South Staffordshire Council

Sustainable Development SPD

2018

Further information can be found at
www.sstaffs.gov.uk

Contents

1. Introduction

1.1 This Supplementary Planning Document aims to explain more about policies relating to Sustainable Development within the Core Strategy. Sustainable Development is a thread which runs throughout the Core Strategy and national planning policy.

1.2 The Local Plan consists of a number of statutory and non-statutory documents that together set out the planning policies and proposals to guide the development of the District. The statutory documents are known as Development Plan Documents (DPDs) and these will form part of the Development Plan for South Staffordshire. At the heart of the Local Plan is the Core Strategy and this sets out the long-term vision, objectives and planning policies to deliver the vision and secure a sustainable future for the District. Supplementary Planning Documents (SPDs) are also part of the Local Plan and are produced as a material consideration in planning decisions.

1.3 This document is in addition to the policies contained in the Local Plan and is not the starting point for decision making. This document provides guidance as to how the policies will be interpreted and is not formal planning policy in its own right.

1.4 The Council expects good design to be an integral part of any proposal and this is supported by the Village Design Guide.

1.5 The main policies in the Core Strategy which deal with Sustainable Development and Climate Change include (but are not limited to) the following:

Core Policy 3 – Sustainable Development and Climate Change

"*The Council will require development to be designed to cater for the effects of climate change, making prudent use of natural resources, enabling opportunities for renewable energy and energy efficiency and helping to minimise any environmental impacts. This will be achieved by:*

a) *giving preference to development on previously developed land (brownfield land) in sustainable locations, provided it is not of high environmental value; and supporting and encouraging the reuse of buildings as a sustainable option;*

b) *supporting and encouraging development which facilitates sustainable modes of transport, including the transport of materials and recycling products, by requiring travel plans for developments which would have significant transport implications;*

c) *ensuring that development on brownfield land affected by contamination or land instability is remediated in accordance with the NPPF;*

d) *ensuring that all new development and conversion schemes, are located and designed to maximise energy efficiency, and incorporate the best environmental practice and sustainable construction techniques appropriate to the size and*

type of development; and minimises the consumption and extraction of minerals by making the greatest possible reuse and recycling of materials in new construction;

e) *ensuring that building design is flexible to future needs and users, and reduces energy consumption by appropriate methods, such as high standards of insulation, layout, orientation, using natural lighting and ventilation, and capturing the sun's heat where appropriate;*

f) *minimising and managing waste in a sustainable way, particularly through re-use and recycling;*

g) *protecting and enhancing South Staffordshire's natural and historic assets including natural habitats, the character and quality of the landscape and valued historic landscapes and the wider countryside, mitigation against the worst effects of climate change and pursuing biodiversity enhancement schemes and historic environment management proposals;*

h) *protecting and enhancing the character, local distinctiveness and setting of villages;*

i) *protecting and enhancing essential community facilities and services including sole facilities, buildings and open spaces, primary care and healthcare facilities;*

j) *guiding development away from known areas of flood risk as identified in the Strategic Flood Risk Assessment, Surface Water Management Plan and consistent with NPPF;*

k) *ensuring the use of sustainable drainage (Sustainable Drainage Systems) in all new development and promoting the retrofitting of SuDs where possible;*

l) *ensuring that all development includes pollution prevention measures where appropriate to prevent risk of pollution to controlled waters;*

m) *protecting the amenities of our residents and seeking to improve their overall quality of life through the provision of appropriate infrastructure, facilities and services;*

n) *consideration of the impact that development will have on the sterilisation of mineral resources and the potential for future extraction of these minerals*"

1.6 The following Development Policies support Core Policy 3 and give further details regarding what the Council will expect from sustainable development proposals:

- **EQ5** – Sustainable Resources and Energy Efficiency
- **EQ6** – Renewable Energy
- **EQ7** – Water Quality
- **EQ8** – Waste

2. Sustainable locations and modes of transport

Core Strategy sustainable development policies related to this area:

Core Policy 3

"a) *giving preference to development on previously developed land (brownfield land) in sustainable locations, provided it is not of high environmental value; and supporting and encouraging the reuse of buildings as a sustainable option*"

"b) *supporting and encouraging development which facilitates sustainable modes of transport, including the transport of materials and recycling products, by requiring travel plans for developments which would have significant transport implications*"

2.1 Ensuring that developments facilitate the use of sustainable modes of transport and are in a sustainable location are two closely linked issues, and are linked to numerous Core Strategy policies, including Core Policy 3.

2.2 The district of South Staffordshire comprises of a collection of villages, where rural roads are an integral part of the landscape, often reflecting and preserving historic landscape features such as ancient routes or field boundaries and set within outstanding countryside. Features such as hedges, verges, banks and fingerposts may contribute strongly to local character and historic significance. Public transport is often limited in rural areas, but services will almost always stop in the village centre. Many of the villages are compact in size and the centres will be accessible to local residents on foot.

2.3 Decisions regarding transport will inevitably depend on location, the scale and type of development and what capacity is available on the existing network.

The main points to consider are to:

- Promote cycling and walking
- Reduce car usage
- Provide access to public transport
- Accessibility for goods and emergency vehicles

2.4 In order to reduce car usage, residential developments likely to generate significant trips movements must ensure they provide acceptable walking access to services, facilities and recreational opportunities. Therefore, such applications should be located within walking distance of a range of essential services and facilities, having regard to the principles of walkable neighbourhoods (set out in section 4.4 of Manual for Streets) and the relevant guidelines set out below:

	Town Centres (m)	Commuting/ School/ Sight-seeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1000	800
Preferred Maximum	800	2000	1200

The Institution of Highways and Transportation (2000) Guidelines for Providing for Journeys on Foot

2.5 Any new development in South Staffordshire must also be well connected via public transport from the outset. Developers should seek to provide direct connections to key destinations such as village centres, major employment and leisure zones. Contributions towards the provision of transportation to schools should be considered. To encourage a reduction in car use, public transport will need to be frequent, reliable and easily accessible. For residents without cars, early morning and night time transport facilities should be considered. The provision of super fast broadband can also support the objective of reducing car journeys and should be actively considered during the design phase of new development.

2.6 In addition to the above, it will be important to undertake early engagement with the local planning authority and highways authority to establish any potential need for a travel plan to be provided.

2.7 These factors will be important to determining whether or not a development is located sustainably and facilitates sustainable transport modes. However, there may be many other material considerations to be considered in judging a development's sustainability. Therefore, in determining whether a proposal represents sustainable development, the above factors will be considered in the round alongside any other material considerations in determining a site's sustainability.

<u>Further sources of information for applicants</u>

- *The Institution of Highways and Transportation (2000) Guidelines for Providing for Journeys on Foot*
- Historic England (2017) *Streets for All*

- Department of Transport Circular 02/2013.
- *Department for Transport (2007) Manual for Streets*
- *Interim Advice Note 195/16: Cycle Traffic and the Strategic Road Network*

3. Promoting energy efficiency through appropriate design

Core Strategy sustainable development policies related to this area:

Core Policy 3

"d) *ensuring that all new development and conversion schemes, are located and designed to maximise energy efficiency, and incorporate the best environmental practice and sustainable construction techniques appropriate to the size and type of development; and minimises the consumption and extraction of minerals by making the greatest possible reuse and recycling of materials in new construction*"

"e) *ensuring that building design is flexible to future needs and users, and reduces energy consumption by appropriate methods, such as high standards of insulation, layout, orientation, using natural lighting and ventilation, and capturing the sun's heat where appropriate*"

Policy EQ5: Sustainable Resources and Energy Efficiency

Changes in National Policy and Legislation

3.1 Since the adoption of the Core Strategy in 2012, significant legal changes have been made regarding the energy efficiency standards which can be expected of development. Following recent changes at the national level[1], the Council can no longer require housing or householder development to comply with the energy efficiency policies set out in Policy EQ5 of the Core Strategy.

3.2 However, whilst it is no longer a policy requirement, the Council still wishes to encourage the use of the following design approaches in schemes. We will therefore encourage applicants on residential schemes to consider the following design advice to enhance the sustainability of their schemes.

Residential development

3.3 There are now many options available to those wishing to design and build eco-friendly homes. For example, using pulped recycled paper for roof insulation is a

[1] Deregulation Act 2015, Written Ministerial Statement 'Planning update March 2015'

simple but highly effective ecological resource. Other features of ecological building might include:

- The use of solar panels for domestic hot water heating
- The use of energy exchange technologies
- Water conservation, including biological waste water treatment and re-use and the collection of rainwater for garden use
- Low energy light bulbs, which can last up to 100 times longer than regular bulbs
- Cellulose insulation, for example paper roof insulation
- Non-toxic or lead free paints and wood preservatives
- Locally-grown and harvested timber from sustainably managed forests

3.4 In addition to these measures, pre-existing guidance on achieving eco-friendly homes is available in the Code for Sustainable Homes: Technical Guide (November 2010). Whilst this guidance has now been withdrawn by the Government, and is no longer a policy requirement, it highlights many measures which applicants may want to consider in improving the energy efficiency of a scheme. Although these measures are no longer planning requirements and cannot be required as conditions on a permission, applicants are still encouraged to use such measures wherever possible. The Energy Saving Trust has also published technical guidance on designing and building new homes that reduce energy requirements, through use of appropriate construction materials that go above the requirements of the Building Regulations. These are available on the Energy Saving Trust website and applicants are encouraged to consider the use of these in designing new housing.

Householder development

3.5 In considering scheme design, householder schemes are encouraged to consider the guidance contained in South Staffordshire Householders' Guide to Sustainable Construction and Renewable Energy to maximise their scheme's energy efficiency. This guidance is attached in Appendix 1.

