SUSTAINABLE DEVELOPMENT
Supplementary Planning Document

Adopted 7 April 2015

HAMBLETON
DISTRICT COUNCIL

Contents

Introduction

Background to the Supplementary Planning Document

This Supplementary Planning Document (SPD) replaces the Sustainable Development SPD which was adopted in September 2009. This new SPD is intended to bring the document up to date, as there have been many changes since it was first adopted, notably in the area of renewable energy. This SPD forms part of the suite of documents which comprise the Council's Local Development Framework (LDF). The LDF is set to be replaced by a new Local Plan, at which point this SPD will again be reviewed.

The purpose of this SPD is to provide greater detail on the policies in the adopted LDF Development Plan Documents (DPDs). The document has been produced to provide supporting information and guidance on LDF policies relating to the achievement of sustainability in new development. Table 1 below summarises the policies in the LDF which are supplemented by this SPD.

Table 1: Planning Policies supplemented by this SPD

Core Strategy Policies	Development Policies
CP1 Sustainable Development	**DP2 Securing Developer Contributions**
CP2 Access	**DP3 Site Accessibility**
CP16 Protecting and Enhancing Natural and Manmade Assets	**DP28 Conservation**
	DP29 Archaeology
	DP30 Protecting the Character and Appearance of the Countryside
	DP31 Protecting Natural Resources: Biodiversity/Nature Conservation
CP17 Promoting High Quality Design	**DP32 General Design**
	DP33 Landscaping
CP18 Prudent Use of Natural Resources	**DP34 Sustainable Energy**
	DP36 Waste
CP21 Safe Response to Natural and Other Forces	**DP43 Flooding and Floodplains**

Scope of the SPD

The aim of the document is not to set new policy, as this is outside the remit of an SPD. The information should however be used as a material consideration when determining planning applications and as a guide for applicants. Supporting information and guidance contained within this document is concerned with the design and construction stage of development. Issues relating to site selection are covered in other LDF policies.

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Supporting information and guidance within the document is applicable to all new development. It is recommended that developers engage with planners at the outset of the planning process, using the Council's formal pre-application procedure (details of which can be found at **hambleton.gov.uk/development-management**). This is to ensure that appropriate measures are incorporated into the design of developments at an early stage.

This SPD should be used in conjunction with the adopted LDF policies, the National Planning Policy Framework and National Planning Practice Guidance. Useful links are provided throughout the document to sources of more information relevant to the SPD.

Consultation

Consultation on the draft SPD took place between 19 December 2014 and 30 January 2015, a period of six weeks. A total of 371 individuals or organisations were consulted and a total of fifteen responses were received. Further details of the consultation process are contained within the Consultation Statement which accompanies this document.

Strategic Environmental Assessment

This document has been subject to Strategic Environmental Assessment (SEA) screening to determine any likely significant environmental effects, in accordance with the European SEA Directive. The Screening Report, which is available on the Council's website, concluded that the SPD did not require SEA. The three statutory bodies which were consulted on this Screening Report (English Heritage, Natural England and the Environment Agency) all agreed with the report's findings.

Policy Context

Building Regulations Part L and the Code for Sustainable Homes (the Code) are of particular significance in the context of this document. At the time of writing, it is the Government's intention to incorporate the requirements of the Code into strengthened Building Regulations.

Part L provides guidance on the conservation of fuel and power in new and existing buildings. Updates to Building Regulations are expected to require greater CO_2 savings, with zero carbon homes being required by 2016 and potentially for non-domestic buildings by 2019. Building Regulations are anticipated to be updated in 2016 and are expected to mirror the energy requirements of the Code.

The Code is an environmental assessment method for rating and certifying the performance of new homes. On 1 May 2008 it became mandatory for all new homes to be assessed against the Code. The previous rating system, EcoHomes, was replaced by the Code.

Useful Links www.

- Building Regulations Part L: Conservation of fuel and power - available from *http://www.planningportal.gov.uk/buildingregulations/approveddocuments/partl* (accessed November 2014)
- Code for Sustainable Homes: Setting the standard for new homes and technical guidance - available from *https://www.gov.uk/government/policies/improving-the-energy-efficiency-of-buildings-and-using-planning-to-protect-the-environment/supporting-pages/code-for-sustainable-homes* (accessed November 2014)
- Climate Change Act - available from *http://www.legislation.gov.uk/ukpga/2008/27/contents* (accessed November 2014)

Energy Efficiency

Effects of Climate Change

The buildings in which we live and work have a significant part to play in combating the effects of climate change. Existing buildings are estimated to contribute nearly half of all the CO_2 emissions emitted in the UK. This section provides information and guidance on possible ways of reducing new developments' contribution to this figure in accordance with Council policies. Table 2 below shows those policies which relate to energy efficiency.

Table 2: Planning Policies relating to Energy Efficiency

Core Strategy Policies	Development Policies
CP1 Sustainable Development: - minimise energy consumption; - conserve and enhance the use of scarce; - encourage the use of sustainable resources; - protect and enhance the quality of natural	
CP2 Access: - minimise the need to travel	**DP3 Site accessibility:** - provide sustainable forms of transport to access the site and within the development
CP17 Promoting high quality design: - minimise the use of scarce resources; - adopt sustainable construction principles; - facilitate access through sustainable forms of transport	**DP32 General design:** - provision should be made for walking/cycling; - incorporate sustainable energy uses; - maximise opportunity for passive solar heating; - encourage the use or re-use of sustainable materials
	DP33 Landscaping: - respond to potential implications of climate change; - encourage the use of sustainable construction materials
CP18 Prudent use of natural resources: - minimise impact on natural resources; - minimise energy demand; - improve energy efficiency	**DP34 Sustainable energy:** Developments above 1,000 m sq in size, or 10 or more residential units should: - address sustainable energy issues through accredited assessment schemes; - commercial developments must undergo an energy use assessment; - include energy efficient measures;

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Table 2: continued

Core Strategy Policies	Development Policies
CP18 Prudent use of natural resources: - minimise impact on natural resources; - minimise energy demand; - improve energy efficiency	**DP34 Sustainable energy:** - provide at least 10% of their energy requirements from on-site renewable energy generation or otherwise demonstrate similar energy savings through design measures
CP21 A safe response to natural and other forces: - ensure that communities and the environment are not adversely affected by the actions of natural or other forces	**DP43 Flooding and floodplains:** - support mitigation and relief measures which reduce the risk of flooding

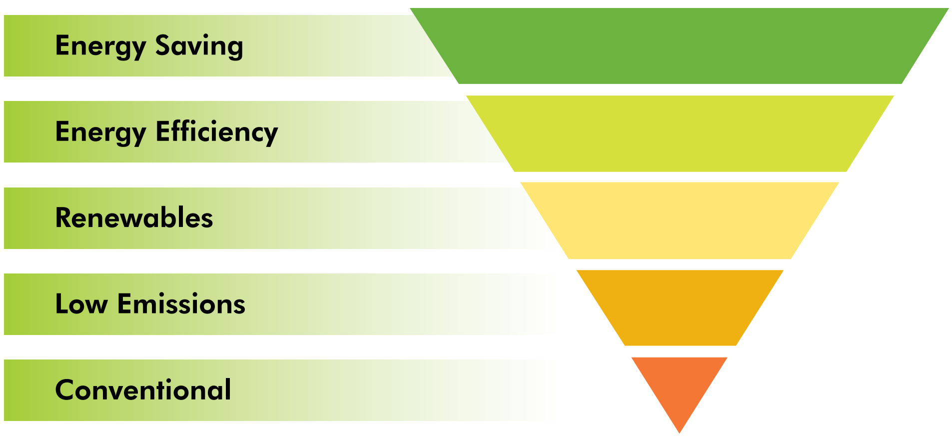
The objectives of the section are to:

- **minimise energy demand and increase energy efficiency**
- **reduce CO_2 emissions from new and existing development in line with the tightening of Building Regulations**

Measures

All developments should conform to the principles of the energy hierarchy, which is to reduce the need for energy, maximise energy efficiency, supply energy from renewable resources and, where fossil fuels are to be used, use as efficiently as possible including the use of carbon capture and storage and/or carbon offsetting.

Figure 1: Energy Hierarchy



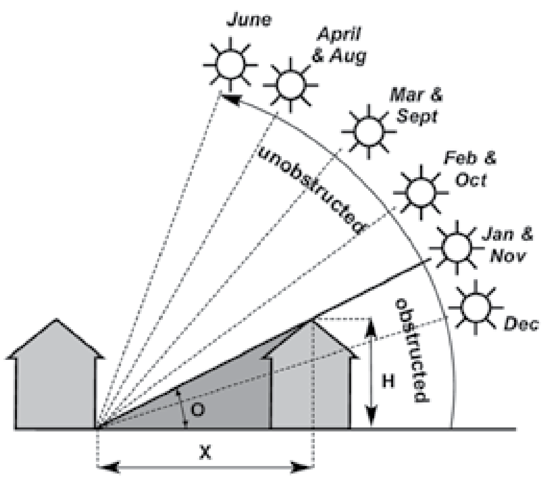
Energy Efficiency

The orientation and layout of development should maximise the potential for passive solar heating, taking account of the implications of solar heat gain. Utilising passive solar heating will have a significant effect on reducing a building's energy demand for space heating.

Passive solar designed buildings exploit the free energy of the Sun, making use not only of the heat in winter for warmth, but also mitigating the effects of heat extremes in summer.

Orientation - developments which are orientated to ensure that the main glazed elevations are between south east and south west are most effective at utilising solar gain. Principle rooms also benefit from being located on this southerly aspect. East-west orientated estate roads are preferable, but it is acknowledged this cannot always be accommodated.

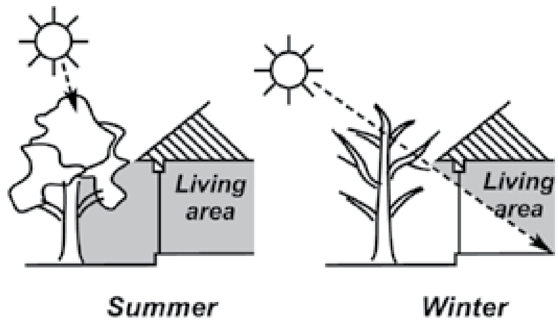
Figure 3

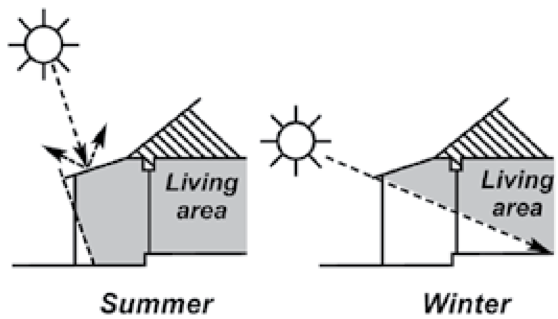


Shading - passive solar designed buildings need to take advantage of the different Sun altitudes that are experienced throughout the year. The Sun has a higher altitude in the summer than the winter.

The use of external shading and the planting of deciduous trees are effective ways of manipulating the Sun's energy throughout the year.

Figure 3



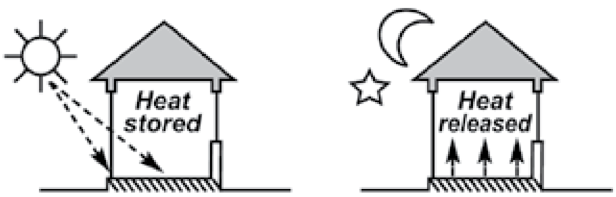


Planting native trees on southerly aspects enables developments to benefit from the shading properties that a green canopy provides in the summer. During the winter months, when the leaves have fallen from the trees, solar radiation can penetrate the branches and warm the building.

External structures that can be used to exploit the different altitudes of the Sun include large overhanging roof eaves or deep window reveals. Care needs to be given to ensure that beneficial daylight is not excluded, as this will lead to an increase in the amount of energy that will be needed to light the building.

Thermal mass - the ability of a building to store heat is determined by the materials used. Thermally massive materials, such as bricks, concrete and stone, are the most appropriate for this purpose. Although the thermal mass of these materials is good, the environmental impact can be high. Locally sourced stone could be used as an alternative to reduce the environmental impact. More information on appropriate materials can be found in the Materials Selection section.

