites usually require all these services to be created.

What about current and future industrial or agricultural development?

Think carefully about how existing or future industries might affect you, your family and your home. The closeness of things like a railway, main road, airport, sewage farm, orchard or industrial plant might have an influence on your health.

Are local shops, places of work and community facilities within easy walking distance?

Having access to local facilities means spending less time travelling (which means less traffic, less pollution and less energy used). Vibrant local communities are often exciting and pleasant places to live and meet with friends.

What natural resources have been left on site?

Existing vegetation, soil and water are all part of 'natural capital' (see *natural capital* on page 28) and should be disturbed as little as possible. All are vital components of 'habitat' (food and shelter for wildlife). Careful use of existing material or regeneration of material previously lost is important when creating a more sustainable home.

Does the site allow a home design to make best use of the local climate?

'Greener' sites tend to have their longest side running either east-west or north-south. Narrow blocks running at other angles often make it harder to design a 'green' home. Ideally, the site should allow the longest side of a home to face north. The direction of the sun, afternoon breezes, and lie of the land are other important factors.

How much of the site is covered in water-resistant material like concrete, bitumen or pavers?

Large areas of water-resistant surfaces can cause problems elsewhere. By diverting the water that would normally soak into the ground on your site, the water moves toward a drainage point and rushes away off-site. The cumulative effect of everyone's diverted water can lead to flash flooding, erosion in low-lying areas, increased pollution, and less creek flow than normal during drier times. Ask about 'infiltration trenches' and 'swales' (shallow, grassed channels) as part of an on-site water management plan.



Are adjacent blocks and access ways clustered to promote community development?

Many people like to be part of a community. To establish and maintain a community means making it easy for people to meet in a variety of ways. Things like wide, busy roads tend to reduce the ease and comfort of meeting others. Well designed clusters of blocks improve personal and property security and deter crime (see *safety* on page 26).

How high is the risk of a bushfire?

The level of fire risk varies greatly, especially with the type and amount of vegetation on and off site. All else being equal: flat ground is safer than sloping ground, gentle slopes are safer than steep slopes and the bottom of a slope is safer than the top. Judge the site and its surroundings on its merit and get specialist advice about the potential hazard. Ask your Local Council or State Emergency Services (SES).



site works

Will earthworks be kept to a minimum?

Lots of earth-moving and digging can cause problems. Natural drainage patterns may be altered (perhaps leading to problems in the future). Soil may be compacted by heavy equipment and become less able to grow plants or soak up water. The living components within soil may die if the soil is moved and not stored properly.

Will erosion and sediment control methods be used?

Where soil is laid bare it can be lost quickly, mainly through being washed away during rain. When this happens, not only is an important part of your site lost, but problems are created elsewhere by blocking drains, silting creeks and polluting in-shore waters. Ensure your builder uses sediment control methods like 'geotextile' fabric and/or 'filter strips'.

How much vegetation remains on the site?

On-site vegetation, particularly native plants, are generally a benefit (especially for erosion control). Try to minimise disturbance by limiting the scale of the site works. If vegetation is removed, ensure as much as possible is 'mulched' (see *in the garden* on page 18). Plants are essential food and shelter for wildlife.

Can shading vegetation be retained on the western side?

Vegetation close to the home can influence the amount of sunlight that falls on the outside wall. Hot afternoon sun means a hot wall, and most likely a hot room. Be careful that retained vegetation doesn't lead to future damage of the foundations, either by changing soil moisture levels or through direct root contact.

Do you have the right people advising you?

The design stage of any project is the best time to ensure a 'green' result. Picking the right people to design what you want is critical. Architects, designers and builders are rarely asked about 'green' considerations. Some will understand what you want, others will not be so sure. Ask to see their previous 'green' work and talk to their other clients.

Would renovation suit your purpose?

Renovating an old home will generally use less materials than building a new home. You will make on-going use of an existing resource, rather than using further resources.

Is the home as small as possible to meet your needs?

By keeping the home as small as possible, the amount of money, materials and energy needed is kept to a minimum. Think about the climate and how spaces like verandahs and balconies can be used as additional living space for at least part of the year. Ask about minimising your home's 'footprint' (the area it covers on the ground).

Is the home built to last?

Durable materials and good design will lead to a long-lasting structure that is easy to maintain. This means less maintenance for you and likely a greater value if you choose to sell.

Does the design allow for future changes?