Commercial and other non-residential development

3.6 The Council's existing policy regarding energy efficiency in non-residential development still applies, and has not been altered by the Deregulation Act 2015 or the Written Ministerial Statement of 25th March 2015. Therefore, the Building Research Establishment's Environmental Assessment Method (BREEAM) remains a relevant planning consideration and as such the Council will still expect the following requirements from Policy EQ5 to be met on non-residential schemes over 1000m2;

*"**Non-residential** development over 1000m2 should be built to BREEAM 'Excellent' standard. In relation to reducing carbon emissions all non-domestic development is required incorporate low or zero carbon (LZC) energy generation systems. The degree of carbon reduction required is as follows*

- *10% for developments completed between 2010 and 2013*
- *20% for developments completed from 2013 onwards,*
- *Or a scoring of two credits within the Building Research Establishment's Environmental Assessment Method (BREEAM) Energy section, if this method of assessment is used*

***Major refurbishment of existing non-residential buildings** or conversions greater than 1000m2 floor space should achieve BREEAM 'Very Good' Standard.*

…

For all non-residential development over 1000m2 at least a scoring of two credits within the water section of BREEAM should be sought, if this method of assessment is used"

Further sources of information for applicants:

- *BREEAM International New Construction 2016 – Technical Manual*
- *Energy Saving Trust – Resources for housing professionals*
- *Code for Sustainable Homes: Technical Guide (November 2010).*
- *South Staffordshire Householders Guide to Sustainable Construction and Renewable Energy (see Appendix 1)*

4. Increasing biodiversity in scheme design

Core Strategy sustainable development policies related to this area:

Core Policy 3

"(g) *protecting and enhancing South Staffordshire's natural and historic assets including natural habitats, the character and quality of the landscape and valued historic landscapes and the wider countryside, mitigation against the worst effects of climate change and pursuing biodiversity enhancement schemes and historic environment management proposals*"

4.1 Any new development can potentially impact on our natural environment. It is important to preserve wildlife corridors, such as hedgerows and woodlands, rivers and streams in order to allow species to move between habitat areas encouraging increased populations.

4.2 Section 40 of the Natural Environment and Rural Communities Act 2006, states that all public authorities in England and Wales have a duty to exercise their functions to the purpose of conserving biodiversity. A key purpose of this duty is to embed consideration of biodiversity as an integral part of policy and decision making throughout the public sector, which should be seeking to make significant contribution to the achievement of its commitments made by Government in its Biodiversity 2020 Strategy. The National Planning Policy Framework is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.

Enhancing biodiversity

4.3 At the design stage of any new development the existing ecology of the site and surrounding area must be taken into consideration and the following considered:

- Installation of bird and bat boxes, planting of wildlife friendly species, green roofs
- Integration of Sustainable Urban Drainage Systems (SuDs), which help to maximise the biodiversity of a site
- Landscape planting schemes should use native species local to the area
- Any developments should aim to maintain and improve linkages to the existing network of semi-natural and other open spaces. Buffer habitats, stepping stones and corridors should be incorporated to link green spaces

- If a site is located within an area that may contain protected species, such as Bats or Great Crested Newts, then a specialist survey will need to be carried out before the planning application can be determined. Opportunities to enhance habitat provision should be considered as part of the detailed design scheme.

4.4 Gardens also make a significant contribution to local character, biodiversity, tranquillity and a sense of space. They also help to enhance the setting of buildings and provide amenity value for residents. Development can impact the biodiversity or habitat value of gardens and will be considered when making decisions on development, which affects residential gardens.

Mitigation and Protection Measures

4.5 Where it is not possible to avoid harm to habitats and species, mitigation or compensating for harm through the provision of appropriate measures may be considered. The following are examples of mitigation and compensation measure that could be used:

- Timing the development to avoid relevant breeding seasons
- Building new structures, which include wildlife friendly features, such as a bat roost and hedgehog friendly fencing.
- Planting trees and hedgerows to maintain habitat connectivity through the site out into the wider environment
- Managing an area within the development specifically for wildlife

Bats and Bat Mitigation Measures

4.6 It is important that the site's landscape and biodiversity features are not damaged prior to or during the construction stage of development. Often damage can occur to these features before construction starts through ground clearance and demolition. All works that are conducted on site should adhere to best practice guidance. The following points should be taken into account:

- Trees – A tree protection plan (TPP) must be produced following the most up to date British Standard Guidance BS 5837:2012 '*Trees in relation to Design, Demolition and Construction – Recommendations'*. Protective measures, such as fencing must be put in place prior to any construction commencing on site to avoid compaction of roots by vehicular movements and mechanical damage to trunk or crown of a tree.

- Water and Wetland Features – These features should be protected from pollution and sediment loading through a control mechanism.

- Exclusion Zones – These may be required if sensitive habitats and/or species are present on the site. This could include fencing around a feature containing a bat roost.

4.7 Even where little biodiversity interest has been identified on a site, developers should aim to create features such as functional habitat networks that will provide wildlife with space to migrate through and places in which to settle and live.

4.8 The above issues should be included within a construction management plan. It is essential that biodiversity within a site and the linkages out of the development are considered at the earliest opportunity. Where appropriate this may be required through a planning condition.

Building Fabric

4.9 Minor additions can be made to the building such as providing nesting spaces for species such as swifts and sparrows. Bat bricks can also be incorporated in suitable buildings close to flight corridors with minimal financial or visual impact. Green roofs and walls can be installed on many types of buildings and helps to create habitats for wildlife, provides insulation and reduces surface water run-off.

Trees and Development

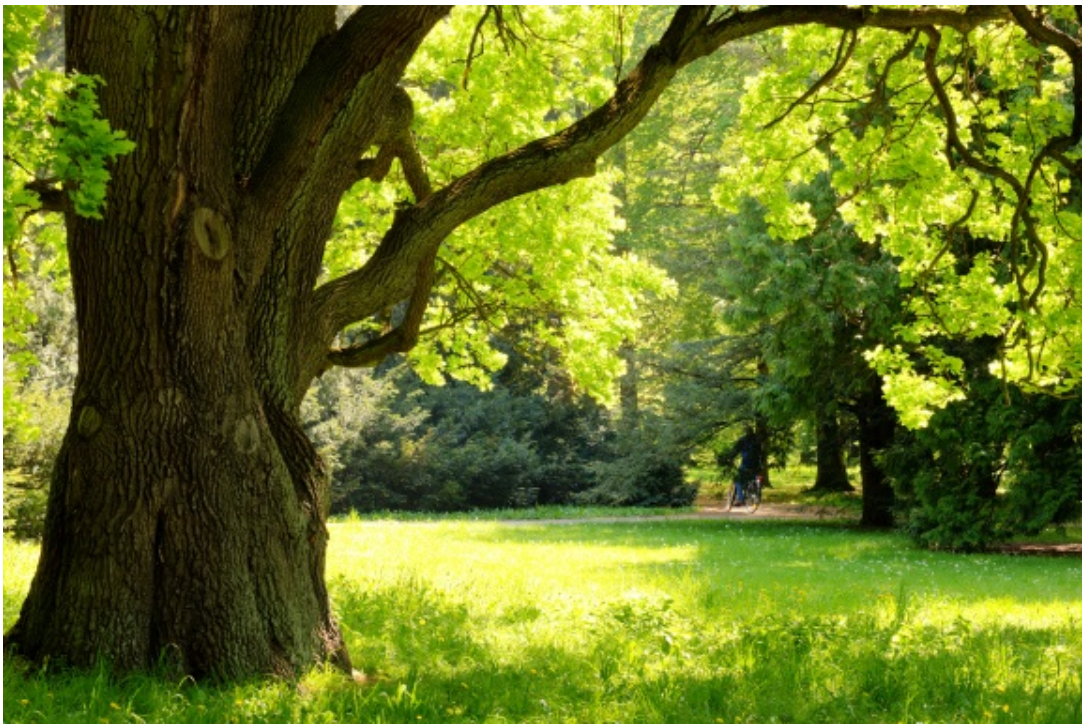
4.10 New developments can be enhanced by retaining mature trees and can provide a readymade landscape and sense of character. Parks, garden and squares which are well managed and planned can have a positive impact on the value of nearby properties. This can attract both inward investments and people to an area.

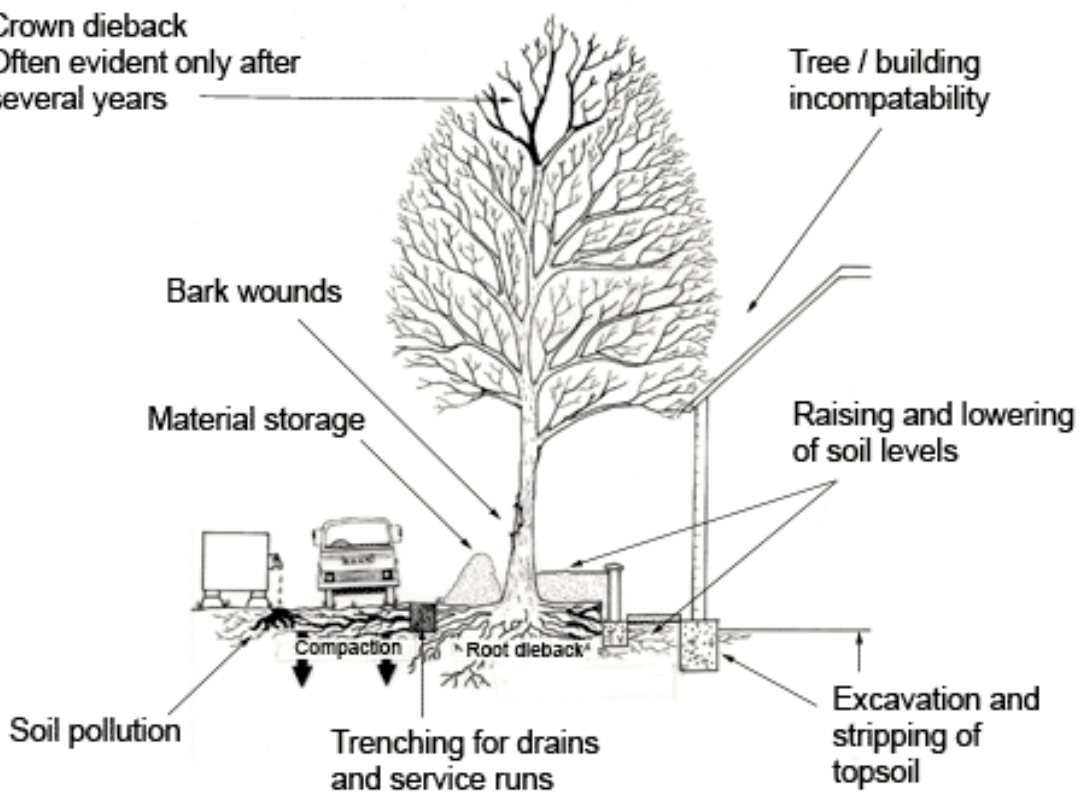
4.11 All existing significant healthy trees, woodlands and hedgerows will be expected to be incorporated into any new development proposals. It is expected that care will be taken to ensure that trees are not lost due to development. In exceptional circumstances where permission has been given to fell such trees, replacements must be planted as part of the overall landscape scheme.

