RUGBY BOROUGH COUNCIL
CLIMATE CHANGE & SUSTAINABLE DESIGN AND CONSTRUCTION

SUPPLEMENTARY PLANNING DOCUMENT
FEBRUARY 2023

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1 INTRODUCTION

PURPOSE OF THIS SUPPLEMENTARY PLANNING DOCUMENT

1.1 Rugby Borough Council is committed to tackling climate change. In July 2019 the Council declared a 'Climate Emergency' as a pledge to take local action to contribute to national carbon neutrality targets. Climate change is a major, global issue and Rugby Borough must take steps to reduce its causes and make plans to respond to its effects at the local level.

1.2 Following the declaration of a climate emergency, the Council, through a cross party member working group, began the development of a climate change strategy with a view to achieving its ambitious goal of achieving a net zero Council by 2030 and a net zero Borough by 2050. The strategy sets out 7 themes that will be addressed to reach this objective.

- **Workplaces and Economy** – Day to day operation of businesses and industry make a significant contribution to greenhouse gases. Opportunities exist to adopt sustainability principles and reduce emissions in workplaces to reduce this impact.

- **Transport** – Recent figures confirm that transport accounts for 25% of all carbon emissions in Rugby Borough. Additionally, transport related air pollution is associated with a number of adverse health impacts. Public transport, active travel and zero emissions vehicles will contribute to reducing these emissions.

- **Waste, Resources and the Circular Economy** – Decomposition from biodegradable waste at landfill sites contributes to greenhouse gas emissions. Reducing the amount of waste going to landfills and moving to a circular economy which re-uses resources and adopts low carbon and efficient systems will help combat this. Products and materials should be kept in use for as long as possible.

- **Homes and Energy** - There is an increasing need to ensure that all homes in the Borough can become more energy efficient and transition to more sustainable sources of energy. Existing homes and associated energy uses will need to be significantly changed to reduce their impact on the environment and to ensure that they are resilient to the impacts of future climate change. Equally, new housing in the Borough will need to be energy efficient and climate resilient.

- **Natural Environment** - Land use and land management has an important impact on carbon balances, for example in soils and forests. Measures can be taken to protect and improve our natural environment as well as mitigate some of the future impacts of climate change. In addition, planting trees, restoring habitats and working towards sustainable land management practices will help to capture carbon.

- **Climate and Nature Positive Communities** – Meaningful engagement and involvement of residents and the local community will help identify issues and deliver sustainable solutions. Parish Councils have a strong history of delivering meaningful change at a local level. On an individual basis residents have access to good quality information that will help make informed choices about energy use, transport and waste management.

- **Adaption** - The impacts of climate change are already being seen, with changes in average temperature, shifts in the seasons and an increasing frequency of extreme weather events. Adaptation refers to adjustments in ecological, social, or economic systems in response to actual or expected climate change. This can increase resilience to climate change, in particular extreme weather events.

1.3 The Council has launched a dedicated website to document our work to become carbon neutral by 2030. The site includes further information on climate issues, news updates and the latest version of the Climate Change Strategy and Action Plan. The website is available at https://www.rugbynetzero.co.uk.

1.4 All of these themes are applicable to development in the Borough. Furthermore, the Local Plan 2019 contains planning policies to determine applications for planning permission. It includes a Sustainable Design and Construction chapter, which recognises that climate change is a major, global issue and Rugby Borough must take steps to reduce its causes and make plans to respond to its effects at the local level. It is essential for development to take into account the consequences of climate change, to ensure it is adaptable to changing conditions over its lifetime.

1.5 Through the application of these policies and guidance to development proposals, including assessment in planning applications, development can contribute to achieving climate objectives. This Supplementary Planning Document (SPD) provides additional guidance to support their implementation. SPDs are material considerations in planning decisions but are not part of the development plan itself.

1.6 This SPD has been developed in consultation with communities, site promoters, landowners and developers, service providers and statutory bodies, such as Warwickshire County Council's, Ecology, Archaeology, Flooding, and Highways services, the Environment Agency, Historic England, Natural England, as well as Rugby Borough Council services including Parks and Development Management.

1.7 Public consultation was undertaken on a Draft Climate Change SPD between 7th October and 18 November 2022. Following changes made in response to that consultation, this revised final version was adopted by Council on 7th February 2023.

1.8 This SPD is to be used in conjunction with other policies in the local plan and other adopted SPDs. The Council has adopted an Air Quality SPD that should also be referred to for developments affecting air quality.

FORMAT OF THIS SPD

1.9 This SPD covers broad areas in relation to climate change and sustainability that applicants should consider as part of their development proposals. Some issues may only apply to large scale or certain types of development.

1.10 In addition to topics covered, information requirements including a sustainability checklist are provided in Appendix A which should be completed by applicants prior to submitting applications. Some categories will only be applicable to certain types of development, however checking this will help ensure that development proposals address the issues that are likely to come up in the application and will avoid delay due to additional information being required.

1.11 Appended to the SPD is also a Residential Design Guide (Appendix B). This includes detailed guidance for residential developments that will help inform decisions.

2 ENERGY EFFICIENCY

Relevant SDC Policies: SDC1, SDC4

THE ENERGY HIERARCHY

2.1 Policy SDC4 of the local plan sets out the Energy Hierarchy (also included in the National Design Guide 2019) which developments are expected to follow to achieve carbon reduction targets. The building of more sustainable buildings will require the Energy Hierarchy to be taken into account from the outset of the design process. In order to achieve low carbon development, the Energy Hierarchy provides the most practical and cost effective methodology. Priority should be given to ways to reduce the energy required from a development through energy efficiency measures. Following this, supplying energy through efficient means should be explored, and then options for utilising renewable technology.

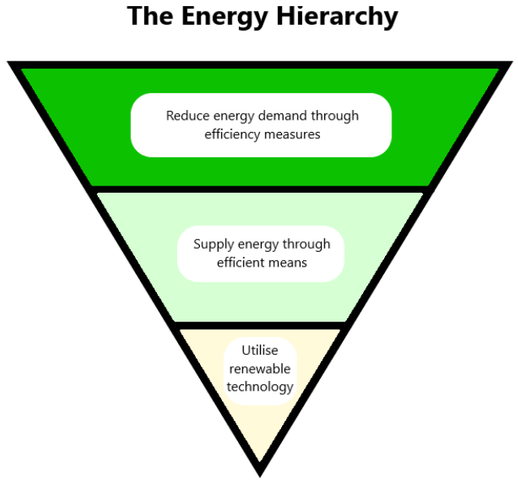


Figure 1: The Energy Hierarchy

2.2 The hierarchy is illustrated here, followed by an explanation of each of the tiers alongside examples of measures that can be incorporated. Adhering to its principles will improve the sustainability of buildings.

TIER 1: REDUCING ENERGY DEMAND

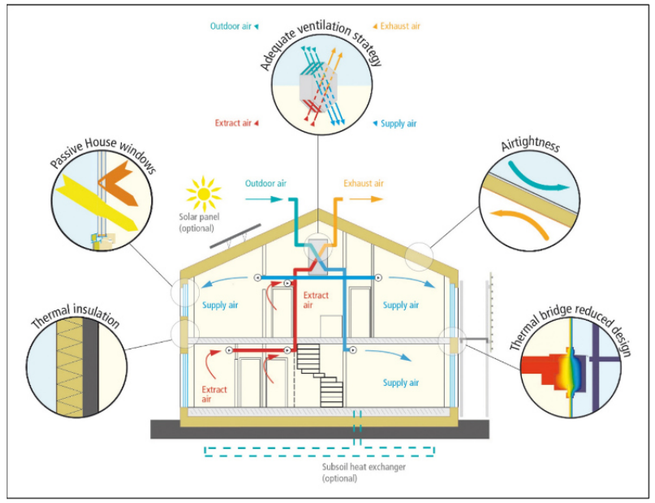
2.3 Reducing the demand for energy is at the top of the hierarchy and should be utilised the most. To achieve this, developments should consider the following:

- Design, layout and aspect of internal spaces that reduces the risk of overheating and fuel poverty
- Insulation, air tightness and thermal mass to retain heat
- Management of solar gain to minimise in summer and maximise in winter
- Natural ventilation for cooling which can be easily closed to maximise air tightness
- ·Positioning, size and orientation of windows
- Outdoor space for food growing.

Energy efficient design

2.4 One way of reducing the demand for energy is by utilising the passive design concept. Passive design uses the natural movement of heat, air and light to keep internal conditions in a building comfortable. By using natural movements, there is a reduced need for energy consuming Active Design measures such as comfort cooling, heat exchangers, boilers etc.

Figure 2: Passive design



Source: Passive House Institute

2.5 A 'fabric first' approach to building design involves maximising the performance of the components and materials that make up the building fabric itself, before considering the use of mechanical or electrical building services systems.

Focussing on the building fabric first, is generally considered to be more sustainable than relying on energy saving technology, or renewable energy generation, which can be expensive, can have a high embodied energy and may or may not be used efficiently by the consumer.

Passive Solar Design – Solar Gain:

2.6 Solar gain refers to the natural heating of a building from the sun. The orientation of a building affects the amount of solar gain experienced. Houses do not all need to face directly to south to gain the benefits of solar gain, but should be orientated within 30 degrees of south where possible. A south easterly orientation is better as it will make effective use of the early morning gains and reduce the likelihood of overheating in the afternoon.

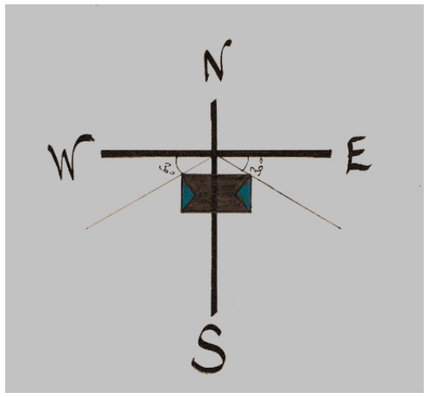


Figure 3: Building orientation should face 30 degrees south

2.7 Road layout is an important factor in passive solar gain as it determines building orientation. Roads which run on an east-west axis will provide more opportunity to position homes to take advantage of solar gain. There are design solutions for roads which by necessity run north-south; diagonal roads, plots can be skewed to face the road, or skewing the houses within the plots. The needs of building orientation should however be balanced by the need to create an acceptable pattern of development and maintain active frontages.

2.8 The most frequently used rooms, such as living rooms and main bedrooms, should be positioned on the south side of the dwelling. Rooms that benefit little from sunlight, such as hallways, utility rooms, bathrooms and storage areas, should be placed on the north side of the dwelling. To minimise overheating in the kitchen, south facing glazing should be avoided.

2.9 Consideration should be given to the proximity of other buildings and to limiting the possibility of overshadowing. Lower buildings such as bungalows should be located to the south, taller buildings to the north. Non-habitable areas such as garages should be positioned to the north.

Figure 4: Building Size location in relation to sun

2.10 Trees can be planted to help protect settlements from prevailing winds. The tallest trees should be deciduous to allow the winter sun. In some circumstances evergreen trees can be used to protect settlements from prevailing winds coming in from exposed directions.

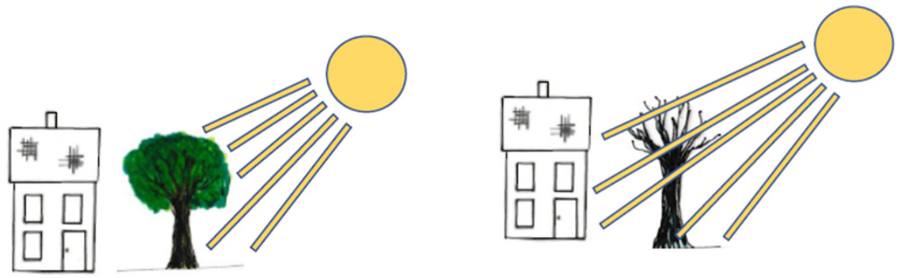


Figure 5: Tree function in Passive Solar Design

2.11 When considering the design of developments and solar gain, reference is recommended to Building Regulations Approved Document O: Overheating. This document sets out measures for limiting unwanted solar gain and removing excess heat from indoor environments. The document is available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1057374/ADO.pdf.

2.12 Warwickshire County Council are responsible for the roads and highways in the borough that are maintained at public expense and must be consulted on any proposals that may affect existing trees within the adopted highway, or any proposed tree planting within streets intended to be offered for adoption.

Passive Solar Design – Glazing

2.13 A passive solar house normally has more glazing on the south elevation to capture the heat and smaller windows on the north to prevent heat escaping. The southern elevation should incorporate a greater percentage of glazing than other elevations. Smaller glazing on northern elevations will help minimise heat loss.

2.14 Passive solar design considerations must not negatively impact on natural surveillance and daylight within the dwelling.

Passive Solar Design - Thermal Mass

2.15 Thermal mass refers to the capacity to absorb, store and release heat. Heat radiated onto a surface is absorbed, then conducted from the warm surface to the cooler interior of the mass. When the surface becomes warmer than the surrounding air, the heat is radiated back into space, warming the air and the surface becomes cooler.

Figure 6: Thermal mass, absorbing and releasing heat

2.16 An effective thermal mass material must have high heat capacity, moderate conductance and density, and high emissivity and absorptivity. Building materials which may appear to be similar can have different levels of absorption, for example, a building material with a reflective surface will absorb less heat than a similar material with a dull surface. Effective thermal mass is reliant on three factors: specific heat capacity, density and thermal conductivity.