The design and layout might suit you now, but what about in five or ten years time. By keeping designs simple it will be easier to make changes to the design in the future without needing large amounts of money and materials. Think carefully before you introduce 'fashionable' or 'faddish' designs into your home. Such things are rarely sustainable, wasting resources and perhaps lessening the long-term value of your home.

Does the home design take full advantage of the site?

The nature of the site should guide the home's design. Work with the site, not against it. Design the home to take advantage of the slope, breezes, angle of sun and existing vegetation. Create a home in tune with its surrounds. Other buildings close by will also influence the local conditions.

Are the rooms located to make best use of local conditions?

In general, bedrooms are best positioned on the southern side of the home, away from the sun. This helps to create cool sleeping areas. Northern facing rooms will be warmer and so make good living spaces. Western facing rooms tend to be the hottest, especially in the afternoon. Where possible put garages, bathrooms, laundry and storerooms at the western end of the home.



Has the home been designed to make best use of 'passive' heating and cooling systems?

'Passive' design techniques use the properties of sun and wind to maintain a comfortable internal temperature, sometimes all year round. The orientation, size and location of walls, roofs, windows and doors, as well as the width of eaves all contribute to controlling the amount of sun (and therefore heat) that enters your home. Keeping the hot summer sun out is important, as is letting the cooler winter sun in. Ask about the concepts of 'passive solar design' and 'thermal mass' (using materials that gather heat during warm days and release heat during cooler nights). By using such techniques the need to use electricity or gas to heat/cool room space is greatly reduced.

Are both the roof and walls well insulated?

Insulation slows heat flow. In summer this means slowing the movement of heat into the home. In winter, insulation slows the loss of heat out of the home. If you can't afford both, insulate the roof as a priority, then any western-facing external wall. Ask about the 'R value' (a measure of thermal resistance) and 'U value' (a measure of thermal transmission) of your insulation. You need material with a high R value and low U value.

Is the western side well protected from the afternoon sun?

A poorly insulated wall, a large unprotected window or a poorly located door will likely mean the adjoining room will become hot on a sunny summer afternoon. Correctly designed shading will make a big difference. Protect walls with wide, overhanging eaves, vertical louvres or vegetation. Think about hoods for windows and doors. As a general rule, externally fitted devices have a greater heat shielding effect than internal devices. Architects can calculate the size, shape and location of any shading needed.

Are the northern windows shaded in a way that keeps the summer sun out but allows the winter sun in?

The path of the sun changes through the year. At its hottest in mid summer it is almost overhead at midday. At this time, northern facing walls and windows can be shaded by small overhangs or pergolas carrying deciduous vines. However, in winter the sun is less hot and at a lower angle in the sky. At this time north-facing windows can let the sun's heat in for warmth and comfort (make sure any summer shading devices don't block the winter sun).

Has the best use been made of natural light?

The quality of natural light in a room is related to its size as well as the number and position of its windows. Well designed rooms make use of as much natural light as possible, thereby reducing the need for artificial light (saving energy and materials).



Are the windows in the right place and of the right type to catch breezes?

A gentle breeze makes people cooler even though the air temperature may stay the same. A home's design should capture summer breezes from outside and direct them through the home. Some windows such as louvre, casement and hopper, can encourage a controlled and directed breeze into a room. Internal 'breezeways' will help air to move from room to room.

Will each room have enough ventilation?

Air movement is needed to promote healthy spaces. Still, humid air encourages mould and mildew; their presence can cause respiratory irritation. Some materials used to build or furnish a home may gradually release gases. A build-up of these gases can cause health problems (see *health and product selection* on page 27).

Are the roof and external walls a light colour?

Light coloured materials reflect a higher proportion of light and heat than darker materials. If you have a choice, opt for subdued, lighter colours, particularly when choosing a colour for the roof.

Is the overall design energy efficient?

Computer programs can rate home design in terms of energy efficiency. These are useful for comparing alternative designs. Ask an architect or your Local Council about the various programs available.

How well do both the design and the materials insulate noise?

Noise can impact on people's comfort and health. Think about where noise is likely to come from and what form it might take. It might come from inside or out. If you live close to other people, it might come from the next room. It might be constant (like traffic), or it might come in bursts (like trains and aircraft). This may mean building with noise resistant materials both inside and out. Ask architects and engineers about noise reduction strategies (note: noise can travel through the air or it can travel along objects like pipes or beams).

Are all of the design requirements consistent with the law?