4.12 All landscape work in new development must be well designed and implemented. Developers should demonstrate how existing trees and proposed new trees will be

protected throughout and following construction. Common and unacceptable hazards and activities on construction sites include:

- inadequate root and crown spread for the trees
- root damage
- flooding
- raising water tables
- changing soil levels
- compaction of soil around roots
- fire
- damage from machine
- harmful substance (e.g. petrol and cement)





4.13 To ensure these matters are adequately addressed in scheme design, any application which has the potential to affect existing trees must be accompanied by a full Tree Survey compliant with BS 5837:2012 (Trees in relation to design, demolition and construction. Recommendations).

Other Existing Vegetation

4.14 Applicants are encouraged to retain existing vegetation wherever possible and integrate it into the landscaping scheme of the site. Vegetation already on the site will have adapted to the soil, water and microclimate conditions of the area and can provide a good starting point for additional planting regimes.

4.15 Where a development is in close proximity to biologically sensitive areas, additional consideration should be given to the replication of the landscape, which has allowed the species to thrive.

Gardens

4.16 It is important that residential development should incorporate space within the site for gardens. Gardens are significant for the extension of green networks especially within urban and semi-urban environments. Local habitats can be taken into account to effectively continue the network of greenspaces. Hedgerows, long and short grass

and habitats which replicate woodland fringes could be planted to enhance green networks.

4.17 Measures such as living fences, hedgehog friendly fences, pergolas, arbours, window boxes and nesting/roosting structure for swifts and bats can all be integrated into gardens providing a dual role by increasing green spaces and greening built development.

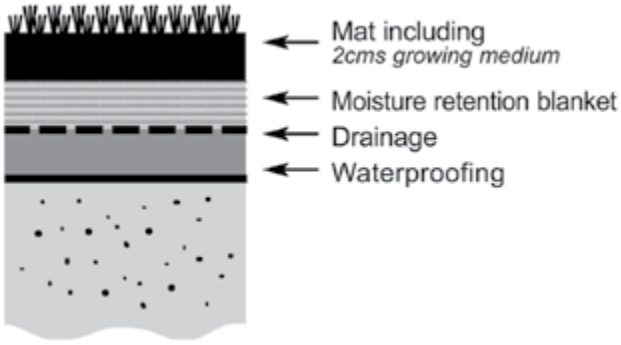
4.18 Consideration of biodiversity should not stop at providing habitats within areas that do not contain built structures. Green spaces and biodiversity can also be extended into the built environment and applicants are encouraged to incorporate this at an early design stage.

Green Roofs

4.19 In most circumstances roofs are featureless expanses, which could be utilised as a method for creating areas of biodiversity interest. Green roofs can be used for a wide variety of buildings ranging from offices to garden sheds. In areas where brownfield land has been found to have biological interest, brown roofs (i.e. those designed to maximise biodiversity) can also be implemented.

Green roofs provide numerous benefits, including:

- Additional biodiversity resource
- Help to cool rooms below in hot weather
- Provide insulation in winter
- Alleviate localised flooding, due to retention of water by roof vegetation before evaporation/transpiration
- Damage to roofs is mitigated through their use



Sedum Mat System (ultra light weight)

4.20 There is a wide variety of plants that can be used for green roofs, ranging from grasses and sedums to shrubs and trees. The plant selection will be determined by the type of green roof specified. The most common green roofs are extensive or

shallow, as they require a small amount of growing medium and can only support low growing vegetation such as sedums. Semi-extensive and intensive green roofs require greater quantities of growing medium, as they support larger vegetation.

Green Walls

4.21 Green walls are similar to green roofs in that they take up a vertical space rather than a horizontal space. Where space is at a premium on a development, a green wall could be integrated into the design as a way of incorporating biodiversity into a scheme. The most common plants used within a green wall are climbing plants, such as Ivy, Russian Vine and Virginia Creeper. Slower growing plants like Honeysuckle and Wisteria can also be used to create an attractive façade.

4.22 Caution should be taken creating a green wall when dealing with structures where roots can take hold and expand in cavities and crumbling mortar and maintenance costs should be considered. High-tensile steel cables should be used to provide support for climbing plants, which can also promote growth.

4.23 The most effective green walls are located on south and west walls. This means they provide a high amount of solar shading in summer. The opposite effect occurs in winter where evergreen climbers have been used. The air between the wall and plant insulates the building.

Further sources of information for applicants

- Staffordshire County Council's 'Planning for Landscape Change' evidence base
- Trees in relation to design, demolition and construction - Recommendations (BS 5837:2012)
- The GRO Green Roof Code: Green Roof Code of Best Practice for the UK 2014
- Highways England (2015) Our Plan to Protect and Increase Biodiversity

5. Delivering Sustainable Drainage Systems (SuDS)

Core Strategy sustainable development policies related to this area:

Core Policy 3

"(k) ensuring the use of sustainable drainage (Sustainable Drainage Systems) in all new development and promoting the retrofitting of SUDs where possible"

Policy EQ7: Water Quality

5.1 Under the policies of the Core Strategy, all new developments must include a suitable SuDs scheme. SuDs are primarily focused on managing the quality and quantity of surface water runoff. However, some types of SuDs can also deliver additional benefits, such as assisting in providing habitat corridors and landscape settings for development, which will be an important consideration in ensuring that such drainage measures are integrated successfully into a wider scheme design.

5.2 Staffordshire County Council, in its role as the Lead Local Flood Authority (LLFA) will be consulted on any application for major development within South Staffordshire. Applicants will therefore be required to deliver an appropriate SuDs scheme to meet the requirements of Staffordshire County Council's Sustainable Drainage Systems (SuDS) Handbook (2017), which sets out the expectations of the LLFA with regards to SuDs. This document or any subsequent update from the LLFA will form the basis of judging whether or not a development delivers an acceptable SuDS scheme to satisfy the requirements of Core Policy 3 and Policy EQ7 of the Core Strategy.

Further sources of information for applicants

- *Staffordshire County Council (2017) Sustainable Drainage Systems (SuDS) Handbook (or any subsequent update)*
- *CIRIA (2015) The SuDS Manual (C753)*
- *CIRIA (2015) Benefits of SuDS Tool*

6. Ensuring sustainable waste management in new developments

6.1 It is important for architects, planners and developers to consult with the Council on suitable types of waste storage and collection arrangements at the initial planning stage of any new development. The Waste Strategy for England 2007 sets out a waste hierarchy, which should be considered in the design of buildings and places and can reduce the amount of waste produced.

1. Reduce	• Prevent waste by using less materials in design and manufacture and order the the materials as accurately as possible
2. Reuse	• Check, clean, repair and refurbish whole items or spare parts, reuse demolition waste
3. Recycle	• Turn waste into a new substance or product, including composting
4. Recovery	• Extracting energy from waste through various technologies, such as incineration and gasification
5. Disposal	• To landfill or incineration without energy recovery - last resort for products that cannot be dealt with any other way

Waste storage in new developments

6.2 New residential developments in South Staffordshire must include appropriate provision for the storage and collection of household waste and recycling.

6.3 Designers and developers should consider:

- Easy and safe access for waste producers, including older persons or persons with disabilities
- Easy and safe access for collectors and collection vehicles
- Location, space and type of containers
- Protection against animal scavenging of waste
- Aesthetics of the development
- Noise (e.g. glass handling)
- Ease of maintenance, including cleaning
- Safety from fire risk and smoke
- Lighting
- Ventilation
- Sound insulation

- Special requirements (e.g. separate storage & collection of bulk waste)

Recycling in new developments

6.4 Additional measures can be taken to ensure the development has a negligible impact on the environment. Provision of storage, collection and recycling of waste needs to be an integral part of any design for a new development. Developments can provide facilities for individual or groups of properties to separate and store different types of household waste at source. It is important that a waste recycling strategy is included during the design the design process.

Sustainability Issue	Sustainability Outcomes Sought	Reasons
Refuse and Recycling Storage	Sufficient and appropriate space for refuse and recycling bin storage. Designs should ensure that: • Recycling facilities should be as easy to access as waste facilities • The location of bins does not have the potential to cause nuisance to occupiers of the development of those nearby • There is no adverse impact on the amenity of the area	• Suitable, accessible and convenient recycling storage facilities can assist in ensuring recycling of waste is undertaken by occupiers

6.5 Key principles to allow well designed, effective and efficient waste storage and collection:

- Ensure that waste storage areas are well located and designed to minimise visual impact and to integrate them into the design of the property.

- Ensure that waste storage facilities do not obstruct sight lines for pedestrians, drivers and cyclists.

- Ensure that waste containers can be moved easily from the rear of the property to the front or where that is not possible, create a suitable storage area.

- Provide a collection point nearest to the carriageway at which bins/sacks can be easily accessible to both collection crews and occupants. This will be particularly relevant to communal properties or developments that have access roads that are unsuitable for use by standard collection vehicles.

- Communal bins should be positioned where they can be used safely.