Figure 4



For thermally massive materials to be effective in the storage and regulation of internal heat, they need to be exposed to the solar energy being radiated into the building. Householders need to be aware that a high number of fixtures and fittings, such as carpets, covering thermally massive materials, will negate its positive effects.

One way to utilise thermally massive materials, such as the wall of a house, is to attach a conservatory, greenhouse or atrium to the southern aspect. The greenhouse effect, which traps heat from solar radiation, heats up the wall and transfers heat through to the house.

Another effective way to maximise the thermal mass of a building is in the use of a trombe wall. This consists of a glazed panel attached to the external wall with a small air space between. Solar rays create a greenhouse effect and air vents positioned at the top and bottom of the external wall allow for the circulation and warming of the air. In the evening and on cold days, the air vents can be closed to stop the air flow.

Window design - developers are encouraged to reduce the amount of glazing on the north, east and west elevations in comparison to the southerly elevation. Implementing these measures will ensure heat loss is kept to a minimum. Window type is also important. Most modern windows have low emissivity (low-E) coatings within the double (or triple) glazed units to further reduce heat losses through radiation. Such units can also contain low density gases such as argon, krypton or carbon dioxide.

Air-tightness - ensuring air tightness within a building can contribute to significant energy savings. The benefits of high levels of insulation in the walls, roofs, floors, doors and windows can be greatly reduced if air gaps are left around windows and doors for example. A pressure test (performed on most new build dwellings) can be carried out to ascertain the overall air leakage rate of the building.

Springboard Business Centre

Natural ventilation systems - ventilation is essential to remove moisture from toilets, bathrooms and kitchens, and also to provide combustion air for boilers. It is also needed to remove moisture from beneath suspended ground floors and from loft spaces. Ventilation however can be a source of heat loss, either through extractor fans and windows, or through the fabric of the building itself (infiltration).

Applicants should avoid the use mechanical ventilation systems where possible and instead opt for natural methods. These types of system are more appropriate in commercial buildings, where cool air can be drawn into the building at a low level and allowed, through natural convection currents, to rise through the building.

Where there is no alternative to mechanical ventilation, an attempt should be made to provide the energy required from renewable/low carbon sources. Alternatively (or in addition) the use heat recovery to reduce heat loss is suggested. In a residential unit it may be more efficient to use a mechanical ventilation and heat recovery (MVHR) system instead of natural ventilation (with its associated heat losses).

Green roofs and green walls can provide additional cooling and insulation effects. These methods will be considered in more detail in the section on Biodiversity.

In addition to providing a means of keeping energy demand to a minimum the use of natural light/ sunlight can affect people's health and well-being. Individuals can be especially affected in winter months when a lack of natural light can lead to conditions such as Seasonal Affective Disorder.

Natural light - utilising natural light will reduce the energy demand required for lighting. Where deep building plots are planned applicants could consider the use of internal atriums and tubular skylights to bring daylight into the building.

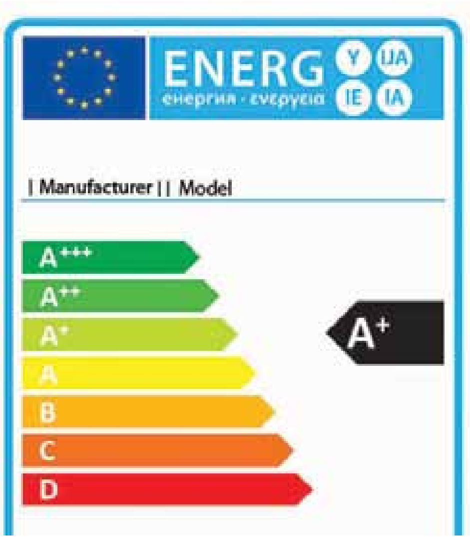
Daylight sensors - connected to high frequency control gear could be used to dim or switch off artificial lighting when daylight reaches a certain level. As well as providing natural lighting which improves an individual's well-being, the use of daylight sensors will reduce energy consumption associated with the operation of artificial lighting.

Policy DP34(ii) requires the incorporation of energy efficiency or renewable energy measures in development. The measures installed must contribute to 10 percent of the developments energy demand. This only applies to major development, which is defined as non-domestic buildings above 1,000m_2 or 10 residential units or more. The following, along with the information on passive solar heating and renewable/low carbon technologies, are possible ways of achieving the requirements of the policy.

Lighting - current Building Regulations require energy efficient light fittings to be installed in the most frequented locations in a building. Applicants therefore have to abide by this requirement. To address the requirements of Policy DP34 with regard to energy efficiency applicants could install energy saving light bulbs in all fittings.

Energy efficient light bulbs

White goods - where a building is to be specified with fixtures and fittings applicants are encouraged to provide energy efficient white goods in their development. Appliances with a high rating on the EU Energy Efficiency Labelling Scheme would be appropriate.



Energy efficiency labelling scheme

Drying space - the inclusion of space, both internal and external, for drying to avoid the energy use associated with the operation of a tumble drier is encouraged.

Care should be given when applying energy efficiency measures to historic buildings and applicants should refer to English Heritage Guidance or contact the Council's Conservation Officer.

Useful Links www.

- PassivHaus provides examples and best practice on integrating passive solar design into developments - available from *www.passivhaus.org.uk* (accessed November 2014)
- The Energy Saving Trust - available from *www.energysavingtrust.org.uk* (accessed November 2014)
- The Carbon Trust: Low Carbon Buildings - available from *www.carbontrust.com/resources/guides/energy-efficiency/low-carbon-buildings-design-and-construction* (accessed November 2014)

Energy Generation

Renewable and Low Carbon Technologies

The term 'renewable and low carbon energy' refers to those forms of energy which are used for heating, cooling or generating electricity. The term has appeared in recent years and is often used synonymously with 'sustainable energy'. It has been borne largely out of an acceptance of our reliance on fossil fuels. Whereas technologies labelled as 'renewable' are generally sustainable, low carbon technologies are unsustainable, as they involve the processing of fossil fuels (which are finite).

With advances in technology however, the carbon dioxide (CO_2) emissions associated with some of the processes used to convert fossil fuels into useable energy, can be reduced and/or eliminated. Several industrial methods now exist, such as carbon sequestration, more commonly known as carbon capture and storage (CCS), where CO_2 emissions are captured and stored or diverted to other processes.

Truly sustainable energy sources are those which occur naturally and are not depleted, for example solar energy. In fact the Sun is the primary energy source for most of the forms of energy we use. Solar panels use the Sun's rays to heat water or generate electricity. Wave power comes from the oceans which are moved by winds which are formed by the heating and cooling of air by the Sun. Plants use sunlight to convert water and carbon dioxide into oxygen and sugars in order to grow; we then burn this biomass to generate heat and electricity.

There are only two forms of energy which do not come from the Sun. The first is tidal energy, the regular movement of the oceans and seas, which comes from the gravitational pull of the Moon. The second is geothermal energy, which comes from the core of the earth, heating up the rocks and aquifers within them. Geothermal energy is now no longer considered a truly renewable energy source, because the heat/water in the rocks can be depleted over several decades and can take several decades to be replenished.

Wind turbines

Nationally Significant Infrastructure Projects (NSIPs)

The Overarching National Policy Statement for Energy (EN-1) and the National Policy Statement for Renewable Energy Infrastructure (EN-3) refer to those types of developments which are to be dealt with as Nationally Significant Infrastructure Projects (NSIPs). With regards to renewable energy developments, The Planning Act 2008, as amended by the Localism Act 2011, states that electricity generating stations generating more than 50 megawatts (MW) are classed as NSIPs.

Given the current energy generating capacity of the various technologies described in this section, the most likely schemes in Hambleton which would fall into this category would be Wind, Solar and possibly Biomass. It is possible that in time, technological advancements could bring other energy generation methods into this category, but at present it is most likely to be limited to those described above.

Table 3: Planning Policies relating to Renewable Energy Generation

Core Strategy Policies	Development Policies
CP1 Sustainable Development: - encourage the use of sustainable resources; - protect and enhance the quality of natural resources	**DP1 Protecting amenity:** - development proposals should protect amenity, including noise and disturbance, pollution (including light), odours and daylight
CP4 Settlement Hierarchy: - support for development which would make provision for renewable energy generation	**DP10 Form and character of settlements:** - protect intrinsic qualities of open areas
CP15 Rural Regeneration: - support given to small scale renewable energy projects	**DP26 Agricultural issues:** - encouraging farm diversification
CP16 Protecting and enhancing natural and manmade assets: - development not supported which has a detrimental impact upon the interests of a natural or man-made asset	**DP28 Conservation:** - protect and enhance natural and man-made assets
	DP29 Archaeology: - support for preservation and enhancement of archaeological remains
	DP30 Protecting the character and appearance of the countryside: - take full account of the nature and distinctive qualities of the local landscape
	DP31 Protecting natural resources - biodiversity/nature conservation: - enhance and increase sites and habitats of nature conservation value
CP17 Promoting high quality design: - respect and enhance the local context and its special qualities; - minimise the use of scarce resources	**DP32 General design:** - incorporate sustainable energy uses
	DP33 Landscaping: - respond to potential implications of climate change
CP18 Prudent use of natural resources: - minimise the use of natural resources; - minimise energy demand; - improve energy efficiency; - promote renewable energy technologies	**DP34 Sustainable energy:** Developments above 1,000 m sq in size, or 10 or more residential units should: - address sustainable energy issues through accredited assessment schemes; - commercial developments must undergo an energy use assessment; - consider incorporating Combined Heat and Power (CHP) schemes; - provide at least 10% of their energy requirements from on-site renewable energy generation or otherwise demonstrates similar energy savings through design measures

Table 3: continued

Core Strategy Policies	Development Policies
CP21 A safe response to natural and other forces: - ensure that communities and the environment are not adversely affected by the actions of natural or other forces	**DP43 Flooding and floodplains:** - support mitigation and relief measures which reduce the risk of flooding

Renewable Energy Technologies appropriate to Hambleton

The following technologies are those which are applicable within Hambleton District:

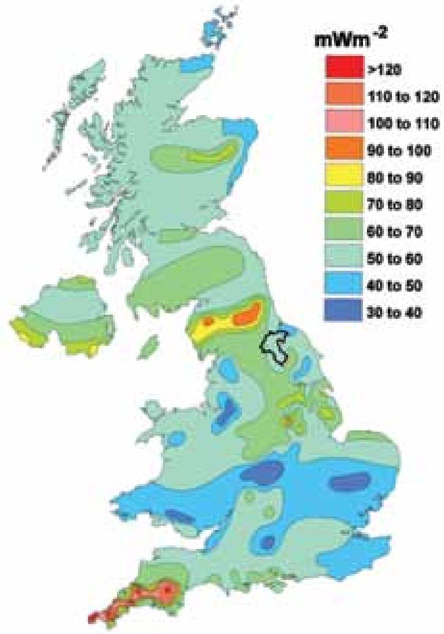
- **Commercial Solar Photovoltaics**
- **Commercial Onshore Wind**
- **Combined Heat and Power**
- **Anaerobic Digestion**
- **Biomass**
- **Hydroelectric**
- **Microgeneration**

Some forms of energy are not applicable to Hambleton District, due to the fact that Hambleton does not have a coastline or an estuary. These forms of energy are wave, tidal and offshore wind. Although it is possible that such developments may have an impact on Hambleton, for example through the transmission of electricity generated through these technologies, such developments can be dealt with through other planning policies. Developments which concern the recovery of energy from waste materials or minerals are generally dealt with by North Yorkshire County Council.

Geothermal Energy

The use of deep geothermal energy is a possibility within Hambleton however the resource in the District is not very great. The Deep Geothermal Review Study (DECC October 2013) shows that Hambleton falls within the range of 40 to 70 mWm^{-2}, that's well below other more resource rich areas of the UK, such as the south west, which has resources well over 100 mWm^{-2} (see Figure 5).

Figure 5: Heat Flow Map of the UK showing Hambleton District (black outline)



It is possible that in the future, as the cost of mining geothermal energy reduces, lower enthalpy areas such as Hambleton may become a more viable proposition. For the purposes for this SPD however it is not envisaged that applications will come forward in the short term and therefore this technology is not covered.