Building work is closely regulated by Governments to promote safety, health and amenity. Important laws governing home building in South East Queensland include the *Building Act 1975 (Qld)* and the *Integrated Planning Act 1997 (Qld)*. Before any building work is undertaken, approval under these Acts must be obtained. Seek advice from architects, engineers, solicitors and the Local Council on how to achieve a 'green' home that complies with the law.



materials

REFUSE, REDUCE, REUSE, RECYCLE is a useful memory aid when considering the purchase of materials. Remember, when you throw something away, there is no such thing as 'away'.

How necessary is the material to you and to the home?

Are you getting the material because it is genuinely necessary for you or the home? Think about what things will be like in six months time. If you don't expect to need the material after that time, perhaps you don't really need it at all.

Are the materials available with minimal packing?

Many materials are supplied 'over-packed'. This is unnecessary, a waste of resources, and leads to problems of disposal (particularly with synthetic products like plastic).

Where do the materials come from?

Using local materials helps minimise transport, energy and pollution. It also helps support local jobs and generate more money for the local community.

How well has the amount of material needed been calculated?

If you or your builder are ordering materials for the home, try to ensure that the amount needed has been worked out correctly. If too much material is ordered, then the left-overs will likely be wasted.

Can existing material be reused?

When building or renovating, there are often ways of incorporating existing materials from other structures into the home. By reusing things like wood, bricks and window frames, you are rescuing a resource that might otherwise be discarded. However, be very careful that the reused bits are safe to use and fit for the task.

Can the materials be recycled when you've finished with them?

Where possible, try to use your materials in ways that allow them to be recycled once you have finished with them. By doing this you make an existing resource last longer; someone else can use it when you have finished with it.

Will the materials last?

Generally speaking, you can either buy cheap and spend more on continual maintenance, or you can spend a little more for durable and efficient materials and save on long-term maintenance.

How much maintenance will the materials need in the future?

Consider using materials that need as little maintenance as possible over their lifetime.



Will the materials affect the health of you, your family and the environment?

Check as best you can how toxic the parts of an individual product are, both to you and the environment. Pay particular attention to products that have a smell, seem to cause sneezing or lead to skin irritation (especially on the hands or around the eyes). Ask the supplier what competing manufacturers use in their products and compare the information (see *health and product selection* on page 27).

Does the product come from a sustainable source?

It is important to ask your suppliers where their materials come from. All materials have an impact on the environment, either when they are extracted, when they are made or when they are transported. Some manufacturers have careful management plans, and try to lessen their impacts. Others are less considerate and cause health and environmental problems that may last long into the future (see *buying 'green'* on page 28).



furnishings

Do the furnishings have low gas emissions?

Many furnishings contain foams or other synthetic materials. These materials can release ('off-gas') various unhealthy gases over time. Some manufacturers are working to reduce off-gassing from their products. Ask the furnishing supplier about possible health issues (the manufacturer should have given this information to the supplier).

Do the windows have heavy curtains?

Heavy curtains and pelmets over windows can reduce heat lost through the window in winter, and reduce heat entry during summer.

Do the furnishings have a recycled content?

Products (such as carpet and furniture) are now coming on the market that have an amount of recycled materials. Find out how much recycled material is in the product, and choose the one best for you. This can help to reduce the amount of raw materials and energy needed to make the product.



appliances

Is the most cost-effective electricity tariff being used?

There are a number of tariffs against which your electricity can be charged. Ask your electricity supplier about which tariff is best for you and how tariffs allow you to use energy more efficiently.

Are low-energy appliances installed?

Many electrical appliances have an energy star rating attached to them. Usually, the more 'stars' the appliance has, the less energy it uses to perform the same task as other similar products.

Are the appliances as small as possible for your needs?

Keeping appliances as small as possible can reduce materials and energy used in manufacture, as well as reducing the amount of water and/or energy consumed when they are in use.

What energy sources are available?

The way we use gas or electricity influences our overall energy efficiency. One energy source may be better for heating water, while another better for cooking or running appliances. If you have a choice, ask your energy suppliers to explain how best to use their energy.

Are low energy light globes installed?

'Compact fluoros', while costing more initially, will save you money over time. More importantly, they use much less energy than traditional incandescent lights.

What about motion detectors for turning lights on and off?

'Motion detectors' are small electronic devices that automatically turn on a light or other electronic appliance when someone approaches. The detectors also turn the light off when the person leaves, and so save energy. Ask electronic equipment suppliers about the different types available. Motion detectors can help with your home's security – think about the lights outside.

Is a clothesline installed?

Weather permitting, make use of the sun and wind to dry your clothes. A clothesline is a very sustainable part of a 'green' home.

Does the refrigerator use non-CFC gases?