Further sources of information for applicants

- *Staffordshire and Stoke-on-Trent Joint Waste Local Plan*

APPENDIX 1

HOUSEHOLDERS' GUIDE TO SUSTAINABLE CONSTRUCTION AND RENEWABLE ENERGY

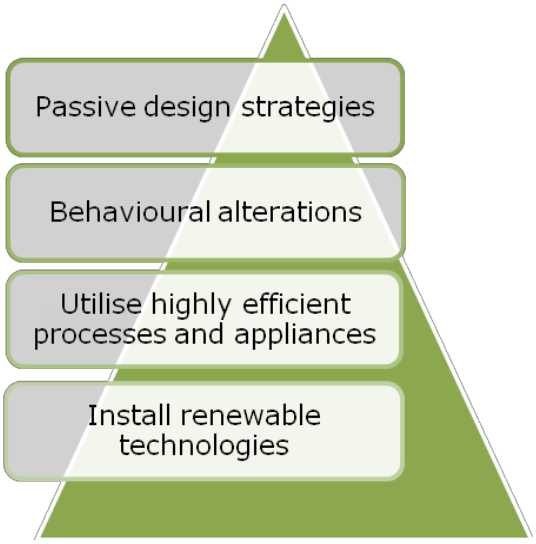
Page No.

Contents

1. Introduction

Sustainable homes are an important part of the future in Britain. In 2010 energy usage from homes in South Staffordshire was responsible for producing **259,200 tonnes of carbon dioxide**, **costing residents £54 million per year**. Therefore, reducing energy consumption has positive environmental and financial benefits for everyone. This simple guide for householders has been developed based on the recommendations of the Camco Renewable/Low Carbon Energy Study (September 2010).

Sustainability can be achieved through various means as outlined by the **'energy hierarchy'** (right);



Therefore, the following sustainability measures are considered in this guide:

- **Insulation and Draught Proofing;** for efficient buildings
- **Energy-in measures;** renewable energy sources
- **Water conservation and quality;** Reducing water consumption
- **Design;** for sustainable buildings

This document provides information for home owners and developers giving detailed information about the use of sustainability measures, including their advantages and disadvantages in section 2. Section 3 identifies how these measures can be implemented in;

- **New build properties;** incorporating sustainability from the outset
- **Existing property, refurbishment, improvement or extension;** retrofitting sustainability into any type of building

Refer to the appropriate section for your needs so you can develop an understanding of the potential sustainability of your home, whether you already live there or are proposing a new build. There are also a number of energy efficiency schemes promoted by the government which could help you with costs and understanding how energy generated in your home can be reintroduced into the national grid.

If in doubt as to whether you need planning permission, or for advice on proposed works to listed buildings or buildings within a conservation area, you can contact us on 01902 696000 or visit www.sstaffs.gov.uk. For further advice on different local energy saving initiatives please see section 6 which provides links to useful websites.

2. Energy Efficiency Measures – what are they?

This chapter introduces and explains all measures which can improve the sustainability of homes through energy efficiency. Each measure is explained and their pros and cons are outlined.

Insulation and Draught Proofing

These are measures which reduce demand for energy, creating energy efficient buildings. Such measures may consist of initial high costs, but will result in long term financial and energy savings.

2.1 Insulation

Insulation can be installed throughout the home, but it is primarily used to insulate the loft, the walls and the floor, and also takes the form of double glazing in windows.

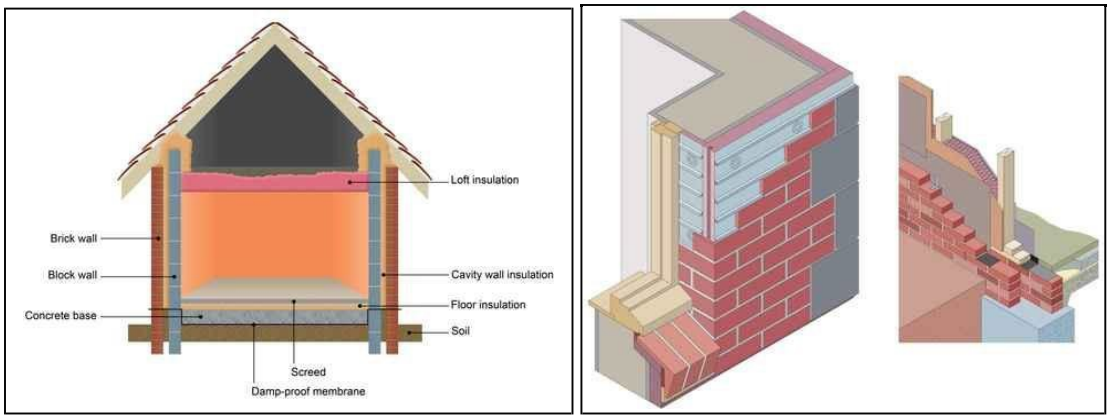


Figure 1: a) Types of insulation and b) cavity wall insulation

Insulation	
Pros	**Cons**
Improves energy efficiency over time and reduces energy consumption	Sometimes high initial costs, but short payback period (2-5 years) and government incentive schemes are often available

Consideration should be given to the insulation materials used, and preference given to natural materials. Home owners should consider possible funding from energy efficiency schemes (see section 5).

2.2 Draught Proofing

A great deal of warmth can be lost through accidental holes or openings in a building, and this can be easily prevented through a number of small scale and low cost draught proofing measures.

Draught Proofing	
Pros	**Cons**
A cheap and efficient way to save energy and money	Must be carefully installed to prevent loss of ventilation
Relatively easy to do yourself if you are confident carrying out simple DIY tasks	

It is important to ensure that some or all of these measures are met, prior to providing energy-in measures, because they are essential for reducing net energy consumption. Home owners should consider the possibility of funding from energy efficiency schemes (see section 5).

Remember, doing the small things to become more energy efficient will make the investment in renewable energy even more beneficial.

Energy-in measures

These are measures for reducing non-renewable energy source use, replacing these with **energy efficient, and renewable energy technologies**. Measures will incur an initial significant capital cost, but with ongoing savings supplemented by government incentives and protection from energy price increases (see section 5).

The emerging home energy storage sector is increasingly enabling the capture of heat or electricity from renewables for use when demanded. This increases the potential value of the renewables sector as a viable source of energy and heat for domestic generators and users.

2.3 Biomass

Biomass is plant matter which is burnt to produce energy or heat. Typical installations include internal stoves burning wood pellets or crops. If effectively managed, biomass can provide sustainable energy production, as it can be locally sourced, and is renewable over time. Due to the rural area of South Staffordshire there is high potential to provide biomass fuel and is the council's preferred solution to renewable energy generation.

Figure 2 (right): a log burning stove

Biomass	
Pros	**Cons**
The biomass while growing consumes more carbon than it releases when burnt	Requires suitable housing facilities and a dry place for fuel
Savings over time will cover the costs of installation	Requires a regular, predictable local supply source to compete with traditional ways of heating homes

Uses recycled materials or those which are sustainably grown	Longer distance delivery of biomass to homes may contradict sustainability principles
	Can incur high initial installation costs

2.4 Solar power

Solar power harnesses the energy from the sun and can use this to generate electricity for your home (photovoltaic), or to heat water for use in your home (thermal).

Installations must provide benefits to the home owner through ensuring correct orientation, slope, shade and maintenance, and reducing cleaning difficulties. The optimal orientation is south facing.

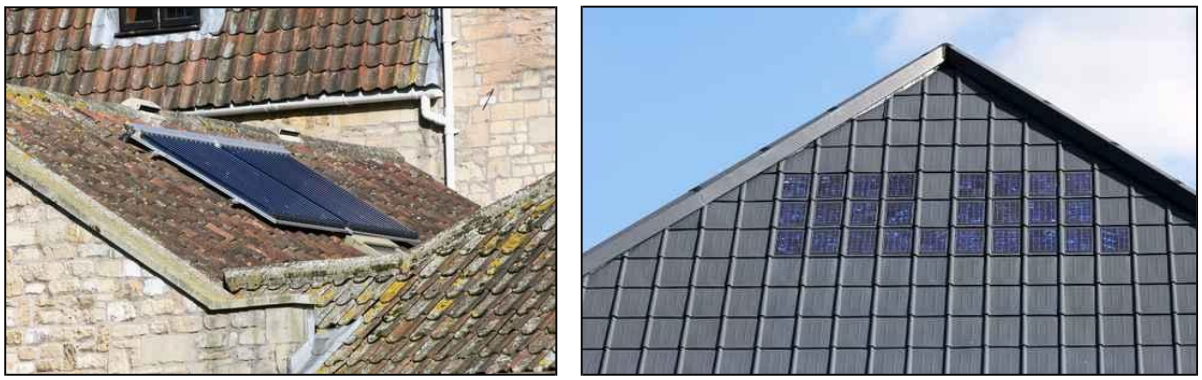


Figure 3: a) Discreetly located solar panels on historic buildings and b) solar roof tiles

Solar Power	
Pros	**Cons**
1.1 1.2 Can be used for heating and water heating	May also require a back-up system, especially in winter
Large savings per year and also income from excess energy sold back to the grid mean costs are quickly recovered	Can incur high initial installation costs
	Potential issue with glint and glare impacting road users and air traffic procedures.

2.5 Air and ground source heat pumps

Heat pumps harvest the sun and earth's energy for space and water heating. This heat can either be taken from the air using a pump which looks like an air conditioning unit or from the ground using a network of water pipes buried underground, and is pumped through a heating system. This energy-in method is best suited to buildings with a predictable or steady heat demand.