Passive Solar Design - Passive Ventilation

2.17 The fabric of a building has limited capacity to hold heat, in periods of high temperatures cooling techniques may be necessary to reset capacity. Passive ventilation should be considered with other passive solar design aspects.

Figure 7: Passive Ventilation

TIER 2: SUPPLYING ENERGY THROUGH EFFICIENT MEANS

2.18 Every effort should be made to ensure that, ideally through renewable means, energy is utilised in the most efficient manner possible. Supplying energy through efficient means includes using efficient mechanical and electrical systems, including heat pumps, heat recovery systems and LED lights.

2.19 Building Regulations set out minimum standards for energy efficiency in new buildings and are periodically updated. Further information on the latest regulations can be obtained from Building Control https://www.rugby.gov.uk/info/20005/building_control or tel: 01926 456551. In addition to meeting Building Regulations requirements, developments are encouraged to maximise opportunities to incorporate energy efficiency measures where possible.

2.20 A 'fabric first' approach to building design involves maximising the performance of the components and materials that make up the building fabric itself, before considering the use of mechanical or electrical building services systems. This can help reduce capital and operational costs, improve energy efficiency and reduce carbon emissions.

2.21 Dwellings and other buildings should aim to ensure that the highest level of insulation possible is provided. Thermal bridge free design is encouraged where appropriate, and lighting should be the most energy efficient– for example, by using LED lightbulbs. Air tightness is equally important and natural ventilation should be able to be easily closed to not compromise air tightness.

2.22 Where dwellings include integrated appliances these should aim to be the most energy efficient with a minimum of A+ rating. Also, Information Technology advances and app-based solutions allow users to manage appliances and heating systems. These can allow close monitoring of energy consumption as well as direct control to use them more efficiently.

TIER 3: UTILISE RENEWABLE ENERGY

2.23 As detailed above, the priority in the energy hierarchy is to reduce energy demand first followed by finding ways to supply the energy more efficiently. For energy generation itself, renewable energy should be utilised where possible to reduce carbon emissions and help combat climate change. Fossil fuels are discouraged.

2.24 There are a range of options available to incorporate renewable energy into new developments, and the best solution will depend upon the individual circumstances of a particular proposal. The main options for renewable energy are set out below. There are likely to be other technologies emerging in the future and therefore the SPD does not restrict the use of only applying the technologies within this section; other new and emerging technologies will be considered on their merits.

Photovoltaics (PV)

2.25 Solar Panel systems, also known as PV, capture the sun's energy using photovoltaic cells. The cells do not need direct sunlight to work as they can still generate some electricity on cloudy days, but it is important to avoid shading. Cells convert sunlight into electricity which can be used to run household appliances and lighting. The installation of PV panels will need to be sensitive to all developments, particularly those in Conservation Areas and relating to Listed Buildings. Examples of PV on residential buildings are shown in Appendix B. Guidance on how Photovoltaics may be installed on historic buildings or within historic sites is available in the Historic England report: Energy Efficiency and Historic Buildings: Solar Electric (2017) available at https://historicengland.org.uk/images-books/publications/eehb-solar-electric/.

2.26 Where solar arrays are proposed on agricultural land, measures should be taken to ensure the land can be restored to its agricultural use once the solar array is no longer needed. Also, careful consideration to the siting and design of arrays is required due to likely impacts on the landscape character. Some areas of Rugby Borough have more sensitive landscape settings than others. Developers are encouraged to refer to the Rugby Borough Landscape Sensitivity Study 2016, available at (https://www.rugby.gov.uk/downloads/download/272/landscape_sensitivity_study). Spacing between panels will allow light to reach the ground underneath and aid maintenance.

Solar Water Heating

2.27 Solar water heating is a green, renewable heating system which can reduce carbon dioxide emissions. Solar collectors are usually installed on roofs, but they can also be ground-mounted. These systems use free heat from the sun to warm up domestic hot water. If solar energy is unavailable or there is a desire to have hotter water, renewable heating should be provided (gas boilers are now not preferred and these will be inadmissible after 2025 in order to help reach government carbon targets). Once the initial installation has taken place, the hot water costs will reduce.

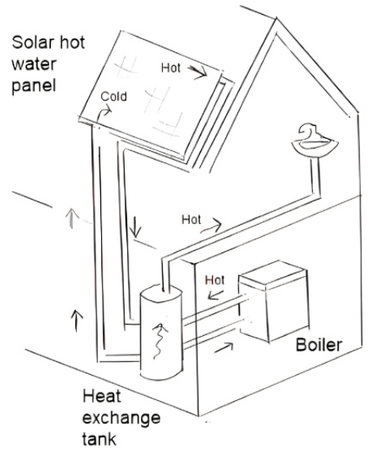


Figure 8: Solar Water Heating System

District Heating

2.28 District heating schemes deliver heating and hot water to multiple buildings from a local plant. District heating should use low carbon energy sources, including renewable energy technology such as water source or ground source heat pumps. They may require connecting to an existing district heating scheme or providing new infrastructure. In some cases, it can be combined with electricity production in combined heat and power (CHP) or in combined cooling, heat and power (CCHP). Systems should not rely on natural gas or diesel.

Micro Wind Turbines

2.29 These generate electricity by harnessing the power of wind. Wind turbines catch the wind by using large blades and as the wind blows, the blades are forced round, driving a turbine which generates electricity. Electricity generation is generally around a few hundred watts which would be enough to power energy efficient light bulbs on a windy day throughout a typical home. Micro wind turbines are often only efficient if installed in undisturbed air flow, i.e. clear of roofs and trees. If attached to buildings, the design should limit mechanically transmitted noise within the building.

Air Source Heat Pumps

2.30 These absorb heat from the outside air which can then be used to provide hot water and to heat the building, preferably by under floor systems which provide greater efficiency than radiators. Although heat pumps will have some impact on the environment as they require electricity, the heat which is extracted from the air is constantly being renewed naturally. Depending on the type of fuel that is being replaced, the home could see lower carbon emissions. Careful consideration should be given to noise issues that may be associated with this technology which may potentially cause a statutory nuisance. To ensure that there are no negative impacts on the street scene or character of the area, design and siting must be given appropriate consideration.

Figure 9: An Air Source heat Pump

Source: https://www.energy.gov

Ground Source Heat Pumps

2.31 Ground source heat pumps are used to heat underfloor or warm air heating systems, hot water and radiators, maximum efficiency is normally obtained with underfloor heating. They use pipes that are buried underground to extract heat from the ground, although boreholes should also be considered as they take up less space which means that there is more land available for other infrastructure such as planting, ponds etc. The ground source heat pump circulates a mixture of water and antifreeze around a pipe, called a ground loop, which is buried in the garden. Heat from the ground is absorbed into fluid which passes through a heat exchanger and into the heat pump. The benefit of using a heat pump is that, as the ground remains at a fairly constant temperature under the surface, the pump can be used throughout the year. If these replace conventional electric heating, depending on which fuel is being replaced, there could be lower home carbon emissions. As well as heating the home it will also heat water and minimal maintenance is required.

Water Source Heat Pumps

2.32 These work on a similar principle to air source and ground source heat pumps. They take advantage of the consistent temperatures found in a body of water such as a river, stream or lake by using submerged pipes. A heat pump pushes working fluid through the network of piping, and the fluid absorbs the heat from the surrounding water as it goes. The fluid is then compressed by an electric compressor which raises the temperature. A heat exchanger can be used to remove the heat from the working fluid, providing hot water that can be used for space heating (radiators but preferably under floor heating for maximum efficiency). Once the heat is removed from the fluid via the exchanger, it is pumped back through the pipes, completing a continuous cycle.

Biomass Heating

2.33 Biomass is a renewable energy source, generated from burning solid fuels such as chips and logs. It releases carbon dioxide when burned, but considerably less than fossil fuels. A stove burns logs or pellets to heat up a single room and a back boiler to provide water heating as well. The boiler burns logs, pellets and chips and is connected to a hot water system and central heating. Proposals for biomass will be considered on a case by case basis and will only be appropriate in certain locations, where there are no unacceptable environmental or amenity impacts, including on air quality. Biomass heating is likely to require a permit from the Environment Agency.

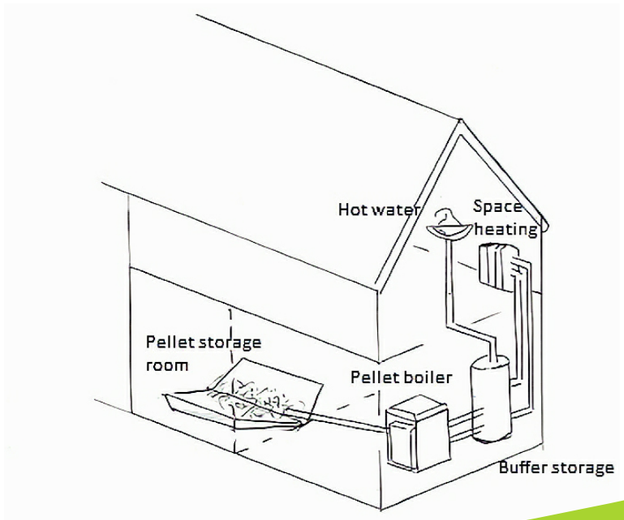


Figure 10: A typical biomass system

Micro Hydro

2.34 In some instances it may be possible to utilise streams or rivers for small or micro hydroelectricity systems. Hydroelectricity systems use the flow of the water through a turbine and can produce enough electricity for lighting and electrical appliances in an average home. Excess power that is generated can be used to provide heat and hot water too. Hydroelectricity is green, renewable energy and doesn't release harmful carbon dioxide or other pollutants into the air.

Thermal Stores

2.35 Thermal stores are vessels used to store excess heat generated from a domestic renewable heating system. It is a way of storing and managing the heat until it is needed. Heated water is usually stored in a large, well-insulated cylinder often called a buffer or accumulator tank.

2.36 These can be used with an individual renewable heating technology or by combining different renewable heating technologies. They can also be used as a renewables technology with a conventional boiler or immersion heater. Thermal stores have been proven to work well with heat pumps, wind energy and solar water heating systems.

Energy Efficiency and the Historic Environment

2.37 Energy efficiency measures and incorporating renewable technologies can impact upon the historic environment. Historic England have published guidance on energy efficiency in older houses and historic buildings and advice on solar power and heat pump installations. These include:

Solar Photovoltaics:
https://historicengland.org.uk/images-books/publications/eehb-solarelectric/heag173-eehb-solar-electric-photovoltaics/

Heat Pumps:
https://historicengland.org.uk/images-books/publications/eehb-heat-pumps/heag172-heat-pumps/

Energy Efficiency
https://historicengland.org.uk/content/docs/advice/technical-conservation-guidance-and-research-brochure-pdf/

3 BREEAM AND NON-RESIDENTIAL BUILDING DESIGN

Relevant SDC Policies: SDC1, SDC3, SDC4

3.1 BREEAM stands for the Building Research Establishment Environmental Assessment Methodology. Policy SDC4 of the local plan requires that all non-residential development over 1000 sqm should aim to achieve as a minimum BREEAM standard 'very good' (or any future national equivalent) unless it can be demonstrated that it is financially unviable.

3.2 BREEAM is used for assessing best practice in sustainable building design, construction and operation of non-residential buildings. It is used to improve, measure and certify the social, environmental and economic sustainability of buildings. BREEAM is assessed using a system of credits in the following nine categories:

- Health and Wellbeing
- Management
- Energy
- Transport
- Water
- Materials
- Waste
- Land Use and Ecology
- Pollution

3.3 Some category credits are mandatory to achieve a certain rating, whilst other category credits can be interchanged. Therefore, where compliance is not achieved in a non-mandatory category it can be offset by another category.

3.4 The use of BREEAM helps designers and clients measure and reduce the environmental impacts of their buildings, creating high value, lower risk assets. The BREEAM methodology has the following aims:

- To mitigate the lifecycle impacts of buildings on the environment;
- To enable buildings to be recognised according to their environmental benefit;
- To provide a credible, environmental label for buildings; and
- To stimulate demand and create value for sustainable buildings, building products and supply chains.

3.5 The Building Research Establishment (BRE) produced a BREEAM New Construction technical manual 2014, which was updated in 2018. This should be used at project inception to ensure that BREEAM certification is followed. It is also crucial for developments to integrate the BREEAM process at this stage, as it will greatly reduce the costs associated with meeting the required BREEAM standards.

3.6 BREEAM certification can also apply to standards for refurbishment. Extensions to existing units which are classified as major developments are expected to adhere to BREEAM standards. A proposal which is part new construction and part refurbishment has two options:

Option 1: Separate BREEAM New Construction and BREEAM Refurbishment and Fit-out assessments, or

Option 2: Bespoke BREEAM combined New Construction and Refurbishment and Fit-out assessment.

Both the New Construction and Refurbishment guidance are available on the BREEAM website at https://www.breeam.com/discover/technical-standards/.

3.7 For all full and reserved matters applications a BREEAM pre-assessment, carried out by a BRE Accredited BREEAM Assessor should be submitted with the planning application. BREEAM Ratings of 'Excellent' or 'Outstanding' are strongly encouraged, however as a minimum it will need to be demonstrated that 'Very Good' rating can be achieved. Achieving "Excellent" requires a score of between 70% and 84%. It is achieved by many modern buildings and is considered "best practice" by BREEAM because it employs proven modern technologies and concepts to increase sustainability performance. Developments achieving an "Outstanding" rating require a score of above 85% and are often referred to as 'innovators' as they require developers to think outside the box to create one of the most sustainable properties.

3.8 Formal BREEAM certification will then be secured via planning condition. For outline applications, submission of a BREEAM pre-assessment as part of future reserved matters applications will be secured via planning condition.