CFC gases, if released to the atmosphere, can damage the ozone layer. Refrigerators are now available that use gases that do not contain CFCs.

Are appliances located in the best position?

When electric motors get hot they work less efficiently and use more power. Things like refrigerator cooling coils should not be enclosed or obscured; make sure there is enough space for air currents to keep them cool.



Does the home need extra heating and cooling?

A well designed home should need little additional heating or cooling. If cooling is required think about ceiling fans (which make you cooler by causing air to move across your body). They are comparatively cheap and economical to run. If you live in high humidity for much of the year (greater than 70% 'relative humidity'), ask about 'desiccant cooling'. If you live in mostly low humidity, ask about 'evaporative cooling' and low energy reverse cycle units. Check the energy efficiency of the units as well as their adjustability.

How many appliances use a 'stand-by' mode?

Using electrical equipment that has remote control is convenient but it has an environmental impact. While your equipment is on 'stand-by' it is still using power, in some cases quite a lot. If we all used machines on 'stand-by' then a lot of energy is being wasted. Ask about 'low current draw in stand-by mode' appliances. Think about not using the stand-by at all (switch the appliance off at the plug).



using water

Is the hot water system located as close as possible to the bathroom/shower?

The longer the pipes, the more heat is lost from the water, especially if the pipes are not insulated. This wastes energy and can increase water used while waiting for the hot water to run.

Can you control the temperature of the hot water?

It's easy to over-heat the water to a point where it becomes too hot to touch. If you then use lots of cold water to cool it down, you are wasting energy. An Australian Standard (AS 3500.4.1-1997) suggests a tap temperature of less than 50°C to reduce the likelihood of scalding.

Are the hot water pipes insulated?

Insulating the pipes keeps the heat in the water, where it is wanted. Having heated the water, don't waste that stored energy by allowing it to move out of the water into the air around the pipe.

Is a solar hot water system installed?

Systems are available that use the sun to heat water for your home. There are many types available; some have a back-up power supply to heat the water on cloudy days. Initial costs are high, but the right system will pay for itself over time. Ask your Local Council or the Department of Mines and Energy about rebates for these systems.

Are dual-flush toilets, low-flow taps and shower heads (also called water efficient or flow controlled) installed?

These minimise the amount of water used (and, if you have metered water, save you money). Find out the performance for various types and choose the one that uses the least amount. (See *for the more advanced* on page 20 for a water-free toilet system).



in the garden

Are there large areas of paving, concrete or bitumen?

During summer these areas heat the local air around the home. This means that when the air enters the home it will already be hotter than it need be. Think about removing those areas and replacing them with vegetation or a pond to cool the air before it enters the home. If you need a hard surface, ask about 'permeable pavers'.

If there is a garden, is it planted with 'natives'?

Favour plants native to South East Queensland ahead of plants from elsewhere. This helps preserve the region's ecology. Also, natives tend to need less water, less fertiliser and therefore less maintenance than 'exotics'.

Is the amount of lawn as small as possible?

Maintaining lawns uses fuel, water, time and often fertiliser. Depending on the mower, some lawns can be quite noisy too. Lawns also provide poor habitat for other plants and animals. Consider using native 'ground-covers' instead. They can be low-maintenance and will offer a better home for other wildlife. If you must have a lawn, ask for drought-resistant grass species at your local nursery.

Are kitchen and garden scraps composted?

Placing vegetable matter in your wheelie bin should be avoided if possible - it adds to the Local Council's waste disposal problems. Besides, you are giving away a valuable resource. Think about composting your scraps (a good compost heap will eat almost anything; but make sure that you look after your 'heap' properly). Perhaps consider a worm farm.

Is an irrigation system really necessary?

Irrigation systems deliver water directly to the garden's plants. Some systems are much more water efficient than others. Find the best type for your garden, making sure it has a timer fitted to ensure the plants are not over-watered and you comply with Local Council sprinkling times.

Has the garden been 'mulched'?

Mulching means covering the soil with (generally) a fibrous material, like straw, bark or even shredded newspaper. Mulching reduces weeds, helps retain moisture in the soil, prevents erosion, cools the surface temperature, adds organic material to the soil and helps improve soil structure. Gravel can be used as a mulch, although it doesn't decompose or improve the soil structure.



What options are there for growing fruit and vegetables?

Try growing some of your own food. Even flats and units often have balconies or areas where herbs or potted fruit trees can be grown. You may not be able to grow all your needs, but by growing something you will learn more about plants and soils, and how difficult it can be to grow food. By joining local 'community gardens' you can share in the wealth of other people's knowledge.