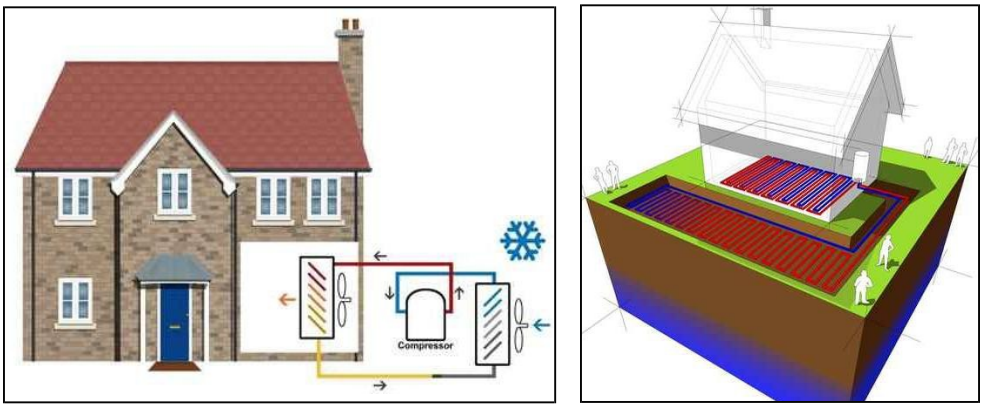


Figure 4: a) Air source heat pump and b) ground source heat pump – how they work

Air and Ground Source Heat Pumps	
Pros	**Cons**
Ground Source Heat Pumps are particularly effective all-year round since subterranean temperature level is fairly constant all year	Air Source Heat Pumps are less effective in winter when outside air temperatures are lower
An efficient way of heating a building	Slow response rate
	Not strictly renewable, due to the electricity required for pumps. Must be combined with renewable energy systems to be zero carbon rated

The Renewable Heat Incentive may cover some initial costs of heat pumps (see section 5).

2.6 Wind power

Wind power converts wind energy into useful forms of energy such as electricity, providing a renewable energy source. However, due to South Staffordshire being a rural district with a great deal of Green Belt and attractive countryside and open space, wind power turbines are considered to be visually detrimental if not located sensitively. Home scale wind refers to turbines which are under 100kW, usually 1-20kW, and produce power for on-site use, as opposed to commercial scale turbines which are over 100kW and can each power hundreds of homes.

 **Wind Power**	
Pros	**Cons**
High power generation	Urban settings are less suitable as 'turbulence' created by other buildings etc diminishes functionality
Can produce energy during the night and store energy on a battery	Must be prominently located which causes potential negative impacts on the landscape
Excess energy can be sold back to the national grid	Requires a minimum of 4.5metres/second wind speeds
	Can, depending on the location and character of the area, impact on wildlife and biodiversity
	Potential impact on road users

A study undertaken by Camco for Staffordshire County Council found the best energy-in measures for the area to be; biomass, solar and ground source heat.

Water conservation and quality

Water consists of an enormous proportion of household costs, and is often wasted. For example, fresh drinking water which has gone through high energy consuming processes is used to flush the toilet, or water gardens when **'grey' rainwater** falling naturally at other times is not utilised at all. **'Sustainable drainage'** features (known as Sustainable urban Drainage Systems - SuDS) such as balancing ponds and swales, are not common across the housing stock, but can be used as an adaptation measure during periods of heavy flooding – for this reason they are required within the grounds of new dwellings by law; and are promoted within existing development. The number of households in the UK will increase in future, each of which will demand more water and increase impermeable surfaces. There is a depleting water supply, pressures on sewerage plants and an increased risk of flooding. Households in the UK can take a number of measures to address these issues.

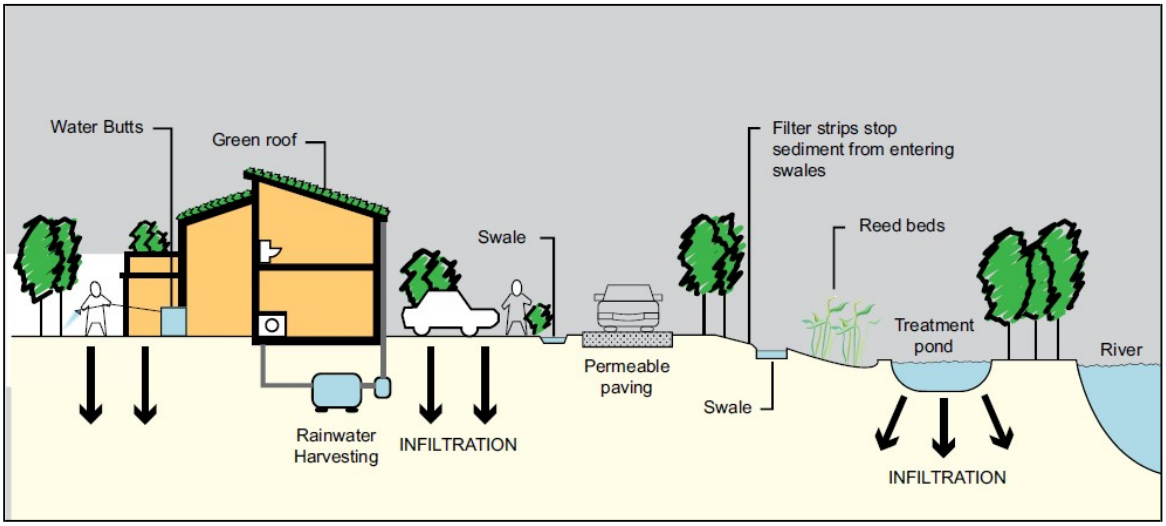


Figure 5: Water conservation and quality measures

2.7 Greywater recycling

Recycle and re-use 'grey' water from the sink or shower for watering the garden, flushing the toilet or cleaning. 'Grey' water is collected in tanks and re-circulated through a water supply system for the toilet, for example.

Greywater Recycling	
Pros	**Cons**
Saves around 30% of mains water which is of drinkable quality	Requires installation of tanks – this is much easier to achieve in new builds as opposed to retrofitting
Small storage tank; can be external and buried or internal	Cleaning processes and detergents may have environmental implications

2.8 Rainwater Harvesting

Rainwater harvesting involves the collection of rainwater from the roof or ground for reuse in non-potable elements of the home such as toilet flushing, cleaning and in the garden.

Figure 6 (right): Rainwater harvesting and underground tank

Rainwater Harvesting	
Pros	**Cons**
Can be installed underground, reducing negative impacts on aesthetic quality	Cost effectiveness of the system is site specific
Tanks are long lasting (up to 15 years)	Risk of contamination
	Uses electricity to operate pumps and control systems

2.9 Permeable surfaces

Impermeable surfaces around houses reduce the amount of water which can be absorbed into the soil, increasing pressures on sewerage systems, and the risk of flooding. Introducing permeable surfaces, especially in more built-up areas supports natural water cycles and reduces the impacts of urbanisation on climate change. These include permeable driveways, SUDs and green roofs.

- **Permeable driveways**

New or replacement driveways now have to be made from permeable materials, or incorporate a drainage system. Permeable surfaces can be combined with underground storage or infiltration as part of sustainable drainage. There are a range of permeable surface types; gravel, wheel tracks and reinforced grass.

Permeable surfaces - driveways	
Pros	**Cons**
Reduces the amount of water entering the sewerage system, therefore preventing overflowing and flooding	All types of permeable surface may not be appropriate in some types of development (e.g. gravel is not suitable for wheelchairs)
Reduces the impacts of urbanisation	Can lead to waterlogging
Reduces surface storage of water in the form of puddles	Use of gravel or reinforced grass not recommended where driveway served off trunk road network

- **Sustainable Drainage Systems (SuDS)**

The term 'SuDS' refers to a number of features such as swales, basins, soakaways and infiltration trenches:

Swales are natural or man-made features which manage water run-off, filter pollutants and increase rainwater infiltration. They are usually flat-bottomed shallow trenches to either direct water to appropriate drainage systems or slow down the infiltration of water into the soil.

Basins are usually large expanses of natural land where water can be allowed to accumulate for slow infiltration into the ground.

Soakaways are excavated underground chambers which enable water to drain away in areas where the surface is less permeable.

Infiltration trenches are deep excavations filled with gravel or other permeable materials, which can hold storm water and allow slow ground water infiltration.

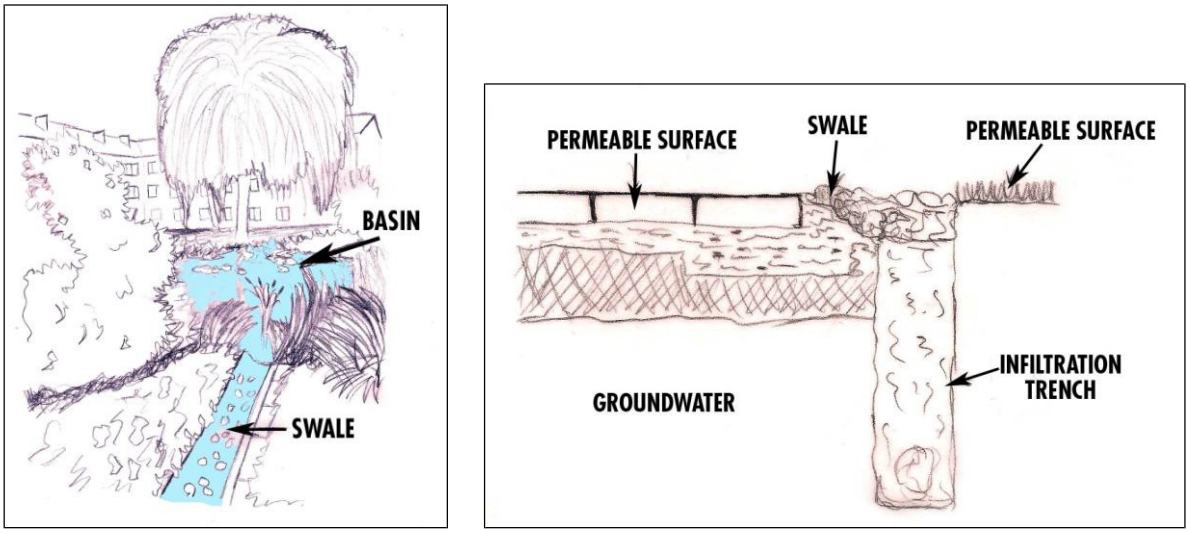


Figure 7: a) swale and basin, b) permeable surfaces and infiltration trench

Permeable Surfaces - SuDS	
Pros	**Cons**
Reduces pressure on drainage systems and helps manage extreme events including flooding and drought	SuDS may take up more space than traditional drainage systems, especially if they are poorly designed
Create attractive natural environments for green space and biodiversity	May lead to waterlogging
Inclusion of SuDS is cheaper than a traditional drainage system	Possible risk to safety, particularly if poorly designed

- **Green roofs**

They can offer visually and environmentally interesting water management systems which can store surplus rainwater. There are three different types of green roofs; extensive, semi-intensive and intensive, which vary in terms of maintenance and structural requirements.