Shale Gas (Fracking)

Much debate and concern has and is being circulated surrounding the issue of Hydraulic Fracturing, also known as Fracking. This is the process whereby a mixture of water and chemicals is injected into the ground at high pressure in order to fracture the shale rock to release gases which are trapped in the lower strata (shale gas). As hydraulic fracturing is a minerals issue, any application relating to shale gas will be dealt with by North Yorkshire County Council Minerals and Waste Team.

Figure 5: Contains Ordnance Survey data © Crown copyright and database right 2014.

Commercial Solar Photovoltaics

Technology overview

Solar photovoltaic panels use the Sun's energy to generate electricity. Sunlight strikes the panel, usually made from a silicone based material, which causes the release of electrons in the form of direct current (DC). The electricity is then converted to alternating current (AC) and is usually fed into the national grid. Commercial solar photovoltaics consist of arrays of usually ground mounted solar panels, sometimes covering many hectares.

The positioning of the panels is important to achieve the maximum amount of solar gain throughout the year. A typical array will have panels mounted between south east and south west (with true south being the optimum) and on an elevation appropriate to its location. Hambleton is approximately 54 degrees north, so at the height of summer, a panel mounted at 54 degrees will receive the optimum amount of solar radiation.

The optimum angle of the panel however will in reality be lower than this as it needs to receive the optimum average solar radiation throughout the year (and also take account of any overshadowing from neighbouring structures/trees etc.). Some systems have adjustable panel angles to optimise efficiency at different times of the year, or even automatically track the Sun throughout the day, vastly increasing each panel's efficiency.

Technical information

The photovoltaic effect was first observed in 1877, with the first solar cell being produced in 1883. Panels are usually made from silicon (Si), however some are made from more exotic materials such as gallium arsenide (GaAs) or cadmium telluride (CdTe). PV panels receive energy in the form of solar radiation (photons) which are negatively charged, and convert this into direct current (DC). An inverter transforms the DC into alternating current (AC) for use in a building or for feeding it into the national grid.

Solar panels

The UK's insolation (received solar radiation) is around 120 W m^2, which is roughly 1,050 kWh m^2 y^{-1}. This of course varies from one part of the UK to another and also daily, seasonally and annually. The annual household electricity requirement is 3,800 kWh y^{-1}. The efficiency of different panels varies, depending on panel composition and location, however on average an array of PV panels covering 24 m^2 would be enough to meet this requirement (based on a system with 15% efficiency). An average house in the UK may be able to accommodate this.

Planning considerations for commercial solar photovoltaics

The National Planning Practice Guidance (NPPG) website provides some guidance to applicants and decision takers for large scale ground mounted solar photovoltaics[1]. The following information is intended to supplement and expand upon this national guidance.

Location: The Government has a preference for the use of rooftops and brownfield sites first, before consideration is given to greenfield sites. The NPPG states that Local Planning Authorities need

[1] NPPG Paragraph: 013 Reference ID: 5-013-20140306, Revision date: 06 03 2014

to consider factors which *'encourage the effective use of land by focussing large scale solar farms on previously developed land and non-agricultural land, provided that it is not of high environmental value'*[ibid].

In a speech by the Minister for Energy and Climate Change to the large scale solar conference in April 2013, he said that *'brownfield land should always be preferred'* and that *'where solar farms are not on brownfield, [one] must be looking at low grade agricultural land which works with farmers to allow grazing in parallel with generation'*[2].

Biodiversity: The NPPG also states that where panels are to be sited on greenfield land, that the land remains in agricultural use and/or encourages biodiversity improvements. The BRE National Solar Centre has produced guidance which gives advice to applicants on issues of biodiversity, including setting up Biodiversity Management Plans. Careful consideration should be had to any grazing proposed on the site, as a higher stocking density will have an adverse effect on biodiversity. Consideration should also be given to the impacts on functionally connected land for birds, which are designated features of Sites of Special Scientific Interest (SSSIs) and Special Protection Areas (SPAs).

Landscape and Visual Impact: Perhaps one of the main planning considerations regarding the siting of solar panels is likely to be landscape and visual impact. Solar panels should be designed and positioned in order to minimise their impact on the landscape. Appropriate screening measures may be required to mitigate any adverse visual impacts, these may be off-site. Special consideration should be given to protecting the special qualities and setting of the North York Moors and Yorkshire Dales National Parks and the Howardian Hills and Nidderdale Areas of Outstanding Natural Beauty (AONBs).

Cumulative impacts relating to any development should be adequately considered. These should include not only other solar installations but other landscape features and other development, such as wind farms. Visual impacts are not just those which are seen from particular static vantage points, but those which occur as one moves through a landscape. Journey scenarios may be required as part of the Landscape and Visual Impact Assessment (LVIA)

Heritage assets: Careful consideration should be given to the impact that commercial solar photovoltaics can have on heritage assets, both designated and non-designated and both above and below ground. Proposals will need to consider the impact of such development on the significance of the heritage asset, including its setting. Where harm to the heritage asset results, the proposal will need to demonstrate substantial public benefits to outweigh that harm in line with the NPPF. The setting of a heritage asset includes not only views of the asset within the landscape, but also views from within the site. Further information can be found in the English Heritage Guide 'The Setting of Heritage Assets' (2011), available from **english-heritage.org.uk**

Archaeology: The location of potential solar farms may adversely impact upon any archaeological remains. The frames which support the arrays could impact upon any remains and an appropriate archaeological assessment may be required.

Other issues: There are other factors which may require consideration in relation to large scale solar developments. Public Rights of Way may be adversely affected and re-routing may be required along with appropriate signage. Reflection and glare from solar farms can be a distraction to motorists, other road users and wildlife. Noise can be an issue if the transformers are located close to any sensitive receptors, such as housing. Flooding may also be an issue, for example a change of use from crop growing to a solar farm with accompanying sheep grazing could have an effect on the surface run-off from a site.

continued overleaf...

[2] Department of Energy & Climate Change (25 April 2013) Gregory Barker speech to the Larger Scale Solar Conference, https://www.gov.uk/government/speeches/gregory-barker-speech-to-the-large-scale-solar-conference

Information required at planning application stage:

- description of proposal including grid connection and ancillary works
- scheme plans, including location plan, site plan, photomontages, contour drawings, elevations and floor plans
- details of the scheme's power rating and expected efficiency/capacity factor
- landscaping provisions including screening
- Design and Access Statement
- Landscape and Visual Impact Assessment (LVIA)
- hydrological assessment
- acoustic assessment
- details of vehicular access and movements
- site management measures for the construction phase
- assessment of agricultural land quality
- assessment of glint and glare
- an assessment of any heritage impacts including archaeology (if appropriate)
- Ecological Impact Assessment
- Environmental Impact Assessment (if screening has determined that one is required)

Useful Links www.

- Department of Energy & Climate Change (October 2013) *'UK Solar PV Strategy Part 1: Roadmap to a Brighter Future'*
- Department of Energy & Climate Change (April 2014) *'UK Solar PV Strategy Part 2: Delivering a Brighter Future'*
- BRE *'Planning guidance for the development of large scale ground mounted solar PV systems'*
- BRE (2014) *'Biodiversity Guidance for Solar Developments'*. Eds G E Parker and L Greene.

Commercial Onshore Wind

Technology overview

Commercial onshore wind developments are arguably the most contentious of the large scale renewable technologies. The most common type of wind turbine is the tri-blade horizontal axis wind turbine (HAWT). The rotating blades drive a generator which produces electricity. Modern turbines operate at speeds of between 4.5 meters per second (10 mph) and 25 metres per second (55 mph). Commercial wind turbines have a rated capacity of between 1MW and 3MW.

Technical information

Other types of wind turbine exist, such as vertical axis wind turbines (VAWT), but the tri-blade horizontal configuration is the most efficient for this scale. The angle which the blade makes with the direction of the wind is called the angle of attack. Wind turbine blades are aerofoil shaped, and the respective drag and lift coefficients vary with the angle of attack. A yawning mechanism automatically realigns the nacelle in response to wind changes so that the angle of attack remains optimised and peak power output is maintained.

Wind turbines have a peak power rating, however a more useful measurement is the capacity factor. This is a measure of the actual power produced expressed as a percentage (as opposed to the theoretical maximum). Most commercial large scale wind turbines have a capacity factor of up to 30%. The lifetime of a wind farm is around 25 years and the development is easily decommissioned. Above ground structures are removed, upper sections of foundations re-covered with topsoil and cables are usually cut below ground and left in place. They are generally considered less environmentally harmful than other forms of energy generation.

Planning considerations for commercial onshore wind

Location: Many factors will determine the location of a wind farm, the most obvious of which will be the wind speed. Initial interrogation of the national wind speed database should help narrow down the area of search. Other factors include proximity to a grid connection, proximity to a port (likely if components are sourced from abroad), site access, site designations and proximity to residential properties. A clear list of alternative sites should also be considered.

Environmental Impact Assessment (EIA): For commercial wind developments consisting of three or more turbines or where the hub height of any turbine exceeds 15 metres, an EIA screening opinion will need to be sought from the Local Planning Authority (LPA). If an EIA is required, the applicant will need to request a Scoping Opinion from the LPA to determine what needs to be covered in the EIA. A well written EIA (including community engagement) will ensure that proposals address any potential issues and mitigate appropriately, resulting in a net gain to the natural capital of the area.

Wind turbines

Landscape and visual impact: A full Landscape and Visual Impact Assessment (LVIA) will need to be conducted and will form part of the EIA (if one is required). The assessment should identify what impact the proposed wind farm will have on the landscape character and visual amenity of the wider area, as well as any heritage assets and landscape features. The scope of the assessment should be informed by Natural England and, depending on the wind farm's location, the North York Moors National Park Authority and/or Yorkshire Dales National Park Authority. Special consideration should be given to protecting the special qualities and setting of the North York Moors and Yorkshire Dales National Parks and the Howardian Hills and Nidderdale Areas of Outstanding Natural Beauty (AONBs).

Cumulative impact: The NPPG provides advice on assessing the cumulative impact of wind farm developments; however regard should also be had to the cumulative impact of other developments, not just other wind farms, for example solar farms. Cumulative landscape impacts and cumulative visual impacts should be considered separately. In addition to static viewpoints, consideration should also be had to journey scenarios, which take account of the sequential effect of developments when moving through a landscape.

Heritage assets: Careful consideration should be given to the impact that the siting of wind turbines can have on heritage assets, both designated and non-designated, and above and below ground. Proposals will need to consider the impact of such development on the significance of the heritage asset, particularly its setting. Where harm to the setting of the heritage asset results, the proposal will need to demonstrate substantial public benefits to outweigh that harm in line with the NPPF. The setting of a heritage asset includes not only views of the asset within the landscape but also views from within the site. Further information can be found in the English Heritage Guide 'The Setting of Heritage Assets' (2011), available from **english-heritage.org.uk**

Hydrology and hydrogeology: An assessment will need to be made of the potential impact the development could have on things such as sedimentation and erosion, flow impediment, increased surface run-off, chemical pollution and pollution migration. A Pollution Prevention Plan (PPP) may be required and appropriate mitigation measures put in place (such as chemical bunding throughout construction/decommissioning).

Noise: Noise (including low frequency noise) can be emitted through construction, operation and decommissioning. UK guidance on construction is contained within BS 5228 Part 1 and operational noise standards are to be found within Government guidance ETSU-R-97 'The Assessment and Rating of Noise from Wind Farms'.

Ecology/ornithology: Wind farms can affect wildlife in different ways and an Ecological Impact Assessment (EcIA) may need to be carried out in accordance with the Institute of Ecology and Environmental Management (IEEM) guidelines (or as part of an EIA). Careful consideration should be given to the removal or instatement of hedgerows and hedgerow trees. Migratory bird movements and bat flight lines should also be considered. Some species are afforded greater protection than others, for example great crested newt surveys may be required as part of the EcIA. Mitigation measures can and should lead to an overall net gain in the natural capital of the area.

Aviation: Windfarms have the potential to interfere with aviation activities, with some schemes having being refused on these grounds alone. Early dialogue with the Civil Aviation Authority, National Air Traffic Service, Ministry of Defence and other aviation stakeholders is essential to minimise objections at a later stage. The Local Planning Authority can provide the latest aerodrome safeguarding area maps to help identify any potential aviation receptors.

Other considerations: Account should also be had of other considerations for example shadow flicker, separation distances, electro-magnetic interference, ice throw and micrositing.

For a more comprehensive list of planning considerations for commercial onshore wind see the relevant section in the National Planning Practice Guidance (NPPG).