What sprays and fertilizers does your garden really need?

Be careful about the types and amounts of chemicals you put on your garden. Some can be harmful to you as well as the wildlife, especially the important microscopic plants and animals living in the soil. Find out what the 'active ingredients' are; it should say on the package. Ask an accredited nursery about the product, or search the library for information (see *health and product selection* on page 27).

If there is a swimming pool, how is the water disposed of?

Disposing of large amounts of chlorinated or salty water may cause environmental problems. Ask your Local Council about current 'best practice' for pool water disposal.



for the more advanced

Can other types of local construction material be used?

Healthy, safe and durable homes can be made from materials such as 'mud brick' (adobe), 'rammed earth' (pise), and even straw bales. Check the library or Internet for information about these (and other) construction materials. Always seek professional advice from specialist architects or engineers before using these materials.

Is a composting toilet an option?

'Composting toilets' work in a different way to flushing toilets. They don't flush water, or take the waste away. Rather, the waste is retained in a special box, eventually turning into a soil-like material that can be used in the garden. Composting toilets save lots of water, but they do require more care and attention than flushing toilets. Check if your Local Council allows their use.

Could solar cells be used for electricity generation?

Solar cells (also called 'photovoltaics' or 'PVs') make electricity from the sun. They are costly to buy but can pay for themselves over their lifetime. Solar cells reduce your reliance on less sustainable energy sources. In some parts of the world, home-based solar cells feed spare electricity back into the local grid (the owner being paid for the power they supply). Ask your energy supplier if it is possible where you live.

Is the 'greywater' recycled?

Plumbing can be arranged to recycle 'greywater' (used water) from hand basins, bath, shower and the washing machine to the garden. While this is one way of making better use of water, it requires more maintenance and can cause problems if not done properly. Talk with your Local Council before you try out your ideas for recycling greywater.

Can rainwater be caught and used for drinking or in the garden?

In South East Queensland it is possible to collect enough rainwater for home use. It does however mean that you need a large and safe storage tank. To avoid potential health problems, careful and regular maintenance is also required. Ask tank suppliers about 'first flush' diversion systems to lessen rubbish getting into the tank. Check with your Local Council that home-based rainwater collection systems are allowed.

Is growing food more sustainably an option?

Much of the food we eat is grown using methods that are not always sustainable. Sometimes soil is lost, water wasted, habitat destroyed and lots of energy used. Many farmers and 'agribusinesses' recognise this and are trying to improve their methods. For the 'green' home owner keen to grow food sustainably, find out about different crop growing strategies such as 'organics' and 'permaculture'.

-  sustainability
-  energy
-  earth
-  water
-  safety
-  health and product selection
-  money
-  natural capital
-  buying 'green'

'green' basics





sustainability

The dictionary gives 'sustain' a number of meanings, one of which is 'to keep from failing; to keep in being at a proper level or standard'. Unfortunately, many aspects of our current lifestyle are not sustainable; collectively we are using many of the available resources too fast for them to be renewed. In some cases those resources can never be replaced.

In the past, economic development, environment protection and community programs have operated in isolation from each other. However, in recent years there is a growing understanding that these issues are closely linked and need to be dealt with together.

Ecologically Sustainable Development (ESD) is a phrase for referring to the combined way in which governments, industry, business and community can become 'greener' and more sustainable.

In 1992 all Australian governments adopted the principles of ESD as a major national strategy.

ESD is defined as a pattern of development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.

There are three objectives defined within the national ESD strategy:

- to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- to provide for equity within and between generations;
- to protect biological diversity and maintain essential ecological processes and life-

support systems.

Seven guiding principles have been created to assist everyone to move toward a more sustainable future:

- decision making processes should effectively integrate both long and short-term economic, environmental, social and equity considerations;
- where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- the global dimension of environmental impacts of actions and policies should be recognised and considered;
- the need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be recognised;
- the need to maintain and enhance international competitiveness in an environmentally sound manner should be recognised;
- cost effective and flexible policy instruments should be adopted, such as improved valuation, pricing and incentive mechanisms;
- decisions and actions should provide for broad community involvement on issues which affect them.

It's a bit like piecing together a jigsaw without the picture – you have to keep matching the edges of one piece to see how they sit with another. Fortunately, unlike a jigsaw, the ESD pieces can be slotted together in many different ways to produce a sustainable 'picture'. There is no single right answer.