Permeable surfaces – green roofs	
Pros	**Cons**
Can provide opportunities for biodiversity enhancement and 'greening' of urban areas	Plants can be sensitive to harsh weather conditions
Reduces heat island effect by aiding heating and cooling of buildings	May present difficulties associated with waterproofing and leaks
Contributes to roof insulation	Can be expensive

Design

Design is a key consideration for all sustainability measures to reduce negative impacts on local character and ensure positive integration of fixtures and fittings into a building, to retain traditional features or reduce their impact on the aesthetics of the built environment. All new build properties must meet the sustainability criteria mandated by **Building Regulations**, South Staffordshire Local Plan Policy EQ5 and the **Code for Sustainable Homes** (or equivalent). Whilst carbon emission rates for new structures can be improved through integrated renewable or low carbon energy sources, according to the **energy hierarchy** it is more optimal and usually cheaper to achieve most carbon savings through building design first. Buildings should also be designed in a way which facilitates flexibility and adaptability to provide lifetime homes for all potential occupants, and for the changing needs of current occupants.

2.10 Materials

The type of materials used for both new builds and restoration projects will influence the sustainability of the building. Reuse or recycling of materials is encouraged.

 **Materials**	
Pros	**Cons**
Reuse or recycling of materials minimises waste and reduces costs of construction	It can sometimes be difficult to balance the need for sustainable materials with local character and distinctiveness
Resilient materials extend the life of a building and prevent further depletion of resources	
Locally sourced materials reduce the distance of travel, minimising the 'carbon footprint'	

2.11 Layout and orientation

The orientation and layout of new buildings should take full advantage of the movement of the sun to increase energy efficiency and reduce the need for non- renewable energy sources. For example, by positioning in a way that heat and light can largely be obtained from the sun, or conversely, orientating to avoid excessive solar impact thus avoiding the need for mechanical cooling or heating by fossil fuels.

Layout and orientation	
Pros	**Cons**
Costs of construction, and long term energy bills can be reduced by strategic design and placement of buildings	Appropriate layout and orientation may be restricted by topographical or environmental features

2.12 Trees

The existence and positioning of trees will influence a number of elements such as shading and drainage.

Shading; to benefit from the sun's heat in winter, any trees near the south wall of a house should be deciduous. This will also contribute to shading in the summer, thus providing natural heating and cooling.

Drainage; trees help to reduce stormwater runoff and pressure on sewage systems. They intercept falling rain, hold water in the leaves and trunk, enable evaporation, and facilitate infiltration of water into the soil. They are therefore an important element of Sustainable Urban Drainage developments.

Urban Heat Island Effect; trees and other foliage can help to break up hard landscaping in urban areas, diminishing the slightly higher temperatures experienced across urban areas in both summer and winter.

 **Trees**	
Pros	**Cons**
Trees and other vegetation provide natural amenity for developments	Require maintenance and could cause concern if located too close to building foundations
Trees and vegetation add value to developments by creating a natural setting	May interfere with other renewable energy technologies such as solar power

3. Installing and introducing sustainability measures

New build properties

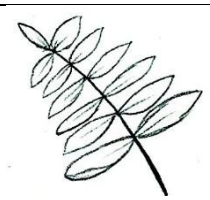
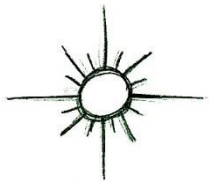
All new build properties must adhere to the current Building Regulations with respect to carbon emissions, water conservation standards etc, and also the Core Strategy policy EQ5. Higher sustainable design features than required by Building Regulations can be achieved both within new individual dwellings and across larger, residential schemes such as new housing developments where there may be opportunities for communal renewable energy installations, or even 'district heating' connections.

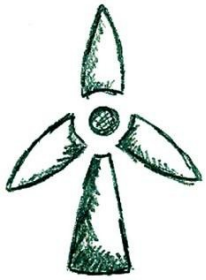
However, appropriate sustainability measures generally depend upon the **scale, density and mix** of the development and must accord to national (NPPF) and local (Core Strategy) policies. In general, developers should use principles of **design, landform, building orientation, massing and landscaping** to maximise sustainability potential of buildings.

3.1 Insulation and Draught Proofing

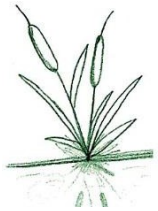
Measure	Processes and installation	Required Permissions and Further Guidance
 **Insulation**	All new build properties should be fully **insulated** including wall, loft and floor insulation; and double glazed to a high standard.	Requires Building Regulations consent.
 **Draught Proofing**	**Airtightness;** houses must be constructed with attention to detail to reduce hot-air loss which can be achieved through draught-proofing. **Ventilation;** all buildings must have adequate ventilation for a healthy environment.	Requires Building Regulations consent.

3.2 Energy-in measures

Measure	Processes and installation	Required Permissions and Further Guidance
 **Biomass**	**Biomass** is an optimal sustainable heating measure in various parts of South Staffordshire due to ample potential for locally sourced resources for biomass heaters. Houses could be designed to accommodate biomass boilers and storage materials, rather than those which rely on non- renewable energy sources, in particular for providing a central heating system.	Does not require planning permission, however there are conditions which are explained in Part 40 (Class E) of the General Permitted Development Order (Amendment) (England) Order 2011. If in doubt, please contact the planning department.
 **Solar**	New houses can be modified to accommodate **solar panels**; however these do not necessarily need to be positioned on roofs and can also be placed on walls, on freestanding frames in gardens, or on out buildings. In new developments space could be allocated for this purpose. The orientation of dwellings at the design stage could also ensure that pitched roofs are south-facing, where this would be acceptable. Solar panels which imitate roof tiles are also available and could be easily installed in new properties.	Building Regulations consent may be required at the design stage prior to planning permission being granted. To retrofit solar panels, planning permission is not required in most cases. However, there are certain conditions see Part 40 (Class A) of the General Permitted Development Order (Amendment) (England) Order 2011 for details. If in doubt, please contact the planning department.

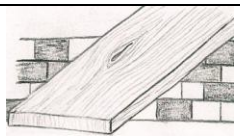
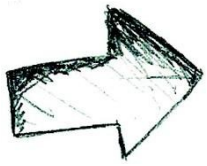
 **Heat Pumps**	**Heat pumps** can be easily incorporated into new builds, along with the appropriate output heating type (generally large expanses of heaters, usually under floor, which work at lower temperatures). In particular the laying out of subterranean ground source heat pump pipe 'loops' serving individual dwellings is more easily achieved on new development sites.	Does not require planning permission, however there are conditions which are explained in Part 40 (Class C) of the General Permitted Development Order (Amendment) (England) Order 2011. If in doubt, please contact the planning department.
 **Wind Power**	**Wind** turbines integrated within new housing schemes can reduce the demand for centralised energy; however these structures can have an adverse impact on the landscape and require ample space. Their location upon a site needs careful consideration so that any resulting amenity impacts on neighbours (noise/vibration/shadow flicker/blade glint etc) are within acceptable limits. As previously explained, domestic turbines can be roof- or ground- mounted.	In most circumstances Domestic Wind Turbines do not require planning permission on detached dwellings or in the curtilage of dwellings, however there are a number of conditions which are explained in Part 40 (Class H) and (Class I) of the General Permitted Development Order (Amendment) (England) Order 2011. If in doubt, please contact the planning department.

3.3 Water Conservation and Quality

Measure	Processes and installation	Required Permissions and Further Guidance
 **Greywater Recycling**	**Greywater recycling** systems could be easily incorporated into new build properties and so should be considered at the housing design stage. Installation should consider the needs of maintenance and modification and therefore be placed in such a way that home owners can access the system.	These measures would not require planning permission as they would be internal and could be incorporated into the design stage.
 **Rainwater Harvesting**	Possible installation of **rainwater** tanks should be considered during design stages as these often require a certain amount of space but can easily be incorporated into new buildings. Consideration should be given to the installation of underground tanks during planning and building works. Installation should consider maintenance and modification needs and therefore be placed in such a way that home owners can access the system. The tank is often the most expensive part of the system and choosing the right size is integral to minimising costs; its size must balance cost and storage capacity. Calculation tools for tank size are available online (see section 6).	These measures would not require planning permission if incorporated into the design of the new dwelling. If in doubt, please contact the planning department.
 **Permeable surfaces**	**Driveways;** All new properties should be constructed with permeable driveways and minimal impermeable surfaces. Retention of natural soils and vegetation is a priority.	These measures would not require planning permission if incorporated into the design of the new dwelling. See guidance on permeable surfaces (section 6).

	SuDS; swales, basins, soakaways, trenches; In areas of new housing, in particular large scale developments, there will be an increase in the area of impermeable surface. New development should be considered as a positive opportunity to manage groundwater.	These measures would not require planning permission if incorporated into the design of the new dwelling. A full ground survey should be carried out to investigate the impact on surface water flow, and appropriate SuDS should be installed.
	Green roofs; New buildings can easily be designed to accommodate green roofs, to ensure appropriate load bearing and waterproofing. However they must also be in compliance with local character and meet the relevant building regulations.	These measures would not require planning permission if incorporated into the design of the new dwelling. Requires Building Regulations consent. The installation of green roofs may have structural implications where Building Control may need to be consulted. If in doubt, please contact the planning department.