3.9 The Council may use planning conditions to ensure a BREEAM design stage assessment is submitted prior to commencement of the development. Also, a condition may require certificates are submitted to the Council once the development has been completed at post construction to ensure the targeted BREEAM ratings are met.

3.10 A 'buffer' of 5% is recommended to be included in a pre-assessment estimator to help safeguard against credits being dropped during later stages of design and construction, which can happen in many cases.

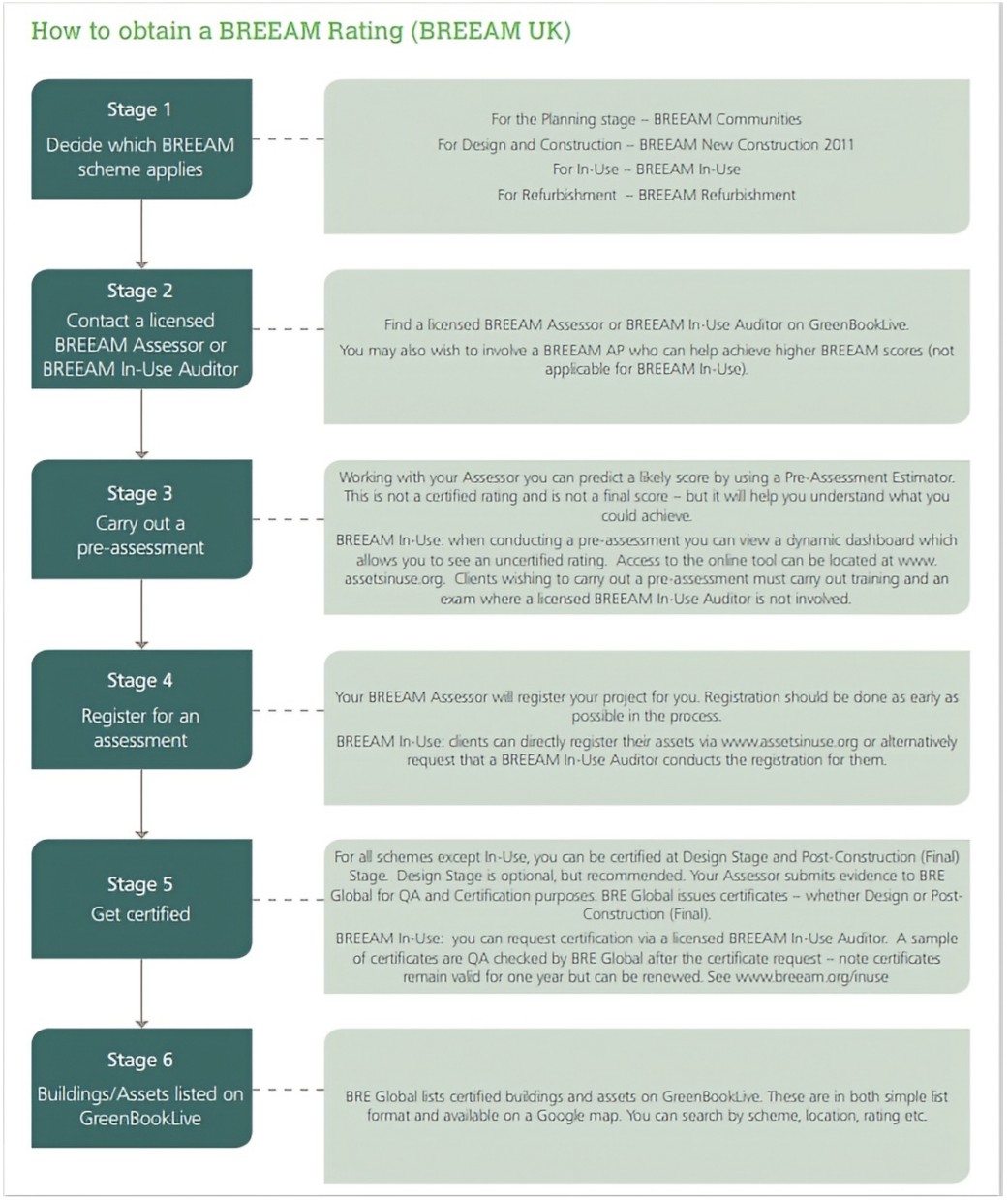


Figure 11: The BREEAM Process
*new construction manual 2014 with 2018 update
Source: https://tools.breeam.com/filelibrary/How_to_get_a_BREEAM_assessment_(with_links).pdf

3.11 In carrying out a financial appraisal, the costs of instructing professionals to carry out the BREEAM (or equivalent) assessments/work associated with part compliance may be factored into the professional fees and form part of the gross development costs. These costs may be deducted from the gross development value and assumptions made around developer/landowner return to determine viability.

3.12 Where a successful case has been made demonstrating non-viability in meeting the required BREEAM standards, it may be permissible for applicants to apply a lower standard or potentially utilise alternative strategies, such as LEED (Leadership in Energy and Environmental Design).

3.13 The onus will be on the developer to justify why the required rating (either Very Good or Excellent) is not achievable – such reasons will have to be robust in planning policy and sustainability terms. These will be assessed on their merits at the planning application stage.

3.14 Exceptions to these minimum standards may be allowed in cases of buildings in conservation areas, but only when a developer can show that it is not practical or commercially viable to achieve the minimum standards or would result in adverse effects which harm the character or appearance of the historic environment.

3.15 Where applicants do not use the BREEAM certification process, the Council will require a clear demonstration of how the building(s) will be constructed to an equivalent standard through the submission of independent supporting information.

3.16 Where full achievement of the policy requirements is not possible due to technical feasibility or viability considerations, information should be provided in an application to clearly justify this.

3.17 Where there are difficulties in achieving the required standard with proposals affecting heritage assets, appropriate sensitive measures should be taken to achieve improvements to the performance of the building insofar as is possible. Information detailing any harm and alternative measures should be clearly explained in the application.

3.18 It is important to acknowledge however that heritage assets can be a valuable aid to achieving sustainable development. For example, historic buildings represent a significant investment of expended energy. Demolishing and replacing these historic structures would also require a major reinvestment of embodied energy and other resources. Therefore, encouraging the reuse of existing historic buildings and spaces can help achieve sustainable development.

4 FLOOD RISK AND RESILIENCE MEASURES

Relevant SDC Policies: SDC5 and SDC6

FLOOD RISK

4.1 Climate change is anticipated to increase the occurrence of extreme weather, including both flooding and drought events. As such, adapting development to efficiently manage the use and storage of water is considered to be a critical component of effectively mitigating the effects of climate change. The priority will always be to steer development away from areas at risk of flooding first.

4.2 As detailed in local plan policy SDC5 and in national policy and guidance, a sequential approach to flood risk is followed to ensure that development is located in the areas of lowest flood risk. This means favouring applications in Flood Zones 1 (low probability of flooding), rather than in Flood Zones 2 and 3 (medium and high probabilities of flooding respectively). This applies at a strategic, local and site-scale level. The Environment Agency flood map for planning, showing the flood zones, can be viewed at https://flood-map-for-planning.service.gov.uk/.

4.3 In addition to the above, where a site-specific Flood Risk Assessment is required (as set out in in SDC5), it will be necessary to consider flooding from all sources, including rivers (fluvial), surface water (pluvial), ground water and sewers, and a possible combination of these. Further information on forms of flood risk is also available at https://check-long-term-flood-risk.service.gov.uk/map.

4.4 For major developments or where a Flood Risk Assessment is required (where the site is in Flood Zone 2 or 3, Minor development and change of use more than 1ha and in Flood Zone 1 in an area with critical drainage requirements, within 20m of watercourse, or next to a flood bank or flood control structure), where relevant applicants must apply the climate change allowances for peak river flow, peak rainfall intensity and floodplain compensation. Applicants must use the appropriate highest level of climate change allowances by considering the lifetime of the development, vulnerability classifications and river basin district serving the development. Further information is available at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances.

4.5 For householder applications where a Flood Risk Assessment is required (see criteria for FRAs in the paragraph above) a more simplified summary of the information that needs to be submitted is provided in the Government's standing advice for flood risk assessment, available online at: https://www.gov.uk/guidance/flood-risk-assessment-standing-advice#what-toinclude-in-your-assessment.

RESILIENCE MEASURES

4.6 As referred to above the priority will always be to steer development away from areas more at risk of flooding, however Property Flood Resilience (PFR) measures can be used to help make properties more resilient to flooding in future. Use of PFR measures will not be justification for selecting areas more at risk of flooding over those less at risk. Measures can include for example, raised finished floor levels, water-tight doors, self-closing airbricks, non-return valves on waste pipes, and waterproof sealants and mortars. Appropriate measures will be specific to each property and are typically defined through a property specific survey. Further information on the variety of measures available can be found at www.bluepages.org.uk.

4.7 A diagram illustrating typical examples of flood resilience measures that can be incorporated into buildings is shown below. Some of these features form Sustainable Drainage Systems (SuDS) and are explained in more detailed in Section 6: Sustainable Drainage.

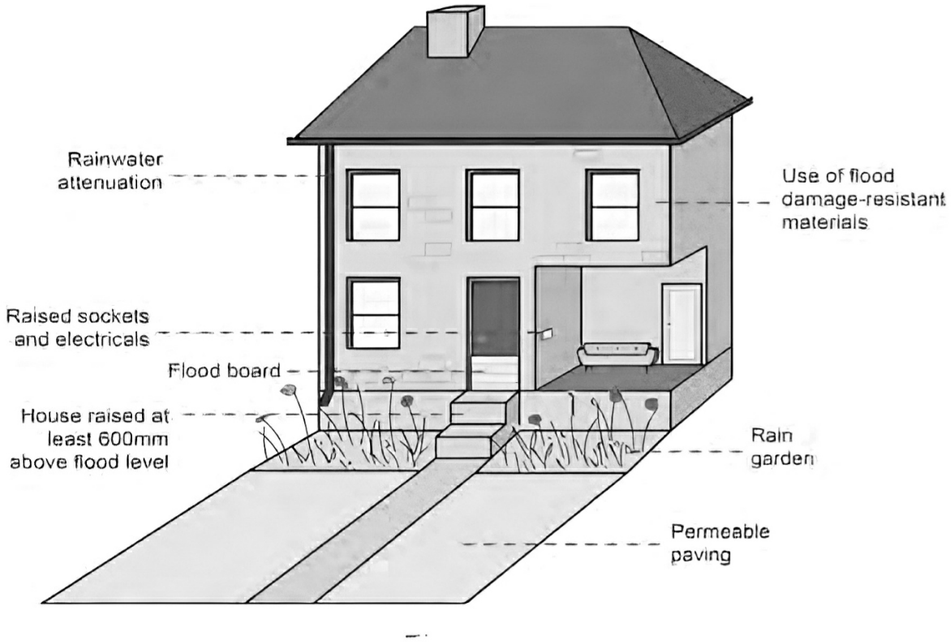


Figure 12: Flood resilience measures on a typical dwelling

4.8 Buildings with stilts should not be used as a flood management method. Areas under stilts are often used as storage spaces and have the potential to become blocked during flood events which will have a cumulative impact in terms of flood risk.

4.9 On a larger scale, natural flood measures could be utilised to reduce flood risk. This can include restoration of floodplains - which can slow water flow and provide attenuation and catchment woodland – to hold some rainwater and allow evaporation, as well as soil infiltration.

4.10 Historic England advise that traditional buildings can experience particular risks from flooding. There may be a need for such buildings to be able to dry out slowly and that care must be taken not to introduce inappropriate retrofitted measures which would prevent effective drying and shorten the life of the building. A guidance note 'Flooding and Historic Buildings has been published with further information on these issues: https://historicengland.org.uk/advice/technical-advice/flooding-and-historic-buildings/

5 SUSTAINABLE DRAINAGE

Relevant SDC Policies: SDC5 and SDC6

5.1 The use of Sustainable Drainage Systems (SuDS) can be used to manage surface water runoff on-site and also alleviate flood pressure elsewhere. Policy SDC6 of the local plan sets out the requirements for providing SuDS as part of developments.

5.2 Without proper sustainable drainage systems in place, developments can contribute to localised and wider-spread flooding through uncontrolled surface run-off. Pollutants from hard surfaces such as roads can be washed into waterways before they have the chance to be treated.

5.3 Sustainable drainage systems (SuDS) re-create the benefits of natural drainage systems by integrating water management into the design of new developments. SuDS allow for the delivery of high quality surface water drainage and help with managing flood risk, reduce pollution from run off, and on larger developments can provide a health and wellbeing benefits as part of a recreation use, and can also add biodiversity benefits.

5.4 In order for sustainable drainage requirements to be met, it will be important to ensure they are considered from the outset of the design of new developments. The layout and scale of development should be informed by the surface water drainage requirements and not vice versa. It may be necessary to incorporate different types of SuDS as part of the overall proposal.

5.5 New development will be required to implement appropriate SuDS techniques in order to manage surface water runoff. For all sites, surface water discharge rates should be no greater than the QBar (the value of the average annual flood event recorded in a river) site-specific greenfield runoff rate, unless otherwise agreed by the Lead Local Flood Authority (LLFA).

5.6 SuDS should be shown on all relevant plans submitted, in order to demonstrate how they integrate with planned public open spaces, landscaping, roads, trees and buildings. Plans should identify multifunctional SuDs which meet the 4 pillars of good SuDS design –

managing water quantity, water quality, providing amenity value and biodiversity. Further information on these principles is available in the CIRIA SuDS Manual 753 (available for free) at https://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx).