Do you think the home you live in was designed and built with sustainability in mind? Will your next home be more sustainable than your current home?



energy

Urban homes usually have one, and sometimes two, energy sources – electricity and gas. The energy is used in three main ways: to heat water, to run appliances, and to heat or cool living spaces.

In South East Queensland, nearly all of the electrical energy we use is made by burning coal in the Swanbank and Tarong power stations. Most of the gas we use is pumped through pipes all the way from central Australia.

Both energy sources are cheap and easy to use. They help make our current lifestyle possible. However, both sources also have environmental impacts, either at the site where they are extracted, at the power station where they are burned, or through the networks needed to get energy to our homes.

Everyone enjoys the benefits of energy. Yet there is increasing concern that our current production and consumption of energy is not sustainable.

It makes good sense to use our energy wisely. This means designing and running our homes to use as little energy as possible. It also means using what energy we do use as efficiently as possible.

Research shows that South East Queensland homes consume about 59% of all electricity used in the region.

It's easy to reduce energy use within a home, especially if the home was designed properly in the first place. If you are having a home built to your requirements, ask the architect and/or home builder about concepts like 'passive solar design' and 'thermal mass'. If you're buying an existing home, ask if it has undergone a test for its 'energy rating'; at the very least ask to see the energy bills for the last two years. If you are renovating, ask architects and energy consultants about 'retrofitting' devices and materials to improve your home's 'thermal performance'.



earth

Soil is a very limited resource in Australia. Yet it supports most of our agriculture and nearly all of our natural vegetation. Without soil we would have to import most of our food. Without soil the landscape, the environment and our lives would all be very different.

Our country is a very old land. It is so old that most of its mountains have been weathered away and the remaining soil is poor in nutrients and essential life-supporting microbes. Contrast this with other geologically younger countries which sometimes have high mountains and deep, rich soils.

Our soils are fragile. They are thin and are easily blown away by wind or washed away by water. In some cases a thin layer of soil that has taken many thousands of years to develop can be lost within hours.

It is very difficult to make new soil, especially in large quantities. Therefore, to be sustainable, we need to ensure that no soil is lost and, where possible, soil structure and quality is improved. Unfortunately, most people don't give 'dirt' a second thought. After all, it's just dirt isn't it?

In fact, the soils that are so vital to the environment are complex, living systems. Within soil there are basic materials: air, water and nutrients. These resources are used by microbes to perform functions that help keep the whole planet running smoothly. In turn, the microbes are eaten by small plants and animals that live in the soil. These then become food for larger animals, such as worms and ants. When one individual dies, teams of refuse collectors and recyclers break down the materials, back into their constituent parts. And so it continues.

If part of the system falls ill, then other parts become ill too. If the illness persists, the soil eventually dies. It falls apart and is no longer able to support other life, large or small. If we lose or poison our soils, replacing them is very difficult. And it makes growing our food and maintaining our environment difficult and more expensive.



water

Water is an essential part of our lives; without water the lifestyle we enjoy would not be possible. Water is also essential for the environment. Without it, the plants and animals would die and our forests, paddocks and gardens would turn to dust.

Australia is the driest inhabited continent on earth. In comparison with other countries our rainfall tends to be unpredictable. We are never quite sure where, when or how much rain will fall. This makes it difficult to make sure that everyone and everything gets the water they need. The uneven rainfall is a major influence on wildlife. Many species of plants and animals have developed special ways of coping with the extremes of flood and drought.

Our increasing use of water sometimes puts additional pressures on the available supply. Often, when we take too much water away from an area, the existing plants and animals are unable to survive. They move, or die. The landscape changes, mostly for the worse.

The water we use in South East Queensland comes mainly from a small number of reservoirs like Wivenhoe, Somerset and Manchester, constructed to catch and retain surface-flowing water. Further west, use is made of underground water, which moves through the cracks and crevices within the rock. In some cases the water extracted is over a million years old.

Our current way of catching, storing and distributing water is designed to ensure a healthy and predictable supply. However, the system we have built to move water long distances is very expensive and not always environmentally friendly.

An average Queensland household uses 1300 litres of water each day. If we continue to use this much each day, as well as building more homes for more people, where will the extra water come from?



safety

People need and want to feel safe in areas where they live and visit.

Proper and thoughtful design of homes and communities can lead to a reduction in both the fear and incidence of crime, and as a consequence, improve the quality of life. It is important, for a sense of community and a sense of well-being, to have an environment where people feel safe.

Crime has a financial, material and environmental cost. Large amounts of resources are devoted to security measures, the justice system and penal institutions. There is also a social cost in terms of community alienation, as well as emotional costs for the victims.