Information required at planning application stage:

- description of proposal including grid connection and ancillary works
- scheme plans, including location plan, site plan, photomontages, contour drawings, elevations and floor plans
- details of the scheme's power rating and expected efficiency/capacity factor
- landscaping provisions including screening
- Design and Access Statement
- details of vehicular access and movements
- Landscape and Visual Impact Assessment (LVIA)
- site management measures for the construction phase (including details of an Ecological Clerk of Works)
- an assessment of any heritage impacts including archaeology (if appropriate)
- acoustic assessment
- ecological Impact Assessment
- Environmental Statement (where local authority screening has determined an EIA is required)
- pre-application local community consultation (for schemes classed as EIA development)

Useful Links www.

- National Planning Practice Guidance (NPPG) Paragraph: 014 Reference ID: 5-014-20140306 to Paragraph: 031 Reference ID: 5-031-20140410, Revision date: 06 03 2014
- Department of Energy & Climate Change (January 2013) *'Onshore wind: part of the UK's energy mix' https://www.gov.uk/onshore-wind-part-of-the-uks-energy-mix*
- House of Commons Library SN/SC/4370 (May 2014) *'Planning for onshore wind farms'*
- Campaign to Protect Rural England (August 2012) *'Policy Guidance Note: Onshore wind turbines'*

Combined Heat and Power

Technology overview

Combined Heat and Power (CHP) systems produce heat and electricity in a single process. There are many different kinds of CHP systems. Some can be linked to district heating networks, whereas others may be used to power a single building (for residential applications see the section on Microgeneration). Where a building has identified cooling demands, a Trigeneration CHP unit can be installed, providing heat, electricity and cooling.

CHP units are best located where there are large heat and power users (anchor loads), such as schools, hospitals, hotels and leisure centres. This way the losses through transmission are minimised and the overall efficiency of the system is maximised. For example the Friarage Hospital in Northallerton has a CHP unit providing heat and electricity to the hospital, as do some of the leisure centres in the District.

Technical information

Roughly one third of the delivered energy in the UK is used for space heating and hot water. In traditional power stations (such as coal and gas), efficiencies range from 35% to 55%, with the rest lost as waste heat. CHP systems offer the benefit of using this waste heat, in addition to generating electricity, to vastly improve the efficiency of the system. When located close to heat users, the systems are at their most efficient, as losses through transmission are greatly reduced.

Heat mapping provides a useful method of identifying areas of high heat demand (anchor loads), so that appropriately sited CHP systems can be planned for. Anchor loads are generally located in urban areas. CHP systems with district heating are ideal for incorporating into new housing or commercial developments (ideally a combination of both). Individual users have a hydraulic interface unit which extracts heat from the district network for use as space or water heating. These systems can be metered similar to conventional utility supplies.

Planning considerations for combined heat and power

Visual impact: CHP systems generally require a building to house the generator, boiler and auxiliary equipment and often have a flue or chimney to expel exhaust gases. Because they need to be located close to the heat demand, they have the potential to cause visual impact on the local area. If the CHP unit is not to be located within one of the buildings which it is to serve, then careful design and siting may be required, perhaps utilising other existing buildings or providing appropriate screening.

Heritage assets: Careful consideration should be given to the impact that CHP systems can have on heritage assets, both designated and non-designated and both above and below ground. Proposals will need to consider the impact of such development on the significance of the heritage asset, particularly in the siting of flues and boilers both internally and externally. It may be possible to mitigate any impact and this can be discussed with the Council's Conservation Officer. Where harm to the heritage asset results, the proposal will need to demonstrate substantial public benefits to outweigh that harm in line with the NPPF.

Noise: As the type of CHP systems vary, so do the types of noises associated with them, both continuous noise and intermittent noise. There will be noise associated with the primary equipment such as the generator and boiler, as well as noise from the exhaust system and other ancillary equipment. There may also be noise associated with the delivery of feedstocks and the loading of biomass hoppers.

Pollution: Depending on the type of CHP system proposed, consideration may need to be given to any combustion products and their dispersal. Gas fired systems may only require an appropriately sited flue, but systems with other feedstocks (e.g. coal) may require a chimney of an appropriate construction, dependent upon the nature of the exhaust gases, their temperature and velocity. Abatement plant may also be required if emissions are likely to be high. Any appliance rated 20MW to 50MW will require an environmental permit from the Local Authority as required by the Environmental Permitting (England and Wales) Regulations 2010 (as amended). Any appliance rated more than 50MW will require an environmental permit from the Environment Agency and will be dealt with as a NSIP. Consideration should also be given to the impact on air quality sensitive habitats, such as Sites of Special Scientific Interest (SSSIs) and Natura 2000 Sites.

Wastes: Depending on the feedstock, there may be wastes associated with the operation of CHP systems. CHP systems incorporating anaerobic digestion (AD) use bio-wastes as a feedstock and also produce digestate. This nutrient rich by-product can usually be used as a fertiliser, however its use is heavily regulated and is determined by the exact nature of the feedstock used in the AD facility.

Fly ash: (mostly produced from coal combustion) is the particulate matter which is expelled from the system via the flue gases. It is normally removed using scrubbers, which vary in their composition according to the specific exhaust gases emitted. The material can often be sold to the building trade and used as an aggregate component. Bottom ash is the material left over after combustion and can be used for soil enrichment or as a construction material (depending on its content).

Fuel type: The fuel sources for CHP units are varied, ranging from coal fired industrial CHP plants to gas fired mini CHP systems. Other fuels for CHP systems can include biomass, solar thermal, geothermal, municipal solid waste and heat pumps.

Information required at planning application stage:

- description of proposal including grid connection and ancillary works
- scheme plans, including location plan, site plan, photomontages, elevations and floor plans
- details of the scheme's power rating and expected efficiency/capacity factor
- landscaping provisions including screening
- a completed Biomass Boiler Information Request form if applicable (available from Environmental Health)
- an assessment of potential emissions and wastes
- acoustic assessment
- odour assessment (if using anaerobic digestion)
- Design and Access Statement
- details of vehicular access and movements
- site management measures for the construction phase
- Policy DP34 requires applicants of commercial developments over 1,000 m^2 to consider the feasibility of incorporating Combined Heat and Power (CHP) schemes.

Useful Links www.

- Environmental Protection UK (June 2009) *'Biomass and Air Quality Guidance for Local Authorities'*
- The Combined Heat and Power Association website *www.chpa.co.uk*
- Department of Energy & Climate Change (January 2013) *'Combined heat and power'* *https://www.gov.uk/combined-heat-and-power*

Anaerobic Digestion

Technology overview

Anaerobic Digestion (AD) is the process whereby organic matter is broken down by micro-organisms in the absence of air. The products of this process are digestate and biogas. Anaerobic digesters can vary in size from small household units of a metre cubed, to industrial installations thousands of cubic metres in volume. The biogas produced is composed mainly of methane and carbon dioxide, in an approximate 60/40 ratio.

Technical information

Feedstock is fed into a digester either on a continuous basis (providing a continuously even yield) or in batches (providing a varying yield). The whole unit is sealed and bacteria break down the feedstock into sugars, which break down further into various acids and then gases (biogas). The composition of the bacterial flora varies according to the feedstock. The resultant matter is called digestate, which can be used as a soil improver and fertiliser.

The biogas produced contains methane (CH_4) and carbon dioxide (CO_2) with small amounts of hydrogen sulphide (H_2S). Biogas can be burned in order to drive a turbine to generate heat and electricity, making the AD facility a Combined Heat and Power (CHP) system. The CO_2 and H_2S can also be removed from the biogas, enabling the methane to be exported to the gas grid.

Planning considerations for anaerobic digestion

Location: It is preferable to locate AD plants as close to the feedstock source as possible as it is usually bulky. Transportation of farm slurry and other wastes can pose a hazard to the environment. Heat produced by an AD plant is more efficiently utilised if the heat users are closer to the AD plant.

Anaerobic Digester

Landscape and Visual impact: AD facilities have the potential to be visually intrusive on the landscape. Their design and siting however can help to minimise this impact, for example by locating them within or near to existing buildings or providing appropriate screening. AD facilities at sewage plants can blend in well amongst the existing equipment.

Heritage assets: Careful consideration should be given to the impact that AD facilities can have on heritage assets, both designated and non-designated and both above and below ground. Proposals will need to consider the impact of such development on the significance of the heritage asset, particularly in the siting of digesters or flare stacks both internally and externally. It may be possible to mitigate any impact and this can be discussed with the Council's Conservation Officer. Where harm to the heritage asset results, the proposal will need to demonstrate substantial public benefits to outweigh that harm in line with the NPPF.

Feedstock: Most kinds of biomass can be used as a feedstock, such as energy crops, manures, silage, plant residues and slurries. Manures and slurries generated on site along with any purpose grown crops are generally not classed as wastes, whereas all other feedstocks are. If the feedstock is classed as waste then the planning application will need to be dealt with by North Yorkshire County Council.

Air Quality: AD facilities have the potential to create odours, the impact of which is unlikely to be of concern on an existing farm or in a sewage treatment plant setting. AD facilities located closer to more sensitive receptors, such as residential properties, Sites of Special Scientific Interest (SSSIs) and Natura 2000 Sites, will need to ensure that appropriate measures are in place to mitigate any odours. It may be necessary to cover any digestate tanks or slurry lagoons.

Grid connectivity: If the facility intends to export gas or electricity to the grid then an appropriate connection will be required locally. Biogas will need to be treated to remove impurities before it can be exported to the gas grid, therefore appropriate additional plant machinery will be required.

Digestate: The composition of digestate varies according the type of feedstock used in the AD plant. In general digestate can be used for soil enrichment and as a fertiliser, however some digestate may need to be treated before it can be returned to the soil.

Information required at planning application stage:

- description of proposal including grid connection (where applicable) and any ancillary works
- scheme plans, including location plan, site plan, elevations and floor plans
- details of the scheme's power rating and any expected efficiency/capacity factor
- details of proposed feedstocks and any environmental permits required
- landscaping provisions including screening
- Design and Access Statement
- odour assessment (where appropriate)
- acoustic assessment (where appropriate)
- details of vehicular access and movements
- site management measures for the construction phase
- an assessment of any heritage impacts (if appropriate)

Useful Links www.

- Department of Energy & Climate Change (June 2011) *'Anaerobic Digestion Strategy and Action Plan'*
- AD Anaerobic Digestion website, The Official Information Portal on Anaerobic Digestion *http://www.biogas-info.co.uk/*
- Defra (March 2010) 'Accelerating the Uptake of Anaerobic Digestion in England: an Implementation Plan'

Biomass

Technology overview

Biomass in the context of renewable and low carbon energy refers to fuel which is derived from either purpose grown crops or from wastes. It can be used directly through combustion or converted into biogas or biodiesel. A wide variety of materials can be used for biomass applications, including agricultural wastes such as straw and crop residues, crops grown specifically for energy production such as miscanthus, willow, oil seed rape and also wastes from food production and municipal solid waste.

A range of applications exist for the use of biomass as a fuel. It can be burned in stoves for general room heating, or in boilers of varying sizes, ranging from individual houses to district heating schemes. Biomass boilers can also be used to generate electricity through Combined Heat and Power (CHP) systems and can also be used in the process of Anaerobic Digestion, whereby the biomass is broken down by organisms in a sealed unit to produce biogas.

Technical information

Biomass boilers perform more efficiently if they are used continuously. Biomass systems typically consist of a boiler, a fuel store and a means to feed fuel from the store into the boiler. Biomass boilers can be very sensitive to the moisture content of the feedstock, so the fuel supply often needs to be certified. Some larger systems may need to comply with the Industrial Emissions Directive, such as those associated with co-firing. This may affect the type of fuel the plant can use.

For most residential installations of biomass stoves or boilers, Planning Permission would not be required as it is deemed permitted development[3]. However Planning Permission may still be required if new buildings or flues will form part of the installation. For commercial applications for systems over 300 kilowatts thermal (kW_t), or 50 kilowatts electric (kW_e) if CHP, then Planning Permission will be required. This section relates to those systems which would require Planning Permission. Any appliance rated 20MW to 50MW will require an environmental permit from the Local Authority as required by the Environmental Permitting (England and Wales) Regulations 2010 (as amended). Any appliance rated more than 50MW will require an environmental permit from the Environment Agency and will be dealt with as a NSIP.