5.7 Sustainable drainage systems (SuDS) need to be designed so that they do not impact on archaeology. Impacts can be caused by draining waterlogged archaeology or introducing surplus water and pollution from surface runoff into archaeological sediments via soakaways. This includes soakaway systems/ground discharge with filters, as the long-term management and replacement of the filters cannot be guaranteed. With regards to these impacts the Historic England guidance on 'Preserving Archaeological Remains' may be useful to consider: https://historicengland.org.uk/images-books/publications/preserving-archaeological-remains/

5.8 A surface water drainage strategy will be required for all major developments to help demonstrate compliance with SDC6. The inclusion of a foul water strategy is also encouraged to ensure this can also be planned for from the outset. Warwickshire County Council Lead Local Flood Authority state the following information should be provided depending on application type:

INFORMATION REQUIREMENTS

Outline planning

5.9 At Outline planning stage, the LLFA will require the applicant to submit an Outline Surface Water Drainage Strategy based on SuDS principles. The strategy should inform the Masterplan or indicative site layout by identifying suitable placement and design of the surface water drainage infrastructure. It should mitigate flood risk, provide opportunity to manage water quality and identify potential for amenity and biodiversity. The following information is required to support the strategy:

- Appraisal of existing site conditions (topography, hydrology, hydrogeology, land use)
- ·Appraisal of suitable SuDS methods that the development is likely to incorporate, with preference for above ground SuDS*
- Appraisal of the drainage hierarchy** and identification of a viable outfall
- Calculations of existing and proposed discharge rates and volumes
- Calculations and plans of proposed attenuation requirements (inc. urban creep where relevant)
- Assess the likely water quality hazard arising from the development and identify appropriate mitigation
- Expected adoption and maintenance regimes for all drainage features
- Correspondence from relevant risk management authorities, such as Severn Trent Water

*examples and design parameters are outlined in the CIRIA SuDS Manual C753
**as detailed in Paragraph 080 of Planning Practice Guidance (PPG)

Note: *Where the development will be phased then information should be provided on how the requirements listed will be suitably met at each phase, such as the allowable discharge rate and/or impermeable area.*

Reserved Matters

5.10 At the Reserved Matters stage, the LLFA are mostly looking to ensure that the principles agreed at Outline planning stage, with regards to the drainage strategy, have been taken forward as the proposals have firmed up. The LLFA will be looking to review:

- Any of the information provided at Outline planning stage that has since been updated
- Site layout plans and cross sections showing all surface water drainage infrastructure which should follow the sustainable drainage principles agreed at Outline planning stage
- Modelling report of the whole drainage network demonstrating its performance during the critical storm in a 1 in 1 year, 1 in 30 year, and 1 in 100 year (plus allowance for climate change) return periods
- Exceedance and overland flow routing information, where a Reserved Matters application includes layout

Note: *Where the development will be phased then information should be provided on how the requirements listed will be suitably met at each phase, such as the allowable discharge rate and/or impermeable area. For surface water drainage, it should be demonstrated how the development complies with the drainage hierarchy, whereby a discharge to the public sewerage system is avoided where possible.*

Full planning / Discharge of Conditions

5.11 At this stage in the planning process, the LLFA expect proposals for surface water drainage to be well developed and this should be reflected in the level of detail provided. Where not explicitly listed below, all details required in Outline and Reserved Matters stages must be provided at Full planning stage. The LLFA require:

- Appraisal of existing site conditions (topography, hydrology, hydrogeology, land use, flow routes)
- Appraisal of suitable SuDS methods that the development will incorporate, with preference for above ground SuDS*
- Appraisal of the drainage hierarchy**, infiltration test results and identification of a viable outfall
- Site layout plans showing all surface water drainage infrastructure supported by a fully labelled network drawing showing all dimensions of all elements of the proposed drainage system
- Calculations of existing and proposed discharge rates and volumes
  Calculations and plans of proposed attenuation requirements
  (inc. urban creep where relevant)
- Exceedance and overland flow routing information

- Modelling report of the whole drainage network demonstrating its performance during the critical storm in a 1 in 1 year, 1 in 30 year, and 1 in 100 year (plus allowance for climate change) return periods
- Submission of cross-sectional drawings of all SuDS features demonstrating design in accordance with the CIRIA SuDS Manual C753***
- Assess the likely water quality hazard arising from the development and identify appropriate mitigation
- Written agreement from any third party asset or land owners required to enable the operation of the drainage infrastructure (such as evidence of an agreement with the adopting body)***

*examples and design parameters outlined in the CIRIA SuDS Manual C753
**as detailed in Paragraph 080 of PPG
***It is possible that this information can be provided later once detailed design is underway. In these cases, the LLFA is likely to secure the submission of this information by recommending a pre-commencement or pre-occupation condition to the LPA for inclusion on any Decision Notice.

Note: *Where the development will be phased then information should be provided on how the requirements listed will be suitably met at each phase, such as the allowable discharge rate and/or impermeable area. For surface water drainage, it should be demonstrated how the development complies with the drainage hierarchy, whereby a discharge to the public sewerage system is avoided where possible.*

5.12 Developers are encouraged to refer to the LLFA 'Flood Risk and Sustainable Drainage: Local Guidance for Developers' document, available online at www.warwickshire.gov.uk/flooding, Direct link: https://api.warwickshire.gov.uk/documents/WCCC-1039-95.

Types of Sustainable Drainage Systems

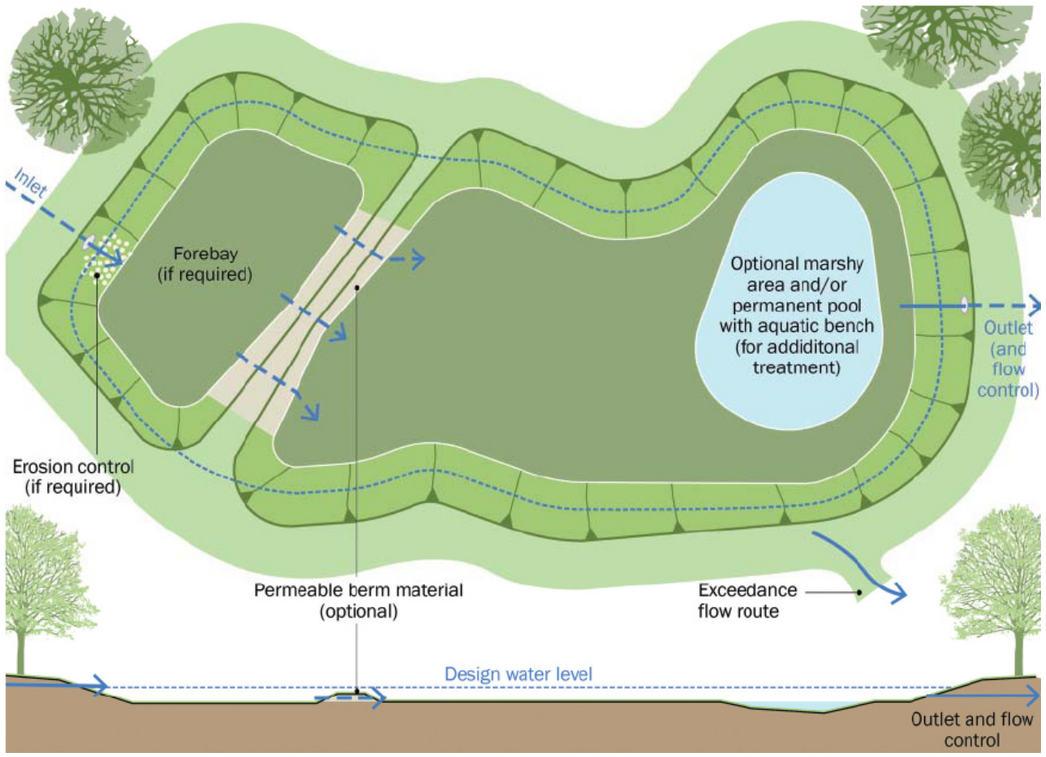
5.13 The CIRIA SuDS manual contains a comprehensive set of information including examples of many different types of SuDS and how they can be implemented into a development. Selected examples from the CIRIA SuDS manual are set out below:

Detention/Attenuation basins

5.14 Detention or attenuation basins are landscaped depressions that are normally dry except during and immediately following storm events. They can store surface runoff from regular events as it's routed through the basin, and when flows rise, because outlet is restricted, the basin fills and provides storage of runoff and flow attenuation.

5.15 Basins can be vegetated to help absorb some runoff and also improve water quality by acting as a filter. Where designed appropriately, some or all of the basin can be used as an amenity or recreation facility. Examples of amenity and recreation uses (amongst others) in SuDS are illustrated at https://www.susdrain.org/delivering-suds/using-suds/benefits-of-suds/SuDS-benefits.html

Figure 13: Plan and elevation of a detention/attenuation basis.

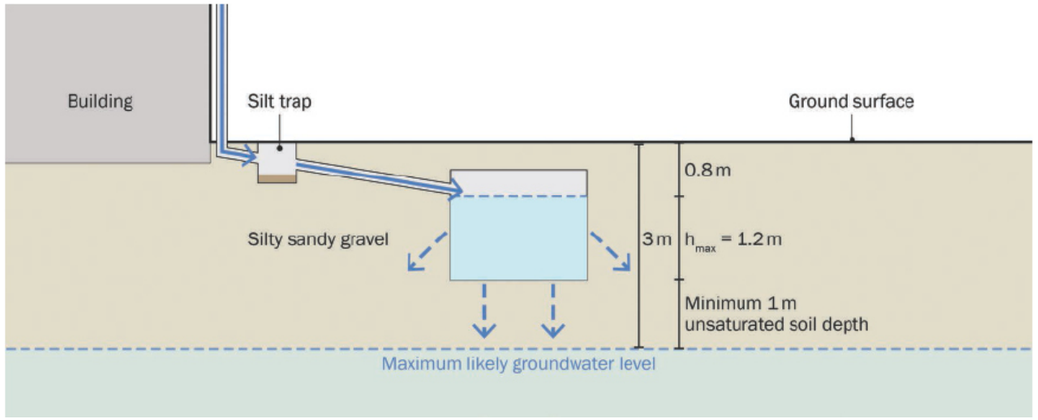


Source: CIRIA SuDS Manual 2015

Soakaways:

5.16 Soakaways are excavations that are filled with a material that allows temporary storage of water before it soaks into the ground. Many modern small soakaways are constructed with geocellular units available from builders' merchants pre-wrapped in geotextile. Infiltration tests should be carried to determine whether soakaways will work in the first instance, and then the rates used to determine its size. Full guidance is available in the CIRIA SuDS manual.

Figure 14: Cross section of a soakaway

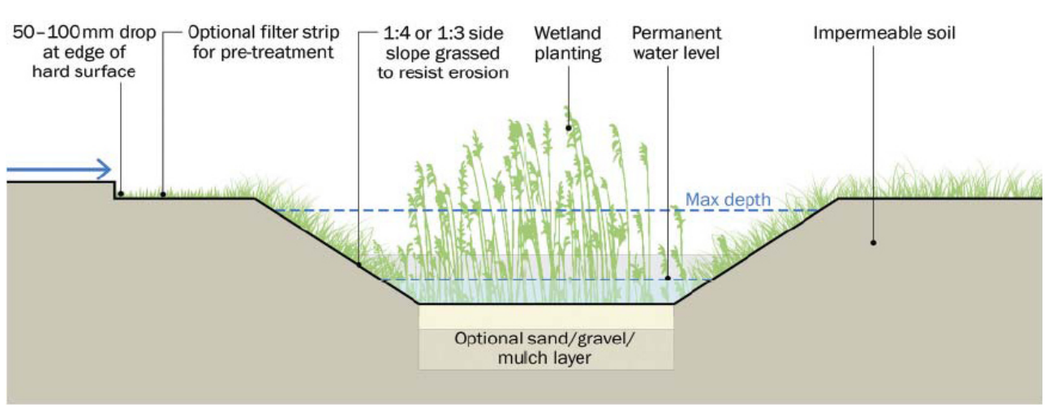


Source: CIRIA SuDS Manual 2015

Swales:

5.17 Swales are shallow, flat bottomed, vegetated open channels designed to convey, treat and often attenuate surface water runoff. When incorporated into site design they can enhance the natural landscape and provide aesthetic and biodiversity benefits. They are often used to drain roads, paths or car parks and can have a variety of profiles.