Where possible, safety and security should be considered early in the design process. The design and layout of a building and its surrounding area within a community can greatly influence the level of crime. Ask about 'Safety Audits' and strategies such as Crime Prevention Through Environmental Design – CPTED. Ask how the strategies might be used in your local area (see *safety* on inside back cover).



health and product selection

Most people spend more than 80% of their time indoors, either at home or at work.

Although most people are aware of air pollution caused by vehicles and industry outside the home, few are aware of pollution in the home. The quality of indoor air can have an effect on human health which, for some people, can be serious (see *health and product selection* on inside back cover).

Because of the way some products – such as furniture, carpets, foams, pressed wood products, fibreglass, paints, varnishes, solvents and glues - use chemicals in their manufacturing process, the products give off gases even after they have been made. The amount of gases released into the air lessens with time but, because our homes are often poorly ventilated, the gases often stay within the room in which they were released.

The health problems arising from indoor air pollution vary greatly from person to person. They also vary for an individual over time.

Some manufacturers are trying to reduce the amount of gases given off by their products. Ask the product supplier for details of the chemicals used and for their advice on possible health effects. Especially ask about 'formaldehyde', 'xylene' and the family of gases known as 'volatile organic compounds' (also called 'VOCs'). Ask for product information; manufacturers are obliged to produce 'material safety data sheets' (also called 'MSDSs').

Try to purchase 'solvent-free' products – they usually have little or no smell. After laying a new carpet or painting an internal wall, open the windows and doors for as long as possible. This will help flush the gases out of your home.

Renovators should be particularly careful of old asbestos products or lead-based paints (often found in homes greater than 25 years old).



money

Are you aware of the link between environmental sustainability and borrowing money?

If you need to borrow money to buy your land or home, consider the source of that money. There are many types of lending institutions, and some lend money to environmentally unsustainable projects. By borrowing from these types of institutions, you may encourage practices you don't approve of.

Examine the basis on which the institutions lend money, and in which industries they invest. Decide whether these industries are environmentally sustainable and if they are fair to their employees and nearby communities.



natural capital

Natural capital is the combined stock of soils, fresh water, clean air, diverse plants and animals, as well as the legacy of gas, oil and minerals. These things are all part of our natural heritage. Collectively, they underpin much of our economic activity and our cultural heritage.

In human terms, some of the natural capital is renewable but other parts can never be remade. As a community, we need to be very careful how we use or harvest these resources. We need to ensure that in turning 'natural capital' into 'physical capital' (buildings, machinery and other products) we don't tip the balance and deplete our 'natural capital' too much.



buying 'green'

The way our economy operates makes you, as a buyer of goods and services, very powerful. You can choose between buying one product or another.

When you choose a 'green' product over a non-green product you help in two ways. First, you help endorse a provider who is trying to do the right thing by the community and the environment. Second, you divert possible income away from providers who are less caring and considerate of community and environmental matters.

It's not easy finding out if a product or service is 'green'. The provider might say the product is 'environmentally friendly' – but do you trust them?

Find out, if you can, about the individual bits that comprise the product. You might find that some of the bits are toxic, or use huge amounts of energy during the production process. Ask if the provider has a published commitment to social and environmental matters. Check what other products the provider offers – it might be that another of their products is bad in some way (by purchasing their 'green' product you also endorse their other products). Remember: you have a choice, and your choice counts.



the ENERGEX energy efficient house

on the road to sustainability

The average South East Queensland home consumes 7000 kilowatt hours of electricity in a year. The creation of this electricity puts a similar amount of greenhouse gas into the atmosphere as a family car would over 12 months.

ENERGEX was the first Queensland organisation to commit to the Federal Government's Greenhouse Challenge and is dedicated to pursuing technologies which promote energy efficiency and the reduction of greenhouse gas emissions. ENERGEX has initiated several programs showing its commitment to reducing greenhouse emissions. Among these is **earth'schoice**, a program which offers customers the option of having ENERGEX purchase the equivalent amount of energy they use from renewable sources instead of coal fired power stations.

One of ENERGEX's initiatives is to build a project house in collaboration with GW Homes that works with its surrounding environment, rather than against it. Called the 'Energy Efficient House', the display home demonstrates the simplicity of the design and construction features which have been employed to reduce the energy costs of running the house. It is this simplicity that makes the Energy Efficient House an affordable new home option for Queenslanders. In computer tests, the Brisbane City Council has given the house a 5-star energy rating.