Planning considerations biomass

Location: Biomass installations are best situated close to the consumers of the energy produced and the sources of feedstock. If the biomass is burned in a Combined Heat and Power unit, close proximity to a grid connection may be required. The use of existing buildings is preferred so as to minimise any visual impact. Consideration should be had regarding access to the plant for fuel deliveries and disposal of wastes.

Landscape and visual impact: Where new buildings are proposed, an appropriate palate of materials should be used. A Landscape and Visual Impact Assessment (LVIA) may be required depending on the nature of the proposals. If the development area exceeds 0.5 hectares then an EIA screening opinion will need to be sought from the Local Planning Authority. If an EIA is required then the LVIA will form part of it.

Pollution: The burning of biomass fuels can create polluting gases and particles such as oxides of nitrogen (NO_x), sulphur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), Polycyclic Aromatic Hydrocarbons (PAHs) and carbon monoxide (CO), as well as carbon dioxide and water vapour. Emissions vary and depend on three main aspects: system design, the chemical and physical properties of the fuel and any abatement fitted to the system.

Emissions of NO_x and SO_2 can be controlled by choosing the correct fuel and, in larger systems, abatement technology can be used, whereas good combustion management can help control emissions of CO, PAHs and particulate matter.

Careful consideration should be given to the introduction of a biomass boiler as it may be installed with the intention of reducing CO_2, but at a local level other pollutants such as NO_x or SO_2 may increase, however this depends largely on the existing fuel being displaced. If the system is being used to replace coal or oil heating then emissions of

[3] For more information on permitted development see the Planning Portal at: *http://www.planningportal.gov.uk/permission/responsibilities/planningpermission/permitted*

NO_x and SO_2 may be lower, however in towns and villages where mains gas is available then the introduction of biomass burning may increase NO_x and SO_2 which could make local air pollution worse.

Some biomass systems are exempt (under the Clean Air Act 1993), however this depends on the fuel used, with any deviation of approved fuel resulting in a potential revocation of exemption. Always check with the Local Authority beforehand. The location of boilers in areas where pollution levels are already high could result in exceedances of UK air quality objectives. The cumulative impact of biomass boilers should also be considered for this reason.

Fuel: The availability and type of fuel is a key consideration in the siting of biomass systems. The moisture content can be of critical importance to more advanced types of boiler. The type of fuel also determines the amount of space required for fuel storage, for example pelleted fuel takes up less space than logs or wood chip.

Transport: The delivery of fuel and removal of wastes, as well as general maintenance all requires transport to and from the site. The number of fuel deliveries can be reduced depending on the design of the system. Some boilers have an automatic feed hopper which can supply fuel to the boiler for several weeks, thereby reducing the amount of transportation required.

Noise: Different biomass systems have the potential to emit noise of differing degrees. There will be continuous noise associated with daily running of the primary equipment. There will also be intermittent noise associated with the delivery of feedstocks. Consideration should be had to receptor proximity and traffic movement times. If there is potential to cause significant noise then a full acoustic assessment should be submitted to the Local Authority.

Heritage assets: Careful consideration should be given to the impact that Biomass systems may have on heritage assets, both designated and undesignated, as well as their settings. Proposals will need to consider the impact of such development on the significance of the heritage asset, particularly in the siting of new buildings, flues and boilers. It may be possible to mitigate any impact and this can be discussed with the Council's Conservation Officer. Where harm to the heritage asset results, the proposal will need to demonstrate substantial public benefits to outweigh that harm in line with the NPPF.

Information required at planning application stage:

- a completed Biomass Boiler Information Request form (available from the Environmental Health Department of the Local Authority)
- description of proposal including any grid connection and ancillary works
- scheme plans, including location plan, site plan, photomontages, elevations and floor plans
- landscaping provisions including screening
- Design and Access Statement
- Environmental Permit (if appropriate)
- acoustic assessment
- details of vehicular access and movements
- site management measures for the construction phase
- an assessment of any heritage impacts (if appropriate)

Useful Links www.

- Environmental Protection UK (June 2009) *'Biomass and Air Quality Guidance for Local Authorities'*
- Department of Energy & Climate Change (April 2012) *'UK Bioenergy Strategy'*
- BIOMASS Energy Centre website, *http://www.biomassenergycentre.org.uk/*
- Carbon Trust website, *'Biomass heating tools and guidance' http://www.carbontrust.com/resources/guides/renewable-energy-technologies/biomass-heating-tools-and-guidance*
- The Clean Air Act 1993, *http://www.legislation.gov.uk/ukpga/1993/11/contents*

Hydroelectric

Technology overview

Hydroelectric energy generation refers to any number of technologies which derive energy from the movement of water (with the exception of tidal energy and wave energy). Typically, water passes through a turbine which then produces electricity. This could be from a run-of-river system or from water stored in a reservoir. As there are no reservoirs within the Hambleton Plan Area[4] (the part of the District outside of the North York Moors National Park), this section refers only to run-of-river systems.

Technical information

The most common hydroelectric application likely to be seen in Hambleton is the Archimedean Screw. These are used in what are called run-of-river (or diversion) schemes, whereby some water is diverted (abstracted) from the river, passed through the turbine and back to the river again. They typically range from 1m to 3m in diameter and can produce power in the range of 5kW to 500kW, though usually around 100kW. Typically a 'head' of water is created (such as a weir or lock) where water enters the helical screw and the downward flow causes the screw to rotate, driving a generator. They can operate with a head height of between 1m and 8m.

Planning considerations for hydroelectric

Landscape and visual impact: Hydro schemes are by their very nature location specific, however careful siting, design and layout can help to lessen any negative landscape impacts. Schemes could be sited at weirs, locks or farms where their impact may be less severe than in the open landscape. All or part of the development could be located within woodland, or its effects lessened by providing appropriate screening. Consideration should be given to protecting the special qualities and setting of the Yorkshire Dales and North York Moors National Parks and the Howardian Hills and Nidderdale Areas of Outstanding Natural Beauty.

Archimeden Screws

Environmental Impact Assessment (EIA): Hydro schemes have the potential to require an Environmental Impact Assessment. Under Schedule 2 Part 3(h) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (EIA Regs), the installation of schemes for hydroelectric energy production of more than 500kW will require environmental screening. Schedule 3 of the EIA Regs provides a list of selection criteria for screening.

Ecology: Run-of-river schemes have the potential to disrupt local ecosystems, both aquatic and terrestrial, and any such effects should be picked up (especially in the EIA screening). Consideration should be had to any alterations to sedimentation, water quality, water flow, impacts on migrating birds and fish and other aquatic life (for example a fish pass may need to be installed). Every effort should be made to enhance the natural capital of the area. It may be appropriate to appoint an Ecological Clerk of Works to oversee construction and to ensure that any mitigation measures identified (e.g. in the EIA) are implemented. Special consideration should also be given to Sites of Special Scientific Interest (SSSIs) and Natura 2000 Sites.

[4] with the exception of Oulston reservoir near Yearsley

Heritage assets: Hydro schemes are often situated in areas where there are heritage assets, such as bridges, old mills, weirs or locks. Schemes should be carefully designed to minimise the impact on these areas, such as by housing machinery in existing buildings and ensuring any pipes and cabling are buried to minimise visual impact. There may be further works required to ensure historic structures are structurally sound prior to the commencement of development.

Consideration should also be given to the impact of hydro schemes on the setting of heritage assets, both designated and non-designated. Where harm to the setting of the heritage asset results, the proposal will need to demonstrate substantial public benefits to outweigh that harm in line with the NPPF. The setting of a heritage asset includes not only views of the asset within the landscape but also views from within the site. Further information can be found in the English Heritage Guide 'The Setting of Heritage Assets' (2011), available from **english-heritage.org.uk**

Flooding: Hydro schemes have the potential to increase the possibility of flooding. This could be during the construction phase or through the river's reduced ability to accommodate flood water after construction. A full hydrology assessment and flood risk assessment should help inform appropriate design and delivery.

Noise: The operation of a hydro scheme will generate noise, however only residents in close proximity to the scheme are likely to be affected. Construction noise can be mitigated by applying planning conditions on construction times or installing sound insulation measures to affected properties.

Recreation: The interests of river users need to be taken into consideration when designing hydro schemes. Recreational pursuits such as fishing and boating can be affected (both positively and negatively) through the construction and use of hydro schemes, such as through changes in fish movements or through weir construction.

Socio-economics: Hydro schemes have the potential to deliver economic benefits to an area, such as job creation through construction, improved leisure facilities such as boating and fishing, or from the electricity generated. Likewise schemes can have negative impacts to these industries, so consultation with river users at an early stage is advisable.

Information required at planning application stage:

- description of proposal including grid connection and ancillary works
- scheme plans, including location plan, site plan, photomontages, elevations and floor plans
- details of the scheme's power rating and expected efficiency/capacity factor
- landscaping provisions including screening
- flood risk assessment and hydrological assessment
- Design and Access Statement
- details of vehicular access and movements
- provisions for fish passes
- acoustic assessment
- site management measures for the construction phase (including an Ecological Clerk or Works if appropriate)
- Environmental Statement (where local authority screening has determined an EIA is required)
- the applicant will need to seek the relevant permits from the Environment Agency e.g. for abstraction

Useful Links www.

- Environment Agency (2013) *'Guidance for run-of-river hydropower development'*
- Department of Energy & Climate Change (January 2013) *'Harnessing hydroelectric power', https://www.gov.uk/harnessing-hydroelectric-power*

Microgeneration

The Energy Act 2004 as amended by the Green Energy (Definition and Promotion) Act 2009 defines microgeneration as that which generates electricity up to 50 kW_e or heat up to 300 kW_t. Several technologies exist at this scale however the most common ones are solar panels, heat pumps, wind turbines, biomass and micro-CHP. Any development which exceeds 50 kW_e or 300 kW_t will require Planning Permission.

Permitted Development

For many microgeneration technologies Planning Permission is not typically required, as it is deemed permitted development. Applicants should refer however to The Town and Country Planning (General Permitted Development) (England) Order 1995, (as amended) to see what exceptions there are. Information can be found on the Planning Portal website at **planningportal.gov.uk**[5]. Alternatively the Council can advise potential applicants if Planning Permission is required.

In certain areas within the District, permitted development rights have been removed for certain types of development. These areas are known as Article 4 Direction areas, details of which can be found at **hambleton.gov.uk/article4**. Also if a proposed development results in an alteration or extension to a Listed Building, then Listed Building Consent will be required. For more information contact the Council's Conservation Officer on **01607 779977**.

Active solar technology: This relates to the direct conversion of the Sun's energy into heat or electricity. The most common forms of this technology are solar panels. There are many different kinds of solar panel but they are generally divided into two types, those which convert sunlight into electricity (solar PV), and those which use the Sun to heat water (solar thermal).

As with Commercial Solar Photovoltaics, the positioning of the panels is important to achieve the maximum amount of solar gain throughout the year for the given location. For most microgeneration applications however, both residential and non-residential, this will typically be dictated by the pitch of the roof on to which they are to be mounted.

Solar Thermal: the essence behind this method is for sunlight to strike the surface of a roof mounted panel to warm it up. The panel usually has a black back plate with a glazed cover to maximise heat absorption. Water passes through the panel via a network of pipes, thus raising its temperature. The heated water then passes to a tank with an immersion heater, which raises the temperature further. For domestic installations this will usually be 60°C.

Other panels are available which, rather than using a network of pipes to transfer water through the system, instead have a number of evacuated glass tubes in series, containing a liquid which boils at a lower temperature than water. The heat energy is transferred from the ends of the tubes to the water system, which then circulates to an immersion heater as above.

Solar thermal systems are usually appropriate to applications which require year round heating of water, such as domestic installations. Used in conjunction with solar photovoltaic panels they can provide an effective means of meeting a building's energy demands.

Solar Photovoltaics: These operate in the same way as Commercial Solar Photovoltaics but on a smaller scale. The electricity generated is converted into alternating current (AC) and used to meet the electricity needs of the building. Any surplus is usually exported to the national grid. Some systems however incorporate fuel cells/batteries which store the energy for times when the panels are not generating a sufficient amount.

[5] For more information on permitted development see the Planning Portal at: *http://www.planningportal.gov.uk/permission/responsibilities/planningpermission/permitted*

Unlike solar thermal panels, solar PV panels do not need direct sunlight to operate, because they convert light into energy, rather than the Sun's heat. Because of this they can in fact be mounted on flat surfaces or even vertical walls.