Figure 15: Swale cross section

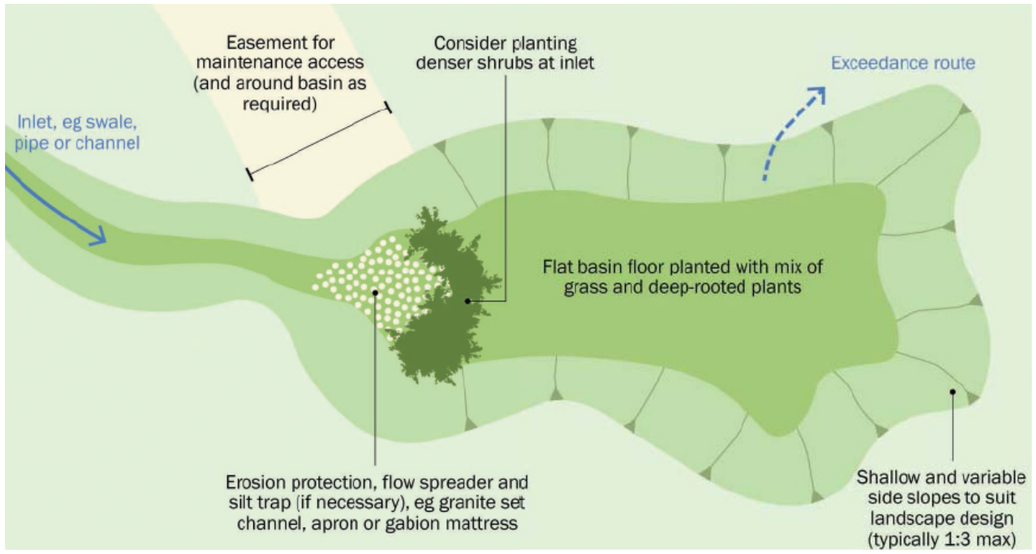


Source: CIRIA SuDS Manual 2015

Infiltration Basin

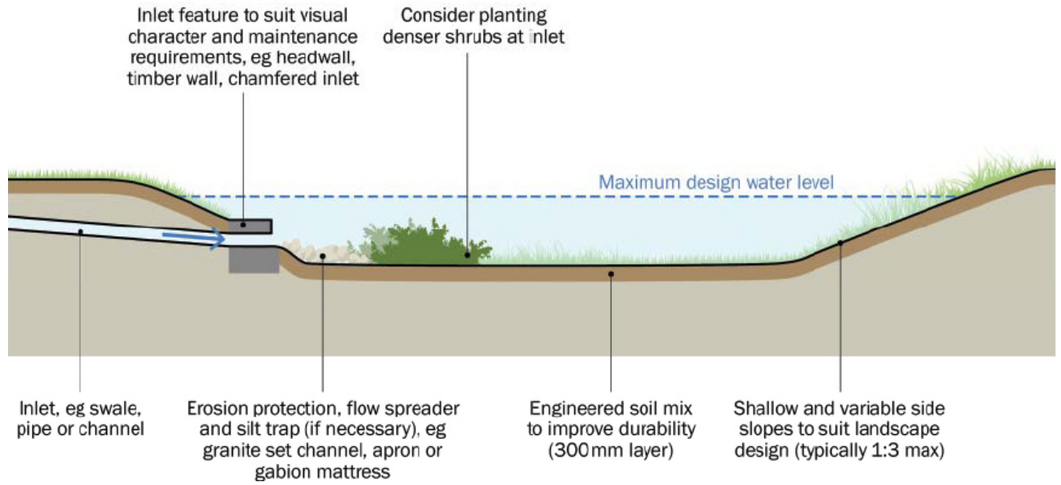
5.18 Infiltration basins are flat-bottomed, shallow landscape depressions that store runoff (allowing pollutants to settle and filter out) before infiltration into the subsurface soils. They can receive water from swales or other inlets.

Figure 16: Plan view of an infiltration basin



Source: CIRIA SuDS Manual 2015

Figure 17: Elevation view of an infiltration basin



Source: CIRIA SuDS Manual 2015

Permeable Paving:

5.19 Permeable pavements provide a pavement suitable for pedestrians and or vehicular traffic, while allowing rainwater to infiltrate through the surface and into the underlying structural layers.

5.20 Permeable surfaces, together with their associated substructures, are an efficient means of managing surface water runoff close to its source – intercepting runoff, reducing the volume and frequency of runoff, and providing a treatment medium. Permeable surfaces should be used for all hardstanding, driveways and paved areas in development to allow for enhanced drainage of surface water.

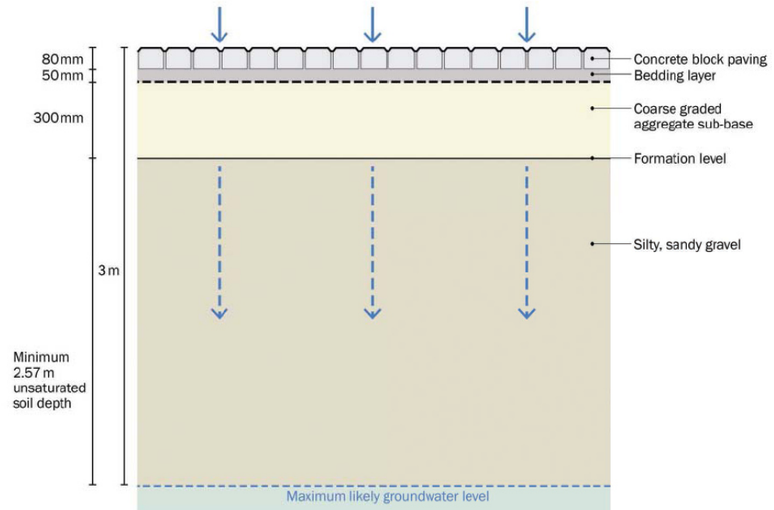


Figure 18: Permeable paving section

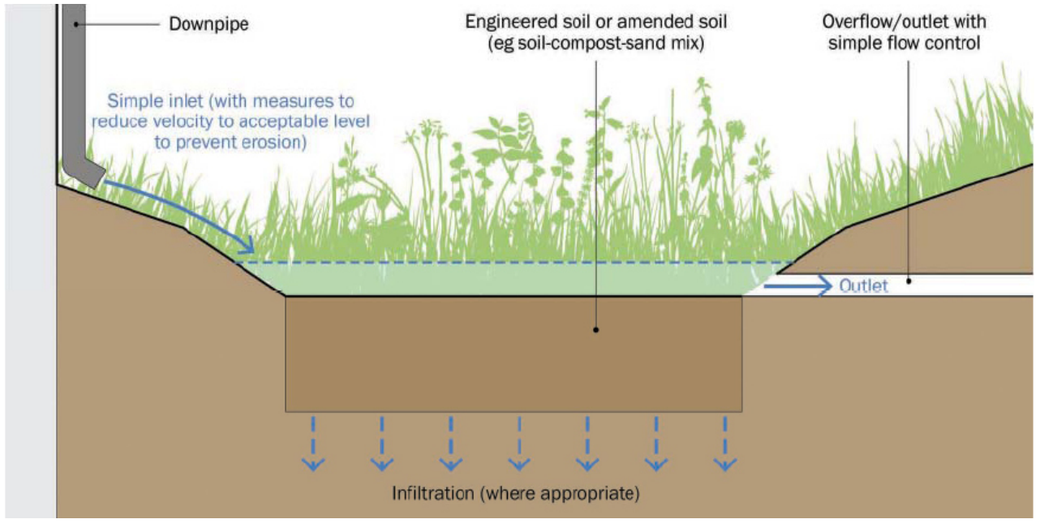
Source: CIRIA SuDS Manual 2015

Rain Garden

5.19 Rain gardens are a form of SuDS that can be implemented in small areas where other SuDS methods are not appropriate or feasible. They consist of small depressions in the ground that act as infiltration points for roof water and other surface water that is low in contamination. Rain gardens are easy to maintain, provided that they are incorporated as part of an appropriately designed and managed landscaping scheme. Housing developments with sufficient outdoor space are encouraged to integrate rain gardens into development where soil conditions allow for infiltration, unless another form of SuDs is being proposed. Rain gardens can also serve as an educational feature at schools or other community facilities.

5.20 A rain garden is not a water garden, pond or wetland. It is dry most of the time and typically holds water only during and following a rainfall event, which drains within 12-48 hours. In simple rain gardens, filter and drainage layers are generally replaced by a thin (200-500mm) layer of engineered or amended soil to help infiltration. They can have an above ground overflow where excess water exits, although in some instances a simple underdrain may be more effective.

Figure 19: Rain Garden section with outlet pipe



Source: CIRIA SuDS Manual 2015

Green Roofs

5.21 Green roofs are areas of living vegetation installed on the top of buildings. They can assist with the reduction of surface water runoff and also provide visual, ecological and building performance benefits. Green roofs typically need flat or near-flat roofs that are designed to take the loading, so may be difficult to retrofit on existing properties. Figure 20 below shows a typical section of a green roof.

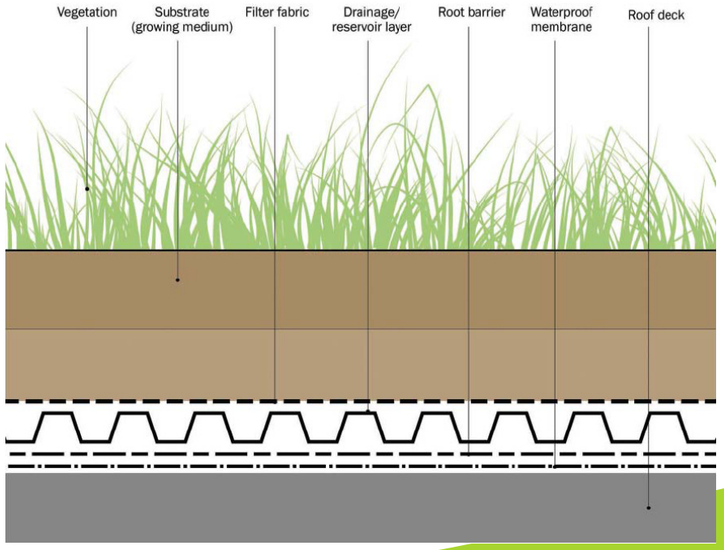


Figure 20: Green roof section

Source: CIRIA SuDS Manual 2015

6 GREEN INFRASTRUCTURE, LANDSCAPING AND BIODIVERSITY

Relevant SDC Policies: SDC1, SDC2

6.1 Green infrastructure, such as planting, open spaces and green roofs, is key to climate change resilience. Green infrastructure can deliver a range of related benefits by improving opportunities to walk and cycle, which in turn reduces carbon emissions, and improving the health and well-being of local communities. It can also improve the resilience of habitats and vulnerable species and help to reduce flood risk. Green infrastructure should be considered at the earliest stages of design. Applicants should liaise and collaborate with representative stakeholders.

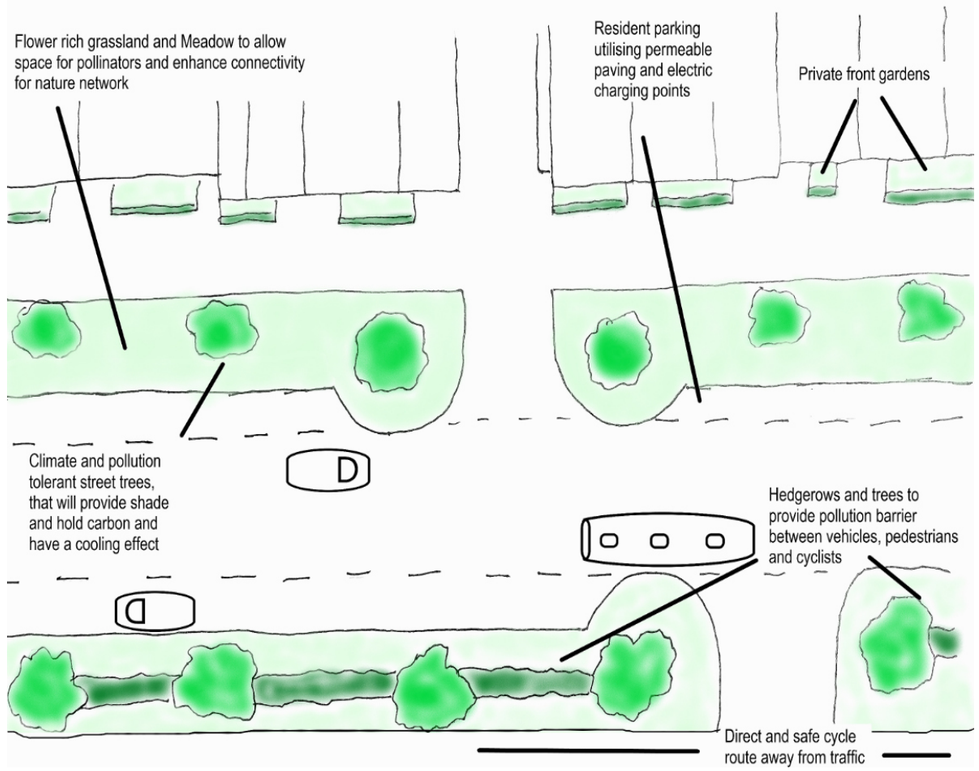
6.2 Policy SDC2 requires high quality landscaping to be incorporated into the design of development. Each development will present its own unique opportunities for landscaping and connecting the site with existing surrounding green infrastructure. Designs should consider the suitability of trees, plants and hedgerows for the location.

6.3 Landscaping, in particular the design of natural shading by trees and plants, also has a role in energy efficiency. If solar gain (the natural warming of a building by exposure to the sun) is needed, any trees that need to be retained should ideally be sited so that they are not overshadowing the new development, unless they have particular amenity value or are subject to a Tree Preservation Order. However, planting can also help avoid overheating in the afternoon, so if solar gain is not needed, trees can provide important cooling benefits and help a building to adapt to a warming climate. A careful balance must be struck between shading, the amenity value of trees and solar gain as a result. Rugby Borough Council has prepared a Tree Policy which is available at https://www.rugby.gov.uk/directory/25/our_planning_strategies_policies_and_evidence/category/86. The policy includes a variety of information about the benefits of trees, how they can be managed, and maintenance work that can be carried out by the Council.

6.4 In addition to providing opportunities for energy efficiency, trees can provide a significant contribution to helping us adapt to and minimise the impacts of climate change. This can be through helping to reduce flood risk, improving air quality by absorbing vehicle emissions and other pollution, and providing wildlife corridors. They can help to reduce the impact of heavy rainfall, slow and store surface water runoff, reduce urban temperatures, and provide shade and protection against the detrimental effects of sunlight.