3.4 Design

Measure	Processes and installation	Required Permissions and Further Guidance
 **Materials**	**Renewable or recyclable;** building materials should be sourced responsibly with limited environmental impacts, such as using reclaimed and preferably locally-sourced materials. There may even be opportunity to reclaim materials on-site, in the case of redevelopment sites. **Durable materials;** materials should be resistant and long lasting to avoid the need for frequent maintenance or replacement of materials, and to avoid waste. There are environmental costs associated with construction and demolition, and therefore constant redevelopment or change is unsustainable because it results in a loss of embodied energy. **Thermally dense materials;** absorbs heat during warm periods and releases heat when the temperature drops to minimise mechanical heating and cooling. uPVC windows and doors are effective, however are discouraged, as their production releases toxic by-products and they have a relatively short life span requiring frequent replacement.	Type of materials used will be considered as part of planning permission to ensure development makes positive contribution to character of wider area. Innovative and modern designs will be considered positively but developments may also need to consider historic character of building and area in certain locations. If in doubt, please contact the planning department.
 **Layout and orientation**	**Layout and orientation** of buildings should be directed to take advantage of the sun. This means preference to south facing buildings with limited openings to the north. Siting should avoid exposed sites, frost hollows and flood risk areas. **Dual aspect;** Rooms should take	Siting of buildings may be negotiated in terms of solutions for sustainability in sensitive areas where it may be relevant to consider preservation of the

	advantage of light from all directions and from above (roof lighting/lanterns etc). **Sunlight Pipes;** Rooms which cannot capture sufficient sunlight can make the use of sunlight pipes to bring light into the room.	local character. Consideration of amenity issues e.g. overlooking and privacy of neighbouring properties to also be taken into account.
 **Trees**	Maximise use of **trees** for shelter, privacy and air cleaning but with minimal shading to the south.	Tree Preservation Orders and areas of protected woodland must be considered before development. Consider appropriate siting of new trees in relation to surrounding and proposed developments. If in doubt, please contact the planning department.

Existing property refurbishment, improvement or extension

Britain's building stock is some of the oldest in Europe and may need modification to become more sustainable. Existing buildings **embody energy** and preference is always taken for the **retention of existing buildings and historic fabric,** rather than wasting energy and materials through demolition and rebuilding. The **Energy Saving Trust** provides an online **Home Energy Check** which homeowners can undertake to calculate their possible yearly savings through the installation or adaptation of sustainable measures.

Historic buildings are often the most difficult to retrofit sustainability improvements to. In particular whilst airtightness may be a desirable quality in new dwellings, the need for older dwellings to 'breathe' may mean certain measures may negatively affect the health of the building. Different dwellings will have different needs and requirements therefore lending themselves to different sustainability solutions which should be appropriate to the specific building.

There are certain **energy schemes** and **government incentives** which are targeted at encouraging home owners to implement sustainable measures, and provide financial aid (see section 6 for useful websites). Whilst many retrofit insulation or renewables measures may be domestic 'permitted development', in the case of conservation areas and listed buildings, Listed Building Consent and/or planning permission may be required. Building Regulation consent is often required, but if you are unsure please contact the planning department.

3.5 Insulation and Draught Proofing

Measure	**Processes and installation**	**Required Permissions and Further Guidance**
 **Insulation**	**Roofs/Lofts** Internal; cheap and simple roll or granular insulation can be laid over or between ceiling joists. This method also has the advantage that it can be reversed or easily modified. External; three possible methods which could be combined; insertion of slab material between rafters, laying slab material over rafters, or	External insulation would require planning permission for buildings within conservation areas. All listed buildings will require Listed Building Consent for insulation measures, due to necessary alterations to the

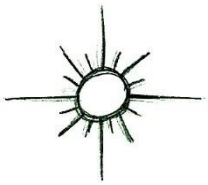
	fixing multi-layer, reflective foil beneath or above rafters.	fabric of the building. If in doubt, please contact the planning department.
	Walls Cavity; most houses built after 1920 have a gap between two walls which can be filled with insulation to keep the warmth in. This can cost up to £300 a year, but with savings of around £150 each year due to lower energy consumption. For cavity insulation installation window recess positioning needs to be considered, especially for historic buildings. Solid; Solid walls let through a lot more heat than cavity walls but can be insulated from the inside or outside.	External insulation would require planning permission for buildings within conservation areas. All listed buildings will require Listed Building Consent for insulation measures, due to necessary alterations to the fabric of the building. If in doubt, please contact the planning department.
	Floors There are various methods of floor insulation. A particularly popular method for historic buildings involves the replacement of floors with a new concrete layer on a damp-proof membrane and a good layer of insulation.	External insulation would require planning permission for buildings within conservation areas. All listed buildings will require Listed Building Consent for insulation measures, due to necessary alterations to the fabric of the building.

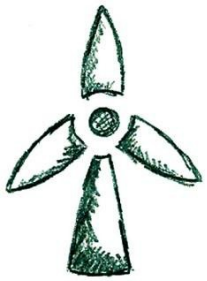
 **Draught Proofing**	Double glazing or an extra glazing layer can be added onto the inside of the window, however where double glazing may detract from the historic character, other measures may be taken elsewhere to compensate for the retention of single glazed windows. Internal timber shutters may also be possible to reduce draughts. Thicker curtains and maintenance of windows will also help to draught proof your home. Refurbishing existing windows, replacement of glass, insertion of slimline double glazing units into existing frames, heavy curtains, and secondary glazing. Draught proofing strips can be added to existing windows and doors; a very cost effective measure.	These measures may require Listed Building Consent due to implications on the internal fabric of the building. Every effort should be made to integrate these measures as sensitively as possible. If in doubt, please contact the planning department.

	Doors, keyholes and letterboxes; covers, draught excluders and foam edges.	
	Loft Hatches; hot air can get lost in loft spaces so these should be tightly sealed – strip insulation can be used.	
	Electrical fittings on walls and ceilings; tightly sealed	
	Suspended floorboards, and skirting boards; cracks between floorboards and between the floor and skirting board can be filled.	
	Pipework leading outside; small gaps around pipework should be filled with silicone fillers, and larger gaps should be filled with expanding polyurethane foam.	
	Ceiling-to-wall joints; any gaps should be suitably filled.	
	Chimneys; if you don't use your fireplace, the chimney can cause unnecessary draughts which can be reduced by either fitting a cap over the chimney pot, or installing a chimney balloon which is an inflatable cushion that blocks the chimney (remember to remove any blockages if you decide to light a fire).	If a temporary blocking of fireplaces is required, then these must be reversible measures.
	Ventilation; ensure no intentional gaps for ventilation are filled, as these are required to retain a fresh, dry and healthy interior environment.	

3.6 Energy-in measures

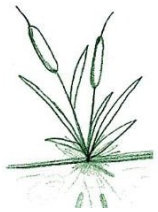
Measure	Processes and installation	Required Permissions and Further Guidance
 **Biomass**	A stove system works well in a historic building and can often use an existing chimney **Biomass** will usually require an alternative heating system to provide sufficient year-round heat, such as under floor heating and so consideration should be given to sensitive alterations. Boilers must be appropriately sized for the property and for the occupant's heating needs.	Components must be sensitively located (fuel store, hot water cylinder and flue). Boilers are often more appropriately located outside of the main building e.g. in a shed, garage or outbuilding. Any new construction to accommodate biomass units may require planning permission and/or Listed Building Consent. Internal stoves may also require Listed Building Consent. If in doubt, please contact the planning department.

 **Solar**	**Solar panels** and associated technologies will need to be considered carefully particularly where it is proposed to install them on historic properties or in historic settings. It is preferable in historic buildings to site panels in less prominent positions which are visually unobtrusive; on rear roof slopes, in roof valleys, behind parapets, within the perimeter of flat roofs, on outbuildings, garages and stand alone units in gardens. Photovoltaic tiles which replicate conventional roofing slate are available but their use must be judged on individual cases.	Alterations on historic properties such as the addition of solar (or photovoltaic) panels may require planning permission or Listed Building Consent. Efforts should be made for discreetly located panels to reduce any potential negative impact on the character and appearance of the building. Internal changes may need Listed Building Consent (relevant to thermal panels). If in doubt, please contact the planning department.
 **Heat Pumps**	Existing buildings must have sufficient space for installation of pumps, and often require a garden which is accessible to digging machinery. **Heat pumps** and associated technologies, in particular the air source pumps must be sensitively located so as not to detract from aesthetic value.	Ground source heat pump installation involves ground disturbance, and so an archaeological assessment must be undertaken. Additionally any form of 'development' which involves deep excavation is likely to involve planning permission. However there are exceptions which are explained in Part 40 (Class C) of the General Permitted Development Order (Amendment)

		(England) Order 2011. External Air Source Heat Pumps wall-/ground-fitted units may also need Listed Building Consent (including curtilage). If in doubt, please contact the planning department.
 **Wind Power**	Installation of attached **wind** turbines requires suitable structural fixings and load bearing, and so may be unsuitable on existing properties, particularly historic ones, and may be inappropriate on listed buildings where wind turbines change the character of the building. Freestanding turbines separated from the building are likely to be less problematic, but require a larger space to move, and must extend above the height of the house to achieve full impact from wind speeds.	Domestic Wind Turbines do not require the benefit of planning permission on detached dwellings or in the curtilage of dwellings, however there are a number of conditions which are explained in Part 40 (Class H) and (Class I) of the General Permitted Development Order (Amendment) (England) Order 2011. Listed Building Consent will be required for listed buildings.