Heat Pumps: These utilise thermal energy contained within the ground, air or water. The energy derived from these systems is upgraded to a higher temperature which can then be used within buildings. In Air Source Heat Pumps (ASHPs) and Water Source Heat Pumps (WSHPs) either air or water is passed over a heat exchanger within the heat pump, which cools the air/water and extracts the useable heat. ASHPs should comply with Microgeneration Certification Scheme (MCS) standards to ensure that specified noise levels are not exceeded.

Ground Source Heat Pumps (GSHPs) are slightly different as they rely on a collection system to extract heat from the ground. Collector pipes are buried either horizontally or vertically in the ground and water or a refrigerant is circulated through them. A heat exchanger, again within the heat pump, then cools the liquid and extracts the useful heat for use in the building.

The most efficient use of heat pumps is in space heating, where heat absorbed is transferred to pipes in the floor, wall or ceiling of the building. An alternative use of heat pumps is in the heating of water, although this is considered less efficient than space heating. Some heat pumps can be used in reverse during the summer months to provide space cooling.

Small Scale Wind: Small scale wind turbines have the potential to provide for the electricity needs of a building. They can be less effective in built up areas and are perhaps more appropriate to locations with a more open aspect, such as on the edge of settlements, industrial estates or farms and farmsteads. Turbines are typically no more than 15 metres in height.

Planning considerations for small scale wind are similar to those of commercial wind, such as visual impact, noise, shadow flicker etc. However because small scale turbines have faster rotating blades than commercial ones, the potential for noise disturbance can be greater, especially if there are many more receptors close by. For this reason vertical axis wind turbines (VAWT) may be preferable. They are generally quieter than their horizontal axis counterparts and are also less susceptible to localised turbulence, making them more suitable in areas where there are more obstructions to wind flow. As with ASHPs, small scale wind istallations should meet MCS standards.

Biomass: A range of different appliances exist for the burning of biomass for domestic use. They generally however fall into two categories, stoves and boilers. Stoves which burn logs are generally for space heating, however some have back boilers for heating water and others are capable of burning multiple fuels. Biomass boilers on the other hand, as well as burning traditional fuels like stoves do, can burn wood pellets or wood chips. Pellet boilers often have automatic hopper-fed fuel systems and can respond quickly to heat demands. Wood chip boilers are less efficient and are more susceptible to the moisture content of the fuel.

Micro-CHP: Like the process described in the Combined Heat and Power section earlier, Micro-CHP refers to the generation of heat and power from the burning of a fuel. Micro-CHP however refers to those installations designed for individual households. Several different systems exist, the most common being gas fired boilers which, using a small Stirling engine, generate electricity in addition to heating water. These systems look like conventional gas boilers and any unused electricity which is generated can be exported to the national grid.

continued overleaf...

Planning considerations for microgeneration

As stated above, most installations of microgeneration technologies are classed as permitted development and therefore do not require Planning Permission, however there are a number of conditions which must be complied with. To establish whether the proposed works require an application to be made please contact the Planning office at the Council or look at **planningportal.gov.uk** for further information.

Useful Links www.

- Department of Energy & Climate Change (June 2011) *'Microgeneration Strategy'*
- For micro-CHP see the Energy Saving Trust website *energysavingtrust.org.uk*
- The Town and Country Planning (General Permitted Development) (England) Order 1995, as amended

Water and Drainage

Water Resources

Water resources are plentiful within the region, but as the effects of climate change become more pronounced this may change. Wetter winters could place stress on the ability of the current drainage system to cope with rapid run-off and drier summers could increase the probability of droughts. As a result all development will need to reassess how it uses this valuable resource.

Over the period 2014 to 2026 it is proposed that 4,490 new dwellings will be built in the District[6], placing increased demand on existing water resources. Table 4 below sets out those LDF policies relating to water resources.

Table 4: Planning Policies relating to Energy Efficiency

Core Strategy Policies	Development Policies
CP1 Sustainable Development: - conservation of scarce resources and reduction of their use; - quality of natural resources including water	**DP2 Securing developer contributions:** - conditions will be sought for water supply improvements where necessary
CP17 Promoting high quality design: - minimise the use of scarce resources	**DP32 General design:** - minimise water use including the use of grey-water recycling
CP18 Prudent use of natural resources: - minimise impact on natural resources	

The objective of this section is to minimise water consumption and ensure the efficient use of this resource.

Water Saving Devices

Policy DP32 states that development should seek to minimise water use. The following devices could be installed to achieve this.

Low flush toilets - a large proportion of a building's water use is utilised for toilet flushing. Reductions in water demand for toilet flushing can be achieved through the installation of low flush units. All new toilets are required to have a maximum flush volume of six litres. The Council encourages the installation of dual flush systems which have flush volumes in the region of 2 to 4 litres.

continued overleaf...

[6] Hambleton District Council (October 2014) Strategic Housing Land Availability Assessment

Waterless urinals - In buildings that have high occupancy rates, for example offices, schools and hospitals, the use of waterless urinals is encouraged. A saving of 6 to 10 litres per flush can be achieved through the installation of these devices. Hygiene and odour problems have been known to occur as a result of waterless urinals, therefore it is important to have an appropriate maintenance regime in place.

Taps - a cost effective way of reducing water use is through the installation of spray/low flow taps, self-closing or infrared controlled taps and flow restrictors.

White goods - where buildings are to be sold fully specified, the use of water efficient white goods is encouraged. Washing machines and dishwashers with low water use and economy options are examples of this.

Bathing - showers, with the exception of power showers, use less water than is needed for a bath. The installation of showers therefore is encouraged in addition to the installation of baths, providing people with choice. The installation of low flow showerheads and aerated sprays will lead to further water efficiencies from showers.

High water consuming systems - e.g. those used in swimming pools can be fitted with water saving devices. These include water recirculation, recycling and water recovery systems.

Alternative Water Sources

Policy DP32 specifically requires applicants to consider the use of grey water recycling techniques to reduce the use of potable water. This should be in addition to the use of rainwater harvesting. The following outlines the ways applicants could address these requirements.

Rainwater harvesting - This process involves capturing non-potable water at source and substituting it for mains water in applications such as:

- **toilet flushing**
- **car washing**
- **garden irrigation**
- **garden ponds**

Provided there is sufficient treatment to remove contaminants, harvested rainwater could be connected to the domestic supply to supplement the potable water supply.

Rainwater harvesting

Greywater systems - this involves filtering and disinfecting water that has already been used, for example in showers and baths. Water is passed through a system where solids are broken down and purification occurs. The water can then be used for non-potable uses such as those mentioned above. At no point should greywater be used for drinking, washing, cooking and food production.

Landscaping and Gardens

A requirement of a number of policies at the local level is the provision of open space and gardens within developments. Any landscaped or garden area needs to be designed to minimise the use of potable water. Applicants could achieve this through the following measures.

Limit hard landscaping - e.g. large areas of paving, to ensure that regular cleaning is avoided. Porous materials are encouraged where there is no alternative to hard landscaping.

Dry and low water gardens - can ensure that water use is kept to a minimum by selecting plants that are drought tolerant and native to the location. The use of water retaining mulches will reduce the frequency of watering.

Watering - large areas of landscaping/gardens can be installed with drip irrigation systems. Water butts connected to downpipes to ensure rainwater is collected and used in the garden could be used in residential developments.

Protecting Water Quality

SuDS can be used to maintain good water quality but they do not encompass the entire suite of measures that can be incorporated into developments to protect water resources. Applicants could consider implementing the following measures to protect water sources from pollution:

- **oil separators**
- **clear marking of drainage systems**
- **bunding of oil storage tanks and chemical storage areas**
- **designated areas for fuel delivery and cleaning activities e.g. car washing**

It is important that applicants refer to the Water Framework Directive to ensure that future development is in line with its aims and objectives. Applicants should also refer to the Humber River Basin Management Plan for local information on individual water body status and relevant mitigation measures that the local authority and developers should consider implementing.

Surface Water Run-Off

Large expanses of hard surfaces within developments can lead to increased problems associated with flash flooding. As the effects of climate change become more apparent traditional drainage methods may no longer be able to cope with the increased volume of run-off that is predicted through extreme storm events. Increased volumes of run-off have also been exacerbated by the prevalence of hard standing and the loss of gardens/open space.

Development sites through the Allocations DPD have generally been designated away from flood risk areas and therefore location issues are not covered within this section. Table 5 below sets out those LDF policies relating to surface water run-off.

continued overleaf...

Table 5: Planning Policies relating to Surface Water Run-Off

Core Strategy Policies	Development Policies
CP1 Sustainable Development: - quality of natural resources including water; - promote the natural drainage of surface water	**DP2 Securing developer contributions:** - flood protection measures and sustainable drainage systems; - habitat creation such as ponds, wetlands or wildlife corridors
CP16 Protecting and enhancing natural and man-made assets: - improve and enhance natural assets	**DP31 Protecting natural resources - biodiversity/nature conservation:** - increase in the number of sites and habitats of nature conservation value
CP17 Promoting high quality design: - optimise the potential of the site	**DP32 General design:** - include Sustainable Drainage Systems (SUDS) where possible - maximise opportunities for habitat enhancement, creation and management
	DP33 Landscaping: - provide sustainable design solutions including the use of Sustainable Drainage Systems (SUDS) - respond to the potential implications of climate change
CP21 A safe response to natural and other forces: - ensure protection from flooding	**DP43 Flooding and floodplains:** - mitigation and relief measures will be supported which reduce the risk of flooding

The objective of this section is to ensure that run-off rates from new development are no greater than those on the site prior to development.

Measures

To prevent rapid run-off from large expanses of hard surfaces applicants should consider the use of Sustainable Drainage Systems (SuDS). The primary aim of SuDS is to prevent flooding and pollution. As outlined above a number of LDF Policies proactively encourage the use of SuDS to alleviate flooding and climate change.

Prevention

Prior to SuDS implementation an attempt to minimise the potential of rapid run-off from a site is advised. A number of measures centred on effective design, maintenance and education can achieve this and the following outlines possible measures.

Minimising paved areas - large areas of paved surfaces can lead to rapid run-off and pollutant transfer to the drainage system. Minimisation of large areas of tarmac is encouraged. Permeable surfaces are recommended for parking areas and paving.

Directly connected areas - large areas of paving are discouraged as this prevents water returning to the natural drainage system.

Maintenance - site management plans could be implemented to ensure that run-off is controlled in an effective manner. Other measures that could be implemented to control and manage run-off are downpipe filters, silt traps and petrol separators.

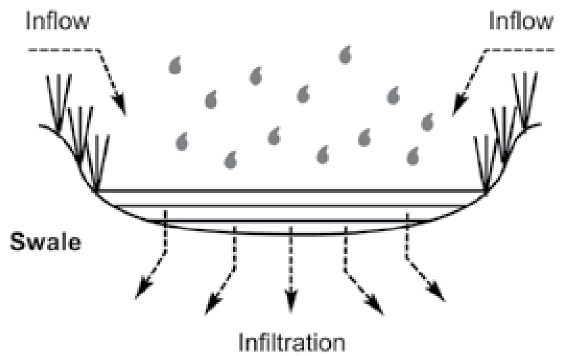
Sustainable Drainage Systems (SuDS)

A number of structures can be used to create SuDS to ensure that flooding and pollution are effectively controlled. Developments of 10 dwellings or more or equivalent non-residential or mixed development must ensure that SuDS are put in place for the management of run-off, unless demonstrated to be inappropriate[7].

Applicants are encouraged to integrate them into the design of their development and where they are, to develop site management plans to ensure run-off is controlled in an effective manner. The following outlines possible approaches for SuDS.

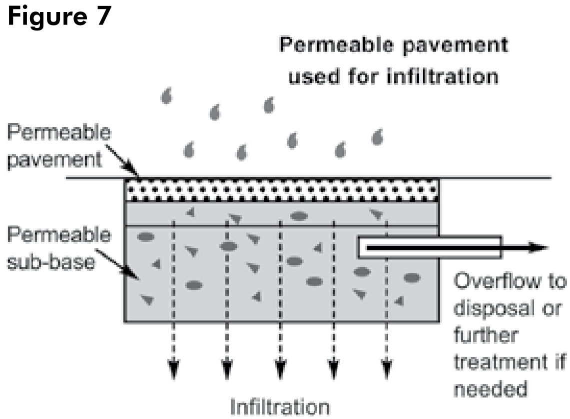
Filter strips and swales - could be utilised as a method for the temporary storage of storm water and the reduction in peak flows to receiving waters. Swales are long shallow channels and filter strips are gently sloping areas of ground that are used to drain water evenly from impermeable areas. Both structures are effective in removing polluting solids through filtration and sedimentation.