6.5 Large canopy species may provide more benefits for climate adaptation particularly if part of ecological networks by providing dark corridors for light sensitive species such as some species of bat. Tree species should be used that can themselves adapt to changing climate conditions, particularly as a result of higher temperatures and potential drought conditions in summer. As confirmed in NPPF paragraph 131, trees make an important contribution to the character and quality of urban areas. New streets should be tree-lined unless clear, justifiable and compelling reasons are provided to say why this would be inappropriate. Figure 21 below shows typical examples of landscaping that can be incorporated into the streetscene.

Figure 21: Plan view of streetscene planting and green infrastructure



6.6 Deciduous trees can be very beneficial by allowing sunlight to reach buildings during the cooler winter months and protect from sunlight (UV) and overheating during the warmer summer months. Species selection, siting and maintenance should be carefully considered to maximise the ecosystem benefits of trees on a development site, and to avoid shading solar panels or blocking drainage systems with leaves. Areas of tree planting can benefit biometric calculations as part of Biodiversity Impact Assessments, as can the retention of hedgerows.

6.7 When combined with other measures, or as part of integrated sustainable drainage systems (SuDS), trees have a major role to play in both the development of green infrastructure, the sustainability of ecological networks and the reduction of flood risk relating to new development, alongside other landscaping, such as green walls and roofs.

6.8 Applicants should show how their landscaping has taken into consideration the impacts of climate change. This should include regard to the species selection, location and types of planting and in terms of the management of the landscaping. Secondly, applicants should ensure that trees and landscaping help mitigate change impacts through integration within Sustainable Drainage System (SuDS) provision, as opposed to being separate features. This may include, for example, landscape areas as water attenuation features, and linking of runoff into tree pits. The section on SDC6 in this SPD provides further advice on sustainable drainage designs.

6.9 Proposals should seek to avoid development that would significantly undermine current levels of soft landscape provision, particularly tree cover, as this is likely to be damaging to climate change adaptation strategies. Conversely, the introduction of well-planned and well maintained urban tree, particularly native species, cover can greatly increase the adaptive capacity and resilience of urban areas, as well as being beneficial for air quality and biodiversity..

6.10 Green infrastructure can play a role in enabling species to move from less favourable habitats to more favourable ones as the climate changes. Green infrastructure can be part of an overall nature recovery network. Advice on nature recovery networks can be found here: Nature Networks Evidence Handbook (NERR081): http://publications.naturalengland.org.uk/publication/6105140258144256.

6.11 The natural environment can play a vital role in tackling the climate crisis as healthy ecosystems take up and store a significant amount of carbon in soils, sediments and vegetation. Alongside many other negative impacts, the destruction and degradation of natural habitats has resulted in the direct loss of carbon stored within them. Restoring natural systems can start to reverse this damage at the same time as supporting and enhancing biodiversity, alongside delivering co-benefits for climate change adaptation, soil health, water management and society. Green infrastructure proposals should seek to restore degraded natural habitats where possible.

6.12 There is a preference for native species that can assist with nature recovery strategies and encourage ecological networks that provide biodiversity net gain relative to habitat size, particularly if this increases tolerance to soil conditions, root spread and ease of management. Where developments include the importation of soil, soil materials should be of a standard to support vegetation, avoiding contamination.

6.13 Opportunities should be taken to improve connectivity between habitats. This can be done by linking Green Infrastructure, but also by, for example, providing 13sqm access holes in fencing to allow hedgehogs to move through more built up areas.

6.14 There may be wider opportunities to link to nearby green infrastructure and utilise existing features. Landscape patterns and hedgerows can be utilised and enhanced, as well as existing grassland and woodland.

6.15 When considering enhancing Green Infrastructure attention should be given to the location, landscape, character and heritage significance of conservation areas, historic parks and gardens and archaeological features. Sensitive preservation of historic geological and ecological features should be incorporated where appropriate, including safeguarding 'Ridge and Furrow' features. When restoring historic field ponds and ditches, these may have archaeological deposits within them and should be assessed, taking into account the impact on heritage. Woodland creation can also cause harm to archaeology and should also be subject of assessment. Historic England have produced guidance on water features such as ponds, which it may be helpful to refer to:

'Water Features in Historic Settings: A Guide to Archaeological and Palaeoenvironmental Investigations' - https://historicengland.org.uk/images-books/publications/water-features-historic-settings/

7 OTHER

Relevant SDC Policies: All

WATER EFFICIENCY

7.1 Water efficiency has a significant role to play in addressing the challenges faced by the water sector and beyond. It is one of the few tools that can address both climate change mitigation and climate change adaptation. It can help the UK meet its climate change targets and make the country more resilient to droughts and floods. Water efficiency can reduce pressure on existing infrastructure and lessen the need for new infrastructure.

7.2 Heating water in homes for cooking, personal washing and cleaning produces 5% of the UK's greenhouse gas emissions and a quarter of CO2 emissions from homes – it is the second biggest use of energy in homes, after space heating, and comes before that of energy consumption of gadgets and appliances (Waterwise – Water Efficiency Strategy for the UK 2017 https://www.waterwise.org.uk/knowledge-base/water-efficiency-strategy-for-the-uk-2017/). Wasting less hot water in homes – through more efficient fixtures and fittings and more efficient use of hot water from taps and showers - can help meet carbon targets. Wasting less hot and cold water will reduce the carbon footprint of the water industry, which would as a result need to pump and treat less water and wastewater (and will in turn make the sector more resilient to climate change as less water is needed).

Water efficient appliances can include:

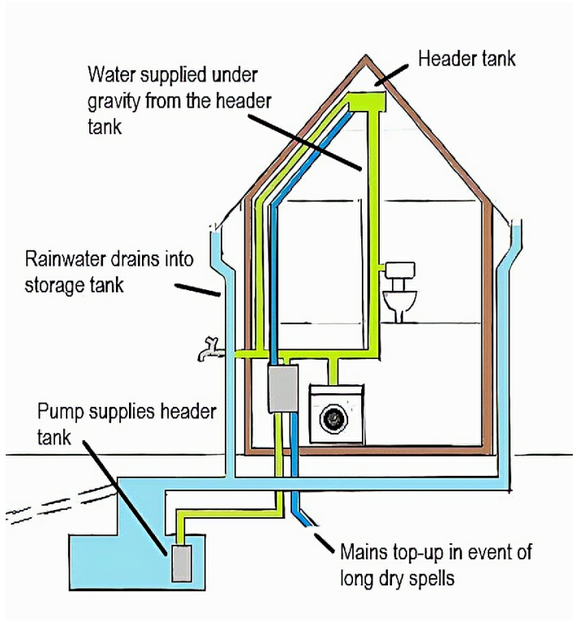
- Dual flush toilets (2/4 litre or 4/6 litre) - Dual flush toilets can save over 60% in toilet water usage.
- Low flow showers – Showers with flow restricting or aerating features can reduce shower water usage by up to 60% in some cases.

- Smaller bath sizes – Lower capacity baths will save on water.
- Water efficient washing machines - The water efficiency of washing machines can vary greatly. The most efficient washing machine will use 6 litres of water per kilogram in comparison to the least efficient washing machine that will use 14 litres of water per kilogram. Checking the water consumption box on the energy label will help identify if an appliance is efficient or not.
- Low flow taps – Taps can include restrictors that limit flow or aerators to add air to the water and can save 40% in tap water usage.
- Usage of these appliances will help developments achieve the 110 litres per household per day standard set out in Local Plan policy SDC4, although an even higher standard of 90 litres per household per day is encouraged.

7.3 Retrofitting water efficient measures into existing buildings can often be costly, time consuming and difficult to implement. As such, water efficient measures should be integrated at the design stage of new developments and incorporated when constructed.

7.4 Rainwater collection facilities such as communal rainwater tanks and water butts should be installed in all residential developments and householder developments. Low carbon rainwater harvesting and/or greywater recycling systems within new developments can be used to increase water efficiency. Referring to these features within Design and Access Statements will help to illustrate compliance with policy SDC4. A rainwater harvesting system is illustrated in Figure 22 below:

Figure 22: Diagram of a Rainwater Harvesting System



WATER QUALITY

7.5 Pollution from waste water or sewage can contain nutrients such as phosphorous and nitrates, harmful chemicals, viruses and bacteria and other harmful substances. These can affect oxygen levels within the receiving waters and can impact on ecology.

7.6 Reducing the impact of pollution from waste water will provide many benefits and help support a wide range of water uses. These uses include drinking water supply, agriculture, angling, conservation and wider benefits such as tourism and quality of life.

7.7 Pollution can come from a variety of sources, individually or combined. It can include metals, vehicle emissions, silt, grit, bacteria and oil as examples. It can come from run off from agricultural land, roads and some types of recreational land. Carefully managing run-off from a development will help manage pollution and can provide ecological and health benefits.

7.8 Where developments require an Environmental Impact Assessment (EIA), applicants should include the impact resulting from development on the water environment in the EIA assessment using information from the "Severn Trent River Basin Management Plan" or directly from the Environment Agency. However, there will be many instances where an EIA is not required.

7.9 Where developments do not require an EIA but have the potential to impact on water bodies then applicants should consult the Environment Agency (EA) as a separate assessment might be required. Water Framework Directive Assessments are sometimes required by the EA for developments where permissions are required for works near/on main rivers. Further information from the EA is available at https://www.gov.uk/guidance/water-supply-wastewater-and-water-quality.

WASTE

7.10 Designs should carefully consider arrangements for bin collections and there should be sufficient space for the different bin types used. Inadequate collection areas can result in wheelie bins strewn across public areas and can represent a safety risk to pedestrians and vehicles and be visually unappealing. Further detailed guidance on waste storage is included in Appendix B to this SPD.

HERITAGE ASSETS

7.11 Heritage assets provide unique opportunities for development proposals. Listed buildings for example often have particular characteristics not present in more modern buildings, and conservation areas help in preserving the historic character of an area. Development can be designed to respect theses to provide a high quality design that also contributes to the safeguarding of a heritage asset and even enhance the surroundings.

7.12 It is a widely held view that older buildings are not energy efficient and must be radically upgraded in order to improve their performance. In reality, the situation is more complicated, and assumptions about poor performance are not always justified. Although their energy efficiency is often perceived as poor they are capable of being upgraded.

7.13 Measures can be installed, but it will require more thought into the approach to the energy efficiency in these buildings. Taking a whole building approach on how best to upgrade historic buildings is preferred rather than focusing on one aspect. Historic England have issued the following document setting out how to take the whole building approach to provide a sustainable and successful solution: https://historicengland.org.uk/images-books/publications/eehb-how-to-improve-energy-efficiency/

7.14 The first priority for listed buildings should be for non-invasive measures. This will help preserve the integrity and special character of the listed building. Measures should incorporate the re-use of building materials where possible. This is already undertaken when works are carried out to historic buildings to ensure materials match and the character and appearance is conserved. This can also reduce the environmental impact of new development through a reduced demand for new materials and reduced levels of waste to be disposed of in landfill sites. The replacement of windows with modern double or triple glazing units is unlikely to be acceptable. Historic England have issued guidance 'Planning Responsible Retrofit of Traditional Buildings':https://historicengland.org.uk/images-books/publications/planning-responsible-retrofit-of-traditional-buildings/

BROADBAND

7.15 Broadband provision will help allow people to have access to high speed broadband as soon as they move in, which in turn will make working from home easier and will give homes fast and reliable connections for streaming TV and films on multiple devices at the same time. This is also more sustainable as it reduces commuting between settlements for work purposes, thereby reducing fossil fuel consumption from vehicles.

7.16 Provision of broadband infrastructure is likely to require street works in many cases so it is particularly important to incorporate this into the design at an early stage. Developers should work together with utilities providers and Warwickshire County Council Highways Authority to ensure minimum disruption to the road network. The Government have issued the following document in relation to broadband infrastructure and street works which highlights some of considerations involved https://www.gov.uk/government/publications/framework-for-uk-fibre-delivery-street-works

7.17 Proposals will be supported that contribute to the future of mobile connectivity and the rollout of small cells for 5G which is most likely to be needed in denser, urban areas. This could, for example include ensuring that all new developments have sufficient ducting space for full fibre connectivity; and/or support the effective use of rooftops and street furniture to accommodate mobile digital infrastructure, including small cells for 5G. Informatives may be used to reinforce this on relevant planning permissions for both residential and commercial schemes.

7.18 Rugby Borough Council is a partner in the Coventry, Solihull and Warwickshire Broadband project which is bringing superfast broadband to communities that are unlikely to benefit from a commercial broadband service. Further information on this project and how it can help deliver broadband in areas is available at https://www.cswbroadband.org.uk/

7.19 The Government have amended Building Regulations to ensure that all new build homes come with Gigabit Broadband. Developers are encouraged to incorporate the latest available broadband technology to ensure homes are fit for the future and this will be controlled by condition on applications for new dwellings. For further information see https://www.gov.uk/government/news/millions-of-homeowners-and-tenants-to-get-better-access-to-faster-broadband.

APPENDIX A

INFORMATION REQUIREMENTS

CONTENTS

1 INTRODUCTION

1.1 This appendix sets out the information required to be submitted with an application. Ensuring the correct information is provided with the application will avoid unnecessary delays with registration. A sustainability checklist is also included which should be referred to when applying. The checklist covers a variety of issues in relation to combatting climate change and sustainability, and by working through the issues raised, proposals are more likely to comply with the sustainability objectives of the local plan.

1.2 A certain amount of information is required as a minimum for planning applications as set out in in national planning practice guidance. This appendix does not set out to duplicate that guidance but details additional information that should be considered and provided.