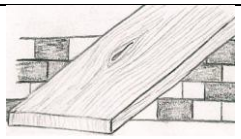
3.7 Water conservation and quality

Measure	Processes and installation	Required Permissions and Further Guidance
 **Greywater Recycling**	Installation of **'greywater' recycling** systems must minimise the impact on existing or historic fabric and tanks should be located as discreetly as possible.	Above ground storage tanks may also require planning permission, and installation of greywater systems require Building Regulations approval, and listed buildings may require Listed Building Consent for required plumbing installations. If in doubt, please contact the planning department.
 **Rainwater Harvesting**	Suspended tanks for **harvesting rainwater** require structural support with sufficient load bearing capacity. The tank is often the most expensive part of the system and choosing the right size is integral to minimising costs. The tank size needs to be a balance of cost and storage capacity. It should also overflow at least twice a year to flush out floating debris. There are tools to predict the amount of rainwater a certain house in a specific area may collect, and whether you have a sufficient collection area to meet your demand, this should inform the size of your storage tanks, and the potential of your house to reduce freshwater usage (see section 6 for	Installation and location of tanks and systems must minimise the impact on existing or historic fabric. Above ground storage tanks may also require planning permission, and tanks should be located as discreetly as possible. Installation of rainwater systems require Building Regulations approval, and listed buildings may require Listed

	links to further information).	Building Consent (including curtilage). If in doubt, please contact the planning department.
 **Permeable surfaces**	**Driveways** Domestic permitted development allows driveways made of permeable (or porous) surfacing, such as gravel, permeable block paving or porous asphalt, or rainwater should be directed to a lawn or border to drain naturally.	Since 2008, all modifications to driveways involving hard standing require planning permission (see section 6). Listed Building Consent may still be required for listed buildings (including curtilage).
	SuDS; swales, basins, soakaways, trenches Retrofitting of SuDS is essential to delivering sustainable solutions, as they are more adaptable and flexible than traditional modes of drainage. In many cases they can be strategically implemented with minimal effects on the existing buildings, although underground conditions should be considered. The most appropriate system will need to be evaluated on a case-by-case basis.	SuDS development involves ground disturbance, and so an archaeological assessment must be undertaken. Additionally any form of 'development' which involves deep excavation is likely to involve planning permission and/or Listed Building Consent.
	Green roofs Green roofs can be installed on any pitch roof including vertical walls, although walls of more than a 9.5degree angle will require specific design requirements in order to retain the water and vegetation. Existing buildings can be retrofitted with a green roof, although it is advisable to consult a structural engineer due to	In most cases, planning permission is not required, although your local planning authority should be consulted as permissions will be judged upon a case-by-case basis. Listed buildings will

	the change in load-bearing capacity of the roof.	require Listed Building Consent for green roofs. If in doubt, please contact the planning department.

3.8 Design

Measure	Processes and installation	Required Permissions and Further Guidance
 **Materials**	In general, locally sourced and traditional **materials** are preferred in existing buildings, in particular those which are in conservation areas or of listed building status. uPVC windows are generally regarded as inappropriate within conservation areas or in listed buildings, as they adversely alter the character and appearance of buildings. Traditional window materials such as timber, which match the building character are considered more appropriate.	In the case of any building works which need planning permission or Listed Building Consent or historic buildings, the planning department may require that new materials match existing very closely. If in doubt, please contact the planning department.
 **Lighting**	**Sunlight pipes;** Sunlight pipes bring natural lighting into buildings in rooms or parts of a house which do not benefit from sufficient natural light from windows. They are unobtrusive pipes which extend through the ceiling, lined with a highly reflective internal finish through which light passes with minimum loss to the interior.	Listed Building Consent will be required. If in doubt, please contact the planning department.

4. Other energy saving activities

4.1 Energy

- Use energy-efficient technology; appliances providing heat and light are high energy consuming.
- Use energy saving light bulbs; use less energy
- Turn off unused appliances and electrical equipment
- Using a microwave uses less energy than a conventional oven
- Try not to leave your fridge door open, for each minute it is open, it takes 3 minutes to return to its optimum temperature
- Regularly defrosting your fridge and freezer helps them to run efficiently Wasted food is a
- big contributor to emissions; try not to buy more than you need, and freeze any leftovers to eat later.
- Consider installing an energy monitor/Smart Meter which can help you understand the influence of individual appliances on your energy bills, and reduce your energy costs. Smart Meters can be provided by energy providers at no additional cost to the consumer.

4.2 Heat

- Wash clothes at a lower temperature
- Live at a lower temperature – reducing the thermostat by 1^{o} C could reduce your energy bills by 10%
- Thermostatic Radiator Valves (TRV) let you control the temperature of each room and can help reduce your energy bills
- A heating system that uses a high efficiency condensing boiler with correct heating controls can save you as much as 40% on your energy bills

4.3 Water

- Always turn off the tap when you're not using it while brushing teeth, shaving, washing up, or washing your face
- Always use cold water when you don't need to use hot water Low flow
- shower heads use less water with the same effect
- Aerating taps – slowing the flow of water makes the taps more energy efficient. Fix dripping taps
- Don't fill your kettle with more water than you need
- Use a half load cycle for smaller loads in the washing machine or dishwasher, or
- wait for a full load before washing
- Avoid using jet washes in your garden, or for the car and instead use a bucket and sponge

5. Energy Efficiency schemes

Energy efficiency advice and help to access local and central government funding is provided by the Council's Warmer Homes Energy Advice Scheme which may support you in improving your home.

5.1 South Staffordshire Warmer Homes Advice Scheme

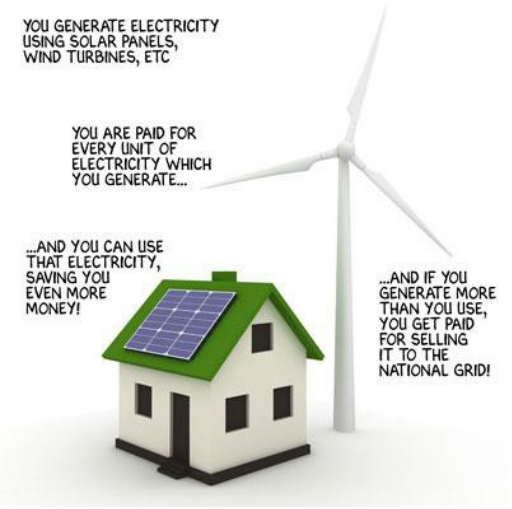
South Staffordshire provide free, no obligation information on all aspects of energy efficiency, from the installation of insulation and changes to heating systems to simple lifestyle changes such as resetting the heating controls or advice on switching energy tariffs. We have up to date information on the latest grants and government schemes and can check your eligibility for discounted measures. We offer a safe and easy route to a trusted and reputable installer.

5.2 Government's Feed-in Tariff (FIT) scheme

The Feed-in tariff is based on renewable electricity generated in your home. Any excess energy produced can be exported to the electricity grid, for which you get paid.

For further and up-to-date information, see Feed-in Tariff website;

www.decc.gov.uk
www.fitariffs.co.uk



5.3 Government's Renewable Heat Incentive

The renewable heat incentive is similar to the feed-in tariff but is relevant for heat generation. Any renewable heat systems you install in your home could earn you money for their output.

For further and up-to-date information, see Renewable Heat Incentive website.

www.ofgem.gov.uk/environmental-programmes/domestic-rhi

5.4 Government's Energy Company Obligation

This is an obligation placed on energy companies by the Government to help reduce the amount of CO2 produced by households. Energy companies must therefore help their customers to reduce energy consumption. Further information can be found at the following web address:

www.energysavingtrust.org.uk/

5.5 Allowable solutions

As previously explained, a new dwelling may be required to meet a particular standard of sustainability – either as a requirement of law (Building Regulations), as a condition of planning approval, or even where voluntarily accepted by the builder. However, if achieving this is difficult or unviable, then the builder may elect instead to make in lieu payments for sustainable measures to benefit sustainable schemes off-site (e.g. public or private sector housing retrofitting; stand-alone renewable installations etc). The Council is investigating the potential to set up a Carbon Investment Fund for in lieu payments to be made towards other projects. For further information please contact the planning department.

6. Useful websites

The **Energy Saving Trust** is a useful tool to help you reduce consumption. The **Home Energy Check** can be used to understand your home's carbon consumption rates and which aspects of your home lifestyle use the most energy and cost the most money. The website also has information guiding you for your choice of renewable measures, and regarding the **Energy Company Obligation:**

www.energysavingtrust.org.uk

Sustainable design, construction and management advice:

www.bre.co.uk

The **Environment Agency** has useful information in particular regarding sustainable drainage and construction:

www.gov.uk/government/organisations/environment-agency

Wind Power:

www.greenspec.co.uk/small-wind-turbines.php

Department of Business, Energy and Industrial Strategy (BEAI)energy and climate change (DECC):

www.gov.ukdecc.gov.uk/department-for-business-energy-and-industrial-strategy

Green Roofs:

www.thegreenroofcentre.co.uk

Energy Efficiency in Buildings:

www.gov.uk/government/policies/energy-efficiency-in-buildings

7. Glossary

Climate Change: Long-term changes in temperature, precipitation, wind and all other aspects of the Earth's climate, often regarded as a result of human activity and fossil fuel consumption.

Listed Building: A building of special architectural or historic interest. Graded I (highest quality), II* or II.

Renewable Energy: Energy produced from a sustainable source that avoids the depletion of the earth's finite natural resources, such as oil or gas. Sources in use or in development include energy from the sun, wind, hydropower, ocean energy and biomass.

Sustainable Development: A widely used definition drawn up by the World Commission on Environment and Development in 1987: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". The Government has set out four aims for sustainable development in its strategy "A Better Quality of Life, a Strategy for Sustainable Development in the UK". The four aims, to be achieved at the same time, are: social progress which recognises the needs of everyone; effective protection of the environment; the prudent use of natural resources; and maintenance of high and stable levels of economic growth and employment.

Sustainable urban Drainage Systems: A system designed to drain surface water in a more sustainable fashion, helps to improve water quality, enhance the environment and reduce flood risk

Strategic Planning Team

South Staffordshire Council

www.sstaffs.gov.uk

Council Offices
Codsall
South Staffordshire
WV8 1PX

Tel: **01902 696000**