Figure 6



Permeable surfaces and filter drains - all paved or hard standing areas could be made from permeable materials to ensure that water infiltrates directly into the subsoil. An alternative is the construction of filter drains which enable water to be stored in an underground reservoir (e.g. crushed stone layer) before being released to receiving waters at a later point in time.

Figure 7



[7] House of Commons: Written Statement (HCWS161) 18 Dec 2014

Soakaways, infiltration trenches, and basins - are reservoirs for the temporary storage of water. Soakaways and infiltration trenches are underground structures, while infiltration basins are above ground and empty in dry periods. By temporarily diverting run-off to these storage areas, water is gradually allowed to infiltrate into the soil. The North Yorkshire Building Control Partnership can conduct soakaway tests to determine feasibility.

It should be noted that, whilst helping to prevent flooding and being beneficial in terms of groundwater recharge, some of the different types of surface water infiltration installations highlighted above can be a cause of groundwater pollution. Some of the measures may be inappropriate in groundwater sensitive areas such as source protection zones, due to having a negative impact on groundwater quality.

Ponds and wetlands - can be utilised in a similar way to infiltration basins, in that they provide areas for the storage of water. These structures are larger than other SuDS methods and are usually fed by swales, filter drains or piped systems. Ponds and wetlands contain water at all times.

All measures outlined in this section can have beneficial effects on biodiversity.

Figure 8

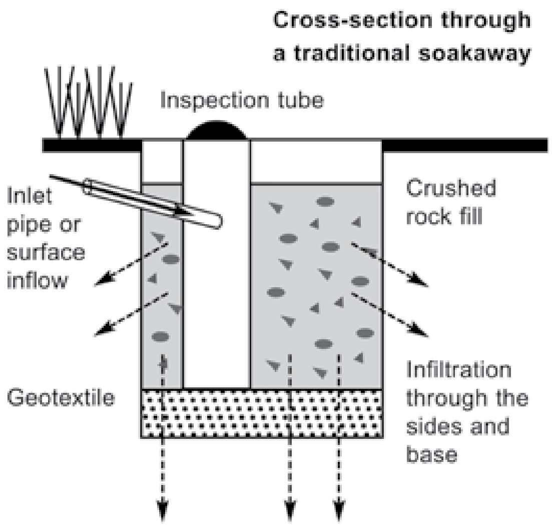
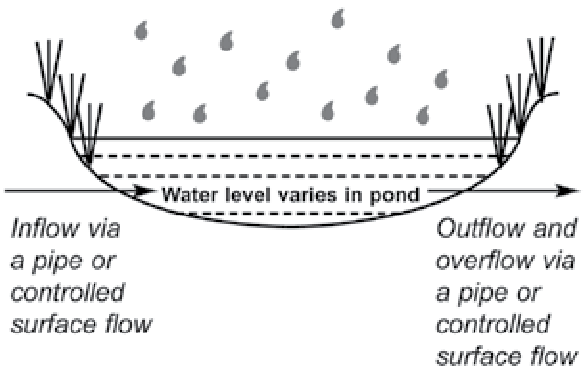


Figure 9



Useful Links www.

- The SuDS Manual - available from *www.ciria.org/Resources/Free_publications/the_suds_manual.aspx (accessed November 2014)*
- North Yorkshire Building Control Partnership, *www.nybcp.org* (accessed November 2014)
- Living Roofs.org, *www.livingroofs.org* (accessed November 2014)
- Humber River Basin Management Plan - available from *https://www.gov.uk/government/publications/river-basin-management-plan-humber-district* (accessed February 2015)
- Catchment Abstraction Management Strategies available from *https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process#yourkshire-map-area-3* (accessed February 2015)

Materials Selection

Significant quantities of energy and resources are utilised in the production, use and disposal of building materials in the UK. The associated impact can be high and can contribute to a number of environmental problems, such as climate change and pollution. Table 6 below sets out those LDF policies relating to materials selection.

The objective of this section is to ensure construction materials have as low an environmental impact as possible and are responsibly sourced.

Table 6: Planning Policies relating to Materials Selection

Core Strategy Policies	Development Policies
CP1 Sustainable Development: - conservation of scarce resources and a reduction in their use; - encourage the use of sustainable resources **CP2 Access:** - utilise local sourcing of materials and local supply chains	
CP16 Protecting and enhancing natural and man-made assets: - preservation and enhancement of man-made assets	**DP28 Conservation:** - preserve or enhance all aspects that contribute to the character and appearance of the historis environment; - consideration of materials in relation to historic heritage **DP30 Protecting the character and appearance of the countryside:** - take full account of the nature and distinctive qualities of the local landscape
CP17 Promoting high quality design: - minimise the use of scarce resources; - adopt sustainable construction principles	**DP32 General design:** - respect local character and distinctiveness; - contribute positively to the townscape or surrounding buildings; - minimise waste production; - encourage the use or re-use of sustainable materials **DP33 Landscaping:** - encourage the use of sustainable construction materials; - contributes to character, appearance and sense of place
CP18 Prudent use of natural resources: - minimise the impact on natural resources; - maximise the use of renewable resources; - maximise the re-use and recycling of waste materials	**DP36 Waste:** - use materials efficiently; - provide on-site recycling; - seek to re-use building construction and demolition waste

Measures

There are two fundamental aspects that applicants should consider which will increase the sustainability of their development. They are the environmental impact and responsible sourcing of materials.

Applicants should bear in mind the potentially conflicting guidance on maintaining the character of settlements and the surrounding countryside (Policy DP28, DP30 and DP33) and the need to be sustainable in material selection (DP32 and DP36). A balance should be found between the two aspects in buildings.

Measures

Policy DP32 specifically encourages the use of sustainable materials in the construction of developments. Those materials that have a low environmental impact are inherently more sustainable and should be given higher consideration by applicants.

Material lifecycle - applicants should select materials that have as low an environmental impact as possible. Impacts should be considered across the whole lifecycle of a material, requiring consideration of a number of factors, including:

- Energy used
- Resources consumed
- Waste generated
- Biodiversity impacts
- Recycling potential
- Emissions generated

Applicants should refer to the Building Research Establishment (BRE) Green Guide to Specification for more detailed information on the lifecycle impact of specific materials.

Pollutants - the use of materials that are damaging to the environment or detrimental to internal air quality should be avoided. For example volatile organic compounds found in synthetic materials, furnishings and chemical products are known to contribute to respiratory problems and therefore materials/goods containing these compounds should not be specified.

Sustainable timber - as a result of the need for buildings to be more sustainable, the use of timber will increase. Where possible the applicant should seek to use timber which is from sustainable sources (e.g. Forestry Stewardship Council approved or other certification schemes). Defra's Central Point of Expertise in Timber (CPET) offers online advice on the procurement of timber from sustainable sources.

Sustainable timber

Responsible Sourcing of Materials

Policy DP36 requires the efficient use of materials, including their re-use and recycling. Sourcing materials responsibly will enable applicants to meet the requirements of this policy as by definition this should achieve efficiencies. Policy DP32 reinforces the need to re-use materials.

Minimise waste - only those materials needed for the development should be specified and purchased. This will ensure that waste is kept to a minimum.

Demolition - where demolition is needed applicants should demonstrate they have given consideration to maximising the re-use and recycling of demolition material. Disposal should be used as a last resort where the applicant has demonstrated this to be the only viable option.

Recycling and re-use - applicants should consider maximising the use of recycled and re-used materials to ensure the use of new resources is kept to a minimum. Optimisation of recycled and re-used material at the design stage should be considered to enable cost savings. Applicants should also consider specifying materials according to their recycling and re-use potential at the end of a building's life, e.g. materials to be avoided are composites as they are very hard to recycle.

Location and design - in conservation areas, article 4 direction areas and on listed buildings, applicants will be required to specify materials according to a development's context and setting, e.g. built heritage and landscape. In addition, consideration should be given to selecting materials that support sustainable development design principles, such as passive solar design and green roofs.

Local materials - applicants are encouraged to attempt wherever possible to source materials locally to ensure transportation is kept to a minimum. It is also appropriate for any tools and equipment to be procured from local sources.

Importing topsoil for landscaping is discouraged and consideration should be given to the use of locally sourced waste aggregates to create a variety of floral diversity. Waste aggregates can be incorporated with soil already on site to create areas that are free draining and low in fertility. The different habitats provide ideal conditions for different types of flora to colonise.

Useful Links www.

- BRE Environmental Profiles, *www.bre.co.uk/envprofiles* (accessed November 2014)
- Central Point of Expertise on Timber (CPET), *www.gov.uk/government/groups/central-point-of-expertise-on-timber* (accessed November 2014)
- Forest Stewardship Council, *http://www.fsc-uk.org* (accessed November 2014)

Biodiversity

Each site that comes forward for development will have some form of biodiversity and the applicant should endeavour to retain this interest regardless of how small it may be. The Council approach is for developments to enhance and where possible create areas of nature conservation value. Development will not be granted where the proposal will have a detrimental effect on a designated site, be it nationally or locally designated. The creation of natural spaces within developments can have beneficial effects on the health and well-being of people.

Hambleton District Council with partnership organisations has developed a Biodiversity Action Plan (BAP) for the District. The BAP sets out how those UK BAP priority habitats and species will be protected. Also set out are the measures to protect those habitats and species that are rare to the district. There are 14 priority habitats and 26 priority species that occur within Hambleton. Table 7 sets out those LDF policies relating to biodiversity.

Green Roof at Momentum Business Centre

Table 7: Planning Policies relating to Biodiversity

Core Strategy Policies	Development Policies
CP1 Sustainable Development: - protect and enhance the natural environment; - protect the quality of natural resources, including biodiversity	**DP2 Securing developer contributions:** Contributions will be sought for: - habitat creation such as ponds, wetlands or wildlife corridors
CP16 Protecting and enhancing natural and man-made assets: - preserve and enhance natural assets	**DP30 Protecting the character and appearance of the countryside:** - take full account of the nature and distinctive qualities of the local landscape
	DP31 Protecting natural resources - biodiversity/nature conservation: - enhance and increase sites and habitats of nature conservation value
CP17 Promoting high quality design: - respect and enhance the local landscape	**DP32 General design:** - retain existing important species and habitats; - maximise opportunities for habitat enhancement, creation and management
	DP33 Landscaping: - create a visually pleasant, sustainable and biodiversity-rich environment

The objective of this section is to retain, enhance and create areas of biodiversity interest within new development.

Measures

The following are possible measures for applicants to pursue to comply with the requirements of Council policies on biodiversity.

Green Infrastructure

A requirement of Policy DP31 is for developments to enhance and create areas of biodiversity interest. Every effort should be made by the applicant to connect into the existing network of green spaces. Providing additional green space enables species to move freely through the landscape. The creation of buffer zones, stepping stones and green corridors will facilitate this movement more effectively and ensure isolated communities do not arise. The following guidance outlines those measures that could achieve this.

Existing vegetation - applicants are encouraged to retain existing valuable vegetation wherever possible and integrate it into the landscaping scheme of the site. Vegetation prior to development will have adapted to the soil, water and microclimatic conditions of the site. The existing vegetation is a good starting point to inform the selection of additional planting regimes.

Where a development is in close proximity to those species outlined within the Hambleton BAP, the applicant is encouraged to give consideration to the replication of the landscape or vegetation that has allowed the animal and plant species to thrive.

Gardens - residential developments should incorporate space within the site for gardens. Gardens are significant for the continuation of green networks especially within urban and semi-urban environments. To effectively continue the network of green spaces, gardens could be designed taking into account local habitats. For example hedgerows, long and short grass and habitats which replicate woodland fringes.