2 INFORMATION REQUIREMENTS

ENERGY STATEMENTS

2.1 Energy statements should be provided for major developments. They must demonstrate how reductions in carbon emissions will be achieved and quantify the total reduction. They must also demonstrate that the approach to energy complies with the energy hierarchy, and that any energy measures proposed are appropriate and will be effective . This section sets out the information that needs to be included. Non-major developments do not need to submit an energy statement but instead should submit adequate information to demonstrate how energy efficiency and sustainability has been incorporated into the proposal in accordance with this SPD.

2.2 An Energy Statement is a validation requirement to demonstrate compliance with the sustainable policies in the local plan. In some instances these details may not be known e.g. outline applications. Where this is the case it may be possible to utilise a planning condition on a grant of planning permission to ensure one is submitted with the reserved matters application. In general terms, the energy statement will require details of the equipment and technology to be incorporated to achieve carbon emission reductions.

2.3 The following list is not exhaustive, however it is recommended that the following information is included:

- Energy efficiency of the building fabric
- Predicted annual carbon emissions of the development
- The contribution of each proposed renewable energy technology
- Feasibility of district or community heating
- Summary of the benefits of various low energy technologies
- The total estimated reduction in the development's baseline carbon emissions and/or energy demand.

2.4 A non-technical summary should be included outlining the conclusions of the statement.

3 SUSTAINABILITY CHECKLIST

3.1 In addition to the requirements for major developments it is important that all new developments including house extensions undertake a sustainability checklist which will be required on the submission of a planning application.

3.2 This checklist has been designed to assist applicants to review their approaches to sustainability in the design of proposals for the re/development. Applicants are expected to work through this during the preparation of the planning application, starting from the preapp consultation and engagement with planning officers where this has taken place.

3.3 Checking the proposal against each of the relevant priorities listed will help improve the sustainability of the proposal and avoid delays while additional information is requested to support the application.

Layout and Design	Yes	No	N/A	Justification
Does the location of the proposed development minimise distances to the main employment centres, shops, recreation and community facilities, and schools?				
Has the local context been addressed in the application and does the building arrangement consider the existing streetscape?				
Has the visual interest of the street layout been considered in the application?				
Have daylight, sunlight and privacy been considered in the application				
Has outdoor space been considered in the application?				
Is there sufficient space for bin storage which protects visual amenity and prevents risk of hazards?				

Does the design conform to the Technical Housing Standards - Nationally Described Space Standard?				
Does the design have regard for characteristics of the area?				
Is the overall design in accordance with the principles of Passive Solar Design e.g. natural heating and light through solar gain, passive ventilation?				
Are the materials chosen appropriate for thermal mass, and has appropriate insulation and airtightness been considered in the design of buildings, whilst balancing against the needs to avoid over-heating?				
For larger development schemes – does the layout utilise design to minimise shadowing, and gain heating efficiencies? Will the development make the best use of existing landform, to protect against hotter or wetter weather conditions, and utilise thermal buffering?				
Does the proposal deliver measurable improvements for biodiversity by preserving or enhancing habitats?				
Sustainable Transport				
Do the designs support sustainable transport options?				
Does the scheme facilitate active/healthy travel choices and reduce private car dependency?				
Do pedestrian and cycle routes link comfortably to surrounding areas/ facilities, and to other transport networks.				

Does the proposal provide appropriate levels and standards of car parking (as set out in Appendix 5 of the local plan)?				
Will the development incorporate electric vehicle charging points?				
Does the proposal provide appropriate levels of, and secure facilities for, cycle parking/storage?				
Will a Travel Statement (for smaller-scale developments) or Travel Plan (for proposals that generate significant traffic) be submitted with the proposal, including measures such as car clubs/Smart travel?				
Energy Efficiency				
Has the development been designed in accordance with the Energy Hierarchy (Reduce energy demand>Supply energy efficiently>Utilise renewable technology)?				
Has an Energy Statement been prepared for the application?				
Does the development utilise energy efficient design techniques such as the passive design concept and high level insulation?				
Have efficient means of supplying energy been included in the proposal including efficient mechanical and electric systems, heat pumps, 'smart' appliances and heat recovery systems?				

For energy generation have renewable technologies been utilised such as solar panels, micro turbines and ground source heat pumps?				
Has the scope for connection of larger developments schemes to an existing District Heat and Cooling System, or CHP system been considered?				
In terms of water-use efficiency, does the proposal comply with Building Regulations limit of 110 litres per day?				
Have measures been included into the scheme to recycle water, for example water-butts for housing developments, or underground tanks?				
Will the development require water-intensive processes for construction and, if so, are there any water-saving measures that can be used to reduce this?				
BREEAM Assessment (Non residential buildings over 1000sqm)				
Has a BREEAM assessment, which achieves at least a "Very Good" rating been submitted?				
Has provision been made to submit post construction certificates to achieve a minimum "Very Good" rating?				

Flood Risk and Drainage				
Has the development been located away from areas more at risk from flooding (Floods Zone 2 and 3)?				
Has the Environment Agency Surface Water Flooding Map been checked to identify localised flooding issues?				
Have Sustainable Drainage Systems (SuDS) been incorporated into the development proposal? For example infiltration basins, soakaways, permeable paving?				
Have maintenance responsibilities been identified for any proposed SuDS?				
Heritage Assets				
Has the impact of proposals upon heritage assets, such as conservation areas and listed buildings been considered? (Works to listed buildings may also require Listed Building Consent in addition to planning permission. Please check with the planning office).				
Where possible, can materials be re-used in the proposal that are in keeping with the heritage asset?				
Demolition and Construction				
Has consideration been given to the amount of embodied carbon (the CO2 used in producing materials), including how it will be reduced in the development and how waste will be reduced and diverted from landfill?				
Has a Construction Management Plan been prepared for the proposal?				
Where site demolition will be necessary, have procedures for the salvage of building part and/or materials been put in place (including any natural materials on site)?				

APPENDIX B

RESIDENTIAL DESIGN GUIDE

CONTENTS

1 INTRODUCTION

1.1 This appendix sets out the design considerations in relation to residential development. The majority of planning applications received by the Council relate to new dwellings or alterations to existing houses. As such it is considered for ease of reference to consolidate residential design issues into this appendix. The appendix should be read in conjunction with the main document.

1.2 The appendix includes guidance on the layout and design of larger developments consisting of multiple dwellings, as well as more detailed guidance for single plots and buildings. Issues relating to space, refuse storage and amenities are explained. These matters are essential in helping a development achieve a high quality, inclusive and sustainable design as set out in SDC1.

1.3 In addition to this guidance, applicants are encouraged the refer to the National Design Guide available from the Department for Levelling Up, Housing and Communities (DLUHC). The guide includes '10 characteristics' to help achieve well designed places; Context, Identity, Built Form, Movement, Nature, Public Spaces, Uses, Homes and Buildings, Resources and Lifespan. The guide is available at https://www.gov.uk/government/publications/national-design-guide

1.4 The DLUHC has also issued the National Design Code. The code expands on the 10 characteristics in the Guide. Design codes can be prepared by developers in partnership with the Local Authority, particularly on larger sites requiring masterplanning. The code is available at https://www.gov.uk/government/publications/national-model-design-code.

2 LAYOUT AND DESIGN

2.1 There are a number of aspects relating to a development's layout and design that should be considered at an early stage. These will will allow them to be incorporated more easily into the proposal to help address climate issues and provide a more sustainable form of development.

ACCESSIBILITY, CONNECTIVITY AND PERMEABILITY

2.2 The accessibility of a site to services and facilities can greatly reduce reliance on private car use. Private car use contributes a large proportion to the UK's total carbon emissions and is a major factor in air pollution. Greater opportunities for more sustainable access to services are likely to be present in the Rugby urban area and Main Rural Settlements. The Countryside and Green Belt are the least sustainable of development locations.

2.3 The layout and design of a site will affect access to existing nearby services. Large-scale developments should ensure that key facilities such as schools, shops, GP surgeries, recreation and play areas and bus stops are accessible and well connected.

2.4 To facilitate access between areas, opportunities for increasing connectivity through walking and cycling should be considered in all developments. Information on cycle routes is available from Warwickshire County Council at https://www.warwickshire.gov.uk/cycleroutes. Those in more sustainable locations such as the urban area will have greater opportunities to connect to existing infrastructure nearby to form a coherent network to link key destinations and trip origins.

2.5 Public transport provision will also help facilitate access between areas and reduce reliance on car journeys. There will be more opportunities for utilising these in the urban area. Details of bus routes are available from Warwickshire County Council at https://www.warwickshire.gov.uk/busroutemaps). Sustainable modes of transport including the introduction of car clubs, car sharing opportunities, park and ride facilities and rail will be supported.

2.6 Permeable networks encourage walking and cycling and make places easy to navigate through, especially for visitors. Consideration should be given to providing seating/resting places along well used routes to assist less mobile persons to reach key facilities and litter bins in order to prevent litter and ensure that these routes remain attractive.

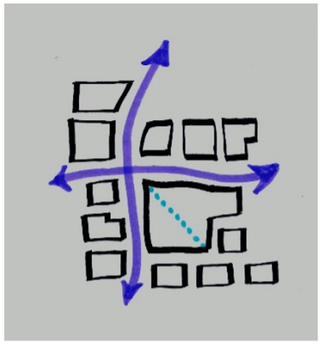


Figure 1: Diagram showing example of permeable layout and connectivity

2.7 Built form defines a pattern of streets and development blocks. These should be appropriate to the location enabling people to easily move both within and into and out of the site. New developments should provide active frontages that are directly accessible by foot and overlooked from the street. This can help in reducing crime by providing natural surveillance and ensuring streets are community friendly which in turn encourages walking and social interaction.

2.8 The National Design Guide (2019) forms part of the government's national planning practice guidance and identifies 'movement' as one of ten characteristics of well-designed places. It highlights the need for an integrated network for all modes of transport giving

people maximum choice in how to make their journeys, prioritising pedestrians and cyclists. Applicants are encouraged to refer to the guide which is available at https://www.gov.uk/government/publications/national-design-guide.

2.9 Cycling and walking provision should provide suitable crossing facilities where necessary as well as appropriate lighting levels and security measures to ensure the safety and security of pedestrians and cyclists. Lighting may also need to consider necessary mitigation measures such as protection of species and local amenity. Cycle infrastructure should provide connections that link origins and key destinations, provide direct routes and give priority to cyclists at junctions.

2.10 An appropriate amount of cycle storage should be provided, guided by the standards set out in Appendix 5 of the local plan. This includes providing for each new dwelling as well as on new employment, leisure, retail and commercial development sites. This should be secured, covered, have good surveillance and be sited conveniently. Therefore, consideration will need to be given to the overall design of cycle storage at an early stage of the planning process. The provision of shower facilities in non-residential developments will help facilitate commuting by cycle.

2.11 Electric charging points for e-bikes on new developments as well as grouped locations for cycle hire will help encourage this sustainable form of transport. The size of the development may help inform what a suitable number of points could be and would need to be considered on a case by case basis.

2.12 Cycle and walking routes have to the potential to become green/blue corridors to encourage wildlife and habitats as well as making these routes more attractive. Doing so will help the development become more adaptable to climate change and provide ecological benefits. Tree lined streets should be utilised, which is a requirement set out in paragraph 130 of the NPPF. Examples of planting and landscaping that can be included in streetscene design are illustrated in the Green Infrastructure, Landscaping and Biodiversity section of this SPD.

DENSITY AND MIXED USE

2.13 Density plays an important part in reducing people's reliance on using a private car. Higher density developments can make efficient use of land in more sustainable locations, making destinations easily accessible by walking or cycling, and bringing people together to support local public transport, facilities and local services. Rugby Borough consists of a mix of urban and rural environments, so an appropriate density will need to be considered for each new development which will help form the context, form and character of the area.

2.14 Mixed use developments can provide a wide range of services and facilities including employment opportunities, schools, healthcare provision, recreational and leisure facilities, open green spaces and many more. This will allow residents and other people frequenting the site access these with minimum amount of travel. These developments will be expected, where appropriate, to include good cycle and pedestrian access to these facilities.

3 INSTALLING RENEWABLE AND LOW CARBON ENERGY

3.1 Section 3 of the main SPD details types of renewable and low carbon energy that can be incorporated into developments. When designing new dwellings it will be necessary to carefully consider how these will effect the appearance of the buildings and character of the area.

SOLAR PV PANELS

3.2 Solar panels are often located in prominent positions to make use of the roof slope. South facing rooflsopes are usually preferred to make the most of the suns rays. When installing solar panels, the following points should be considered to ensure they are sited as suitably as possible:

Visual prominence
Consider where the panels would be visible from e.g. from nearby roads or footpaths. Panels on the fronts of properties are likely to be visually prominent. Are there any roofslopes less visible that could be utilised?

Design
Check what colour finishes are available to help it blend in with the roof. Panels are typically dark blue or black, however coloured finishes and tones are available to help them appear less obtrusive. Coloured panels are however less commonplace currently and can be more difficult to obtain.

Arrangement
Think about the layout of the panels. The size and layout of panels can have a significant effect on the appearance of the building. Neatly arranged symmetrical panels for example are likely to be much more pleasing visually compared to panels that are scattered haphazardly across the roofspace.

Matching Styles
Check if neighbouring or nearby properties have a particular style of panels they use? In some cases it might be possible to use a similar style giving a more uniform appearance to an area.

Conservation Areas
Check if the property is within or near to a Conservation Area. Such locations are likely to be extra sensitive in terms of the character and appearance of the area. Additional care or alternative siting may be required in some circumstances.