The Energy Efficient House is based on a typical project home. While the house is unique, it looks very similar to other modern designs. The key differences lie in the materials used in the construction of the roof, walls and flooring. Combined, these three elements seal the house from external heat in summer and escaping heat in winter. The effective integration of different energy sources such as electricity, gas and solar power also helps to ensure energy efficiency.

The roof design allows for a larger than usual cavity which helps to retain heat in winter and disperse it in summer. Temperatures within the roof are monitored with a thermostatically controlled roof ventilation system. When the air inside the roof cavity becomes too hot, it is extracted to the outside, maintaining a flow of cooler air into the roof. Conversely, in winter, air is trapped inside the cavity to act as extra buffer against heat loss.

Concrete tiles have been used for the outer shell of the roof. More eco-friendly in their fabrication than traditional roofing systems, concrete tiles are also the cheapest roofing system on the market and are available in a variety of colours.

The walls are made from lightweight precast concrete panels. These easy to use panels are durable, reduce noise and offer high levels of pest and fire resistance. Above all, the panels have double the heat insulation capacity of normal brick and can help maintain a comfortable internal air temperature.

The roof and the walls are insulated and 'sisilated'. Sisilation is the use of silver foil between the exterior shell and the insulation batts to reflect heat away from the home and act as a seal against wind. Sisilation and insulation batts are placed flush against the wall panels, significantly improving insulation values above more traditional wall designs.

The floor is a concrete slab overlaid with timber flooring which makes for a hygienic and visually attractive finish. This type of floor is both easy to construct and gives excellent insulating properties.

Inside and out, the Energy Efficient House is an affordable stepping-stone toward environmentally-aware living. Even the gardens have been carefully planned, using only native plants which require minimal watering, all in an effort to help reduce the long-term impact of urbanisation on our environment and to help you save money in daily household management.

location

Sovereign Gardens Estate
Queensland Master Builders'
Display Village
Lot 71
Berkshire Crescent
(off Wishart Road)
Wishart QLD 4122



your quick-reference check list

You might like to photocopy this page and use it to keep a tally of the things you see. If you're looking at lots of properties, it will help you keep track of them.

address

date

	good	ok	poor	notes
orientation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
materials used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
water efficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
energy efficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
appliance efficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
community friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
wildlife friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
noise friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
health safe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
fire safe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
things to check			
			
			
			

further information

general

- Web <http://kaos.erin.gov.au/> – search for 'State of the Environment'.
- Phone 02 6274 1999 (Environment Protection Group – Federal Government).
- Book State of the Environment Australia 1996 by State of the Environment Advisory Council. CSIRO, 1996. ISBN 0643058303.
- Book Use with care: managing Australia's natural resources in the 21st century by K.D. Cocks. New South Wales University Press, 1992. ISBN 0868403083.
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home design

- Book Climate, Comfort and Energy – Design of Houses for Queensland Climates by S. Szokolay. University of Queensland, Architectural Science Unit. 1991.
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sustainability

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- Book Our Common Future by G. Brundtland. World Commission on Environment and Development. Oxford University Press, 1987. ISBN 019282080X.

energy

- Web <http://www.dpie.gov.au/netenergy/> – a Federal Government web site.
- Web <http://www.dme.qld.gov.au/page2.htm> – search for 'energywise' and 'solar hot water'.
- Web <http://www.caddel-ee.org/home.htm> – an international web site.
- Book Energy from Nature by P. Pedals. 9th Edition. Rainbow Power Company, Nimbin, Australia.

earth

- Web http://www.dnr.qld.gov.au/fact_sheets/landfacts.html – look for 'soils'.
- Book Gardening down-under: the handbook for inquiring gardeners by K. Handreck. CSIRO Publications, 1993. ISBN 0643055118.
- Book Soil Erosion And Sediment Control : Engineering Guidelines For Queensland Construction Sites by G. Witheridge and R. Walker. Institution Of Engineers Australia Qld Division, 1996. ISBN 0858141531.



water

- Web <http://www.dnr.qld.gov.au/> – search for 'waterwise'.
- Phone 07 3224 2718 (Qld Department of Natural Resources – ask for 'Waterwise Manager'.
- Book The Brisbane River : A Source-Book For The Future By P. Davie, E. Stock, and D. Low Choy. Australian Littoral Society, 1990. ISBN 0731654404.

safety

- Web <http://www.police.qld.gov.au/> – look for 'Crime Prevention'.
- Phone 07 3364 4297 (Qld Police Service – ask for 'Crime Prevention' and 'Safety Audits').
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health and product selection

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fire

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