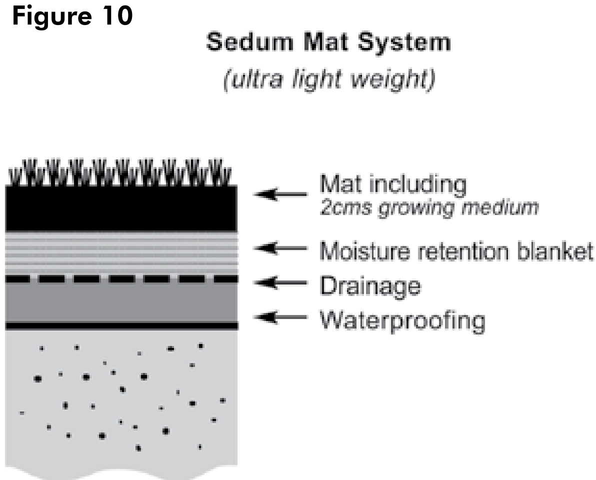
A number of measures can be integrated into gardens that have the dual role of increasing green spaces and greening built developments. These measures include living fences, pergolas, arbours, window boxes and nesting/roosting structures for swifts and bats.

Greening Built Development

Applicants should ensure that consideration of biodiversity does not stop at providing habitats within areas that do not contain built structures. The built environment has a key part to play in encouraging biodiversity and extending the network of green spaces. Built environments should not preclude biodiversity and are encouraged to incorporate this requirement at an early design stage.

Green roofs - could be utilised by applicants as a method for creating areas of biodiversity interest. In most circumstances roofs are featureless expanses, but this need not be the case. Green roofs are becoming more popular and can be used for a wide variety of buildings ranging from offices to garden sheds. Brown roofs can also be implemented in areas where brownfield land has been found to have biodiversity interest.

Figure 10



As well as providing an additional resource for biodiversity, green roofs have the benefit of helping cool the rooms below in hot weather and provide insulation in winter. Localised flooding can be alleviated through the use of green roofs as water is retained by the vegetation before evaporation/ transpiration. Damage to roofs is also mitigated through their use.

A wide variety of plants can be used for green roofs, ranging from grasses and sedums to shrubs and trees. Plant selection will be determined by the type of green roof specified. Extensive or shallow green roofs are most common as they require a small amount of growing medium and as a consequence 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 - similar in concept to green roofs yet instead of taking up horizontal space they take up vertical space. If space is at a premium on the development site green walls could be integrated into the design as a way of incorporating the requirement for enhancement and creation of biodiversity. Most commonly green walls utilise climbing plants such as ivy, Russian vine and Virginia creeper, but slower growing plants such as honeysuckle and wisteria can be used as an attractive façade.

High-tensile steel cables should be used to provide support for climbing plants and can, as a result, aid growth. The applicant should show caution in using green walls when dealing with structures that have cavities and crumbling mortar where roots can take hold and expand.

Green walls are most effective when they are located on south and west walls to ensure that they provide a high amount of solar shading, although in Hambleton it may be more beneficial to plan on north walls. The opposite effect occurs in winter, if evergreen climbers have been used, as the air between the wall and plant insulates the building.

Applicants should be aware of maintenance costs associated with green roofs and walls.

Useful Links www.

- CIRIA Building Greener, *www.ciria.com/buildinggreener* (accessed November 2014)
- Hambleton Biodiversity Action Plan, *www.hambleton.gov.uk/planning-policy/local-development-framework-ldf/714-hambleton-biodiversity-action-plan* (accessed November 2014)

Waste

A large proportion of waste is produced during the construction and operation of buildings, therefore regard needs to be given on how to manage this waste effectively. Consideration needs to be given to waste at all stages of development, from design and construction through to demolition.

The measures outlined in this and other sections attempt to achieve the principles of the waste hierarchy - which seeks first to promote the reduction of waste, followed by its re-uses, then recycling and composting, followed by energy recovery, before finally accepting its disposal as a last resort. Table 8 below sets out those LDF policies relating to waste.

Table 8: Planning Policies relating to Waste

Core Strategy Policies	Development Policies
CP1 Sustainable Development: - encourage the use of sustainable resources	**DP2 Securing developer contributions:** Contributions will be sought for: - waste recycling facilites
CP17 Promoting high quality design: - adopt sustainable construction principles; - minimise the use of scarce resources	**DP32 General design:** - minimise waste production: - provide opportunities for recycling; - encourage the use or re-use of sustainable materials
CP18 Prudent use of natural resources: - maximise the re-use and recycling of waste; - minimise the environmental consequences of waste production	**DP36 Waste:** - minimise waste; - deliver the priorties of the waste hierarchy; - provide for recycling facilities and recycling collection points; - provide on-site recycling; - re-use building construction and demolition waste

The objective of the section is to increase the amount of waste re-used and recycled at all stages of a buildings lifecycle.

Measures

The following outline ways in which applicants could attempt to reduce waste in their developments, as advocated by Policy DP36. There is considerable overlap with the section on materials. Measures apply to both the construction and operational phases of a development.

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Waste storage and recycling facilities - applicants could include specific areas within new residential developments for recycling facilities e.g. integration of recycling bins into the fabric of the building. Facilities could be for individual buildings or shared between buildings. Commercial developments, such as new employment development, could include areas for the collection and storage of bulk materials for recycling.

Re-use and recycling - of waste materials is covered within the section on Materials Selection.

Composting - provision for composting areas in residential developments is encouraged. This will ensure a large proportion of organic waste is diverted from landfill along with a reduction in the greenhouse gas methane. As with recycling facilities, composting areas are recommended to be incorporated into the fabric of the building.

Site waste management plans - should be used by applicants to effectively manage waste from a development during its construction phase. Developments costing over £300,000 are required to have site waste management plans in place under regulations from Defra.

Applicants should be aware that Hambleton District Council operates a kerbside recycling scheme once every two weeks. The link below sets out what sort of materials are collected.

Organic Composting

Useful Links www.

- BRE Smartwaste, *www.smartwaste.co.uk* (accessed November 2014)
- Turn your waste into a new non-waste product or material, *www.gov.uk/turn-your-waste-into-a-new-non-waste-product-or-material* (accessed November 2014)
- Hambleton kerbside recycling, *www.hambleton.gov.uk/recycling/791-kerbside-recycling-box-a-bag-scheme* (accessed November 2014)

Implementation

The SPD is structured to provide guidance and supporting information on those policies which deal with sustainable development in the LDF. This section sets out how developers are to demonstrate they are conforming to LDF policies.

Policy DP34(i) requires developers to show they have addressed sustainable energy issues by referencing an accredited assessment scheme. This only applies to major development, which is defined as non-domestic buildings above 1,000m^2 or 10 dwellings or more.

Non-domestic developments are required to meet at least a "very good" rating under the Building Research Establishments Environmental Assessment Method (BREEAM). Applicants are required to submit the BREEAM Pre-Assessment Report with their planning application. Planning conditions will only be discharged on presentation of the independent assessors' BREEAM certificate documenting a "very good" rating or better rating.

The Policy requirement for dwellings is to achieve a "very good" rating under the EcoHomes rating system. EcoHomes was replaced by the Code for Sustainable Homes in 2007. The equivalent of "very good" under the Code is Level 3. The current building regulations however incorporate the Level 3 standard. Therefore all new dwellings conforming to building regulations should achieve the Policy requirement.

Policy DP34(ii) requires developers to incorporate energy efficiency or renewable energy measures. The measures installed must contribute to 10 percent of the development's energy requirements. This only applies to major development, as defined above, however the use of renewable energy technologies is encouraged for all developments where appropriate.

The Council requires the following information to be submitted with planning applications for developments of 10 or more residential units:

- Aggregate figure for the anticipated energy consumption in kWh per annum for the entire development. The Council requires two figures to be submitted - 1. development built to current Building Regulations, and 2. incorporating energy efficiency and renewable energy measures. Standard Assessment Procedure (SAP) certificates are a source of kWh per annum data.
- SAP certificates for each dwelling type as built to current Building Regulations.
- Re-assessed SAP certificates for each dwelling type incorporating energy efficiency and renewable energy measures.
- Drawings/costings to demonstrate how energy efficiency and renewable energy measures have been achieved through changes in design/specification.
- An explanatory statement setting out how the required energy savings have been achieved across the site.

A similar set of information is required to be submitted for applications for developments over 1,000m^2:

- Aggregate figure for the anticipated energy consumption in kWh per annum for the entire development. The Council requires two figures to be submitted - 1. development built to current Building Regulations, and 2. incorporating energy efficiency and renewable energy measures. The Simplified Building Energy Model (SBEM) is a source of kWh per annum data.

continued overleaf...

- SBEM Main Calculation Output Document for the building as built to current Building Regulations.
- Re-assessed SBEM Main Calculation Output Document for the building incorporating energy efficiency and renewable energy measures.
- Drawings/costings to demonstrate how energy efficiency and renewable energy measures have been achieved through changes in design/specification
- An explanatory statement setting out how the required energy savings have been achieved across the site.

In recognition of the role Combined Heat and Power (CHP) can play in improving energy efficiency the Council requires commercial developments, over the major development threshold, to consider the feasibility of incorporating CHP schemes. The feasibility study should be submitted along with the planning application.

An explanatory statement is required setting out how the requirements of Policy DP32(xii) have been integrated into development. All planning applications should be accompanied by this statement.

Contacts

Should you require any further assistance or clarification regarding sustainable development please contact either the Development Management or Planning Policy Sections detailed below.

If your query relates to a specific planning application your first contact should be with the Development Management Officer who is dealing with the application or proposal on their direct line telephone number.

Hambleton District Council
Civic Centre, Stone Cross, Northallerton
DL6 2UU

tel: 01609 779977
fax: 01609 737248
email: Development Management - planning@hambleton.gov.uk
email: Planning Policy - planning.policy@hambleton.gov.uk

Minerals and Waste Planning Team
North Yorkshire County Council, County Hall, Northallerton
DL7 8AH

tel: 01609 534527
email: mwjointplan@northyorks.gov.uk

North Yorkshire Building Control Partnership
Suite 2, Coxwold House, Easingwold Business Park, Easingwold, York
YO61 3FB

tel: 01347 822703
email: enquiries@nybcp.org

Acronyms and Glossary

AC	Alternating Current
AD	Anaerobic Digestion
Anchor Load	A large heat/electricity user e.g. hospital, school, hotel or leisure centre
AONB	Area of Outstanding Natural Beauty
ASHP	Air Source Heat Pump
CCS	Carbon Capture and Storage
CdTe	Cadmium Telluride
CH_4	Methane
CHP	Combined Heat and Power
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CP	Core Policy
DC	Direct Current
DECC	Department of Energy & Climate Change
Digestate	Organic material resulting from the breakdown of biomass anaerobically
DP	Development Policy
EclA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
Enthalpy	relates to the amount of heat and pressure within a system
GaAs	Gallium Arsenide
GSHP	Ground Source Heat Pump
H_2S	Hydrogen Sulphide
HAWT	Horizontal Axis Wind Turbine
IEEM	Institute of Ecology and Environmental Management
Insolation	Received solar radiation
kW	kilowatt

kW_e	kilowatts of electricity
$kWh\ m^2\ y^{-1}$	kilowatt hours per square metre per year
$kWh\ y^{-1}$	kilowatt hours per year
kW_t	kilowatts of heat (thermal)
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
MW	Megawatt
mWm^{-2}	Heat flow in milliwatts (thousandth of a watt) per square metre
Nacelle	The part of the wind turbine containing the gearing mechanism
Natural Capital	The stock of natural resources
NPPG	National Planning Practice Guidance
NO_x	Oxides of Nitrogen
NSIP	Nationally Significant Infrastructure Project
PAH	Polycyclic Aromatic Hydrocarbon
Photovoltaic	The effect of converting sunlight into free electrons
PM_x	Particulate Matter
PV	Photovoltaic
Si	Silicon
SO_2	Sulphur Dioxide
SPA	Special Protection Area
SPD	Supplementary Planning Document
SSSI	Site of Special Scientific Interest
VAWT	Vertical Axis Wind Turbine
Wm^2	Watts per metre squared
WSHP	Water Source Heat Pump

Notes

Further information...

If you have any planning policy comments or questions you would like to ask **Planning Policy** please email **planning.policy@hambleton.gov.uk**.

You can call Customer Services on 01609 779977
to speak to a customer adviser and you can write to us:
Hambleton District Council - Planning Policy
Civic Centre, Stone Cross, Northallerton, North Yorkshire DL6 2UU

This information is available in alternative formats and languages

HAMBLETON
DISTRICT COUNCIL

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