MICRO TURBINES

3.3 Micro turbines must be sited clear of roofs and nearby trees to ensure they receive sufficient air flow. Due to this however they are also likely to be visually prominent and so their effect on the appearance of the building and character of the area must be carefully considered.

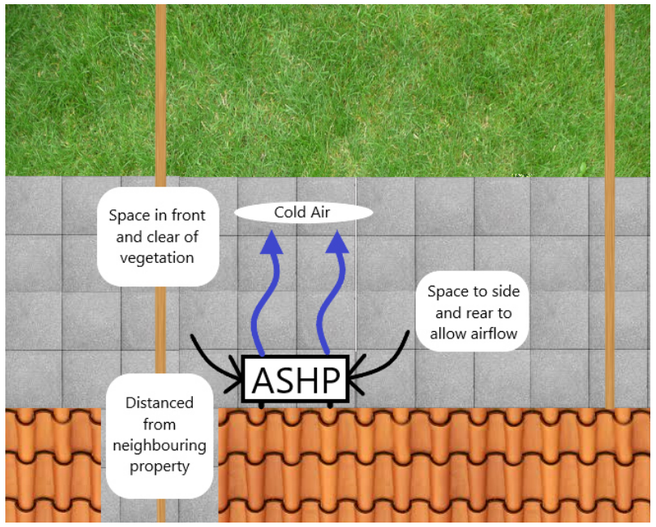
3.4 In addition to their visual impact, there may be potential for noise disturbance from a turbine. Distance from neighbouring properties will need to be considered and it should be ensured any fixings and components are securely fixed and do not vibrate.

AIR SOURCE HEAT PUMPS

3.5 Air source heat pumps require a good flow of air to be most efficient. Air is taken in from the sides and back of the equipment, and cold air is expelled through its front once the heat has been taken from it. Typically they are located on or near the external walls of the building so the energy does not have to travel far. Noise is also potentially an issue, although modern technology has helped reduce this.

3.6 The above factors may limit the suitable locations to fit the equipment due to the required space. Also there is the potential for the cold air expelled to damage nearby garden lawns and plants and make areas less usable. It may be necessary to consider the additional garden space required to compensate for this to ensure an adequate standard of amenity is provided. The figure below shows an example layout.

Figure 2: Example layout for an Air Source Heat Pump



4 CAR PARKING PROVISION AND CHARGING

4.1 Appendix 5 of the local plan sets out the planning requirements for parking provision, however car free developments may be considered in certain circumstances where the following apply:

- Extension, alteration or re-use of an existing building which has no access to parking;
- Reversion of a previously converted property to its original residential use, including flats above shops; or
- Where 100% cycling or walking provision is considered to be a viable option with access to a full range of services. This is only likely to be acceptable in town centre or edge of centre locations however.

4.2 Electric vehicle charging should be provided in new developments and incorporated into existing ones where possible. Appendix 5 of the Local Plan 2019 sets out the Borough's parking standards, however reference should also be had to the Building Regulations Approved Document S (2021) which sets out required electric vehicle charging provision. In general, charging provision should be made available for each new dwelling as far as possible, and in the case of non-residential development a proportion of the spaces should have charging provision (depending on the size of the development). Applicants are encouraged to refer to both Appendix 5 of the local plan to determine levels of parking expected, and Building Regulations to ensure satisfactory charging provision is provided in accordance with legislation.

4.3 Car clubs provide an opportunity for people to utilise hire vehicles for short periods at relatively little cost. Car clubs can reduce the need for private car ownership, therefore reducing the number of vehicles on the road and avoiding personal expense at having to maintain a vehicle. Proposals that incorporate car club schemes will be given positive consideration.

4.4 Developments should aim to create streets that control the speed of vehicles using appropriate traffic calming measures. This may for example involve planning streets so they have a maximum design speed of 20mph. In conjunction with Warwickshire County Council Highways, 'Idle-free zones' (defined areas where vehicles are banned from running engines whilst stationary) outside of sensitive sites such as schools, shops, hospitals and GP surgeries will be strongly encouraged, so as to reduce air pollution and carbon emissions caused by idling vehicles.

5 SPACE STANDARDS

5.1 One recognised way to assess if living conditions of a proposed development are acceptable is whether or not the National Space Standards (https://www.gov.uk/government/publications/technical-housing-standards-nationally-described-space-standard) are adhered to, which can help inform room and storage sizes. Whilst this is not a specific requirement of local plan policy, it is of assistance to the Council in assessing planning applications to understand the degree of compliance with the National Space Standards and to understand the reasons why National Space Standards have not been met (if applicable) for any part of the development. Non-compliance with the space standards is not in itself be a reason for refusing permission, however substandard accommodation will be. Providing a satisfactory amount of space in line with the standards will help secure sufficient amenity and quality design in accordance with SDC1.

5.2 New dwellings should provide an adequate amount of garden space that is in keeping with the character of the area. Gardens help provide a good standard of amenity to developments and may also be used for growing food. It will be necessary to consider the individual merits of a proposal, however, as a guide, a garden should be at least the size of the ground floor footprint of the dwelling. A minimum garden length of 7 metres is encouraged, as well as 60 sqm area for a 2 bedroom property and 80sqm for a 3 bedroom property. Flats should also ensure usable outdoor space is available, such as communal gardens and balconies.

5.3 It is recommended that sufficient space is made available between dwellings. In general, there should be separation of 21 metres between dwellings facing rear to rear, and 14 metres if the rear of the dwelling is facing onto a blank side elevation.

5.4 Consideration should be given to the layout of garages and other outbuildings to ensure that some garden spaces are not enclosed by structures on all sides leading to an overbearing effect.

6 WASTE STORAGE

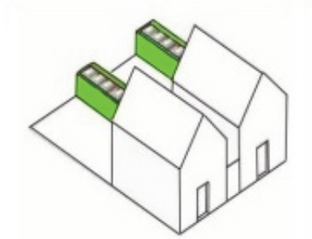
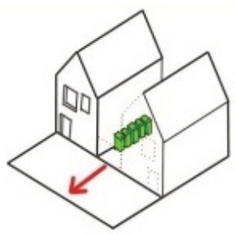
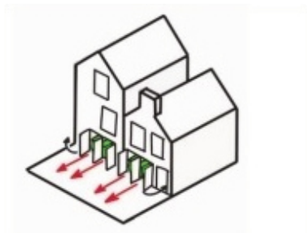
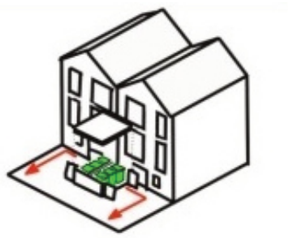
6.1 Designs should carefully consider arrangements for bin collections and provide sufficient space for the different bin types used. Areas without adequate collection areas can result in wheelie bins strewn across public areas and can represent a safety risk to pedestrians and vehicles and can be visually unappealing.

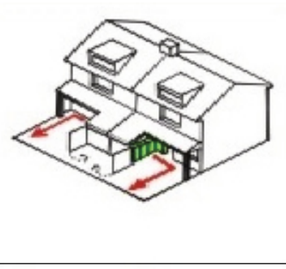
6.2 The design and siting of the bin storage itself should carefully consider possible visual and amenity impacts to ensure it does not adversely affect the external elevation of the property, the character of the area or residents' living conditions. Where required at the front of the property, well designed screening may be necessary. Waste bin storage areas should be well ventilated and situated away from direct sunlight. Communal waste/recycle facilities must be easily accessible to all residents including those with disabilities.

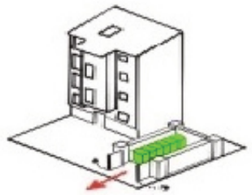
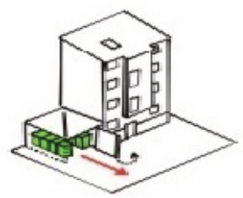
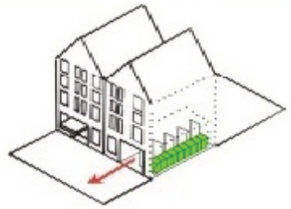
6.3 The National House Building Council (NHBC) Foundation has produced guidance for waste bin storage for different types of housing entitled "Avoiding Rubbish Design" (2016) . The guidelines include examples and case studies of refuse storage for different housing types. The document is available at: https://www.nhbcfoundation.org/publication/avoiding-rubbish-design-providing-for-bin-storage-on-new-housing-developments/

6.4 Illustrated examples from the guide are summarised below. It is important to emphasise however that the most suitable method for waste storage of collection will depend on the individual characteristics of the site and proposal. This may for example involve taking into account the wider design context such as main approaches and viewpoints of the development, as well the overall character of the area.

Figure 3: Examples of waste storage methods.

Semi-Detached Properties	
	
Purpose built stores in rear of property. Bins kept where not visible from the house.	**Bin stored in space between detached houses.** Space provided to allow the passing of bicycles and garden equipment. Gate provided at front of store.
Linked Houses	
	
Storage behind garage type doors. Particularly suited to mews type buildings where there is little space at the front. This solution places bins behind doors to the front of houses. Care should be taken to ensure the design of the façade is not overly dominated by too many doors.	**Storage adjacent to front doors.** Bins are kept in purpose built stores adjacent to the front doors of houses which can be constructed as pairs as shown.

Linked Houses	
	
Storage within storm porches. Storage adjacent to front doors integrates into a wider porch.	**Communal storage sited separately within shared grounds.** This solution provides open storage for a number of bins but it is located away from the houses. Due to the scale of the storage consideration should be given to providing landscaping and/or screening to block residents views of bins. If possible the storage should be located close to the street boundary so that the bins do not have to be wheeled out by residents on collection days.

Apartment Buildings		
		
Communal storage within shared grounds adjacent to apartment buildings. This solution provides open storage for a number of bins. The preferred location is close to the street boundary so that bins do not have to be wheeled out by residents on collection days.	**Communal storage to side of apartment buildings.** This solution provides a dedicated store to the side of the building in a logical position adjacent to the entrance. The store should ideally use the same facing material as the building.	**Communal storage within apartment buildings.** Best suited to smaller apartment buildings, storage space for bins is provided within the envelope of the building. Ideally the storage space is discreetly but close to the building's access.

Source: NHBC Foundation

6.5 In some instances it may also be possible to locate bin stores to the front of properties. These are likely to have a significant visual impact however so will require careful design and may only be acceptable in certain circumstances.

7 RESIDENTIAL EXTENSIONS AND ALTERATIONS GUIDE

7.1 The following section focusses on extensions and alterations to household dwelling and gives details of design considerations that should be adhered to when submitting a planning application.

SECTION A: GENERAL PRINCIPLES FOR ALL EXTENSIONS

7.2 The Council, when assessing a planning application for an extension, will consider:

- The effect of an extension on the scale and character of the existing building and the surrounding area; and
- The impact on residential amenities enjoyed by the occupiers of surrounding properties

The guidance contained in this part explains in more detail how these aims can be achieved.

7.3 There may be examples of extensions in the area that do not comply with these guidelines. Such examples should not be seen as a precedent and will not be accepted as a reason to allow a similar proposal since they are likely to have been approved when different design policies applied. Each case therefore, is considered on its own merits.

SECTION B: PROTECTING AMENITY

7.4 It is important to consider the effect an extension would have on the neighbouring properties and the surrounding area. In addition, the amenity of the future occupiers needs consideration in addition to existing neighbouring occupiers.

7.5 Prior to submitting an application it can be very helpful to discuss proposals first with any neighbours who could be affected. If planning permission is required, following receipt of the application, the Council will notify the neighbours and publicise or the proposals if applicable. The Council will take into account any representations received when assessing if proposals are acceptable.

Daylight and Sunlight

7.6 An extension should not cause any significant loss of light to habitable rooms in neighbouring properties, or restrict sunlight to that part of a neighbouring garden close to the rear of the property that is used for sitting in or recreation. A habitable room usually consists of a living room or lounge, bedroom, dining room or a kitchen. It does not relate to a hall, landing, toilet, bathroom or corridor.

7.7 In addition, overbearing extensions could affect amenity in the garden. The relationship between the properties, including any change in ground levels and orientation must be taken into account when determining the residential impact of the development.

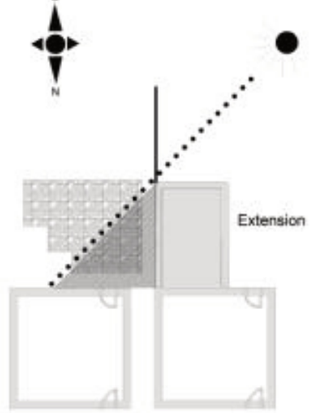
7.8 To maintain a reasonable relationship between an extension and any neighbouring properties, the Council will assess all extensions against the "45° Guideline".

45° Guideline

7.9 The 45° Guideline provides a useful tool to prevent loss of daylight to neighbouring properties.

7.10 To comply with this guideline, extensions should be designed so as not to cross the appropriate line drawn at an angle of 45° from an adjoining neighbour's dwelling (see diagrams below). This is different depending upon whether the proposal is a single storey or two storey extension. For single storey extensions, the 45° line is taken from the mid-point of the nearest window, which is also the main light source for a habitable room (Line X). For two-storey extensions, a line taken at 1 metre in from the edge of the neighbouring boundary line of the dwelling is used (Line Y). If within the 45 degree line, there is usually no loss of daylight to neighbouring properties and extensions are not overbearing.

7.11 The 45° guideline needs to be interpreted carefully and flexibly. For example, if the extension has a much larger building behind it then the daylight from that direction may already be blocked.



Extension restricts sunlight to garden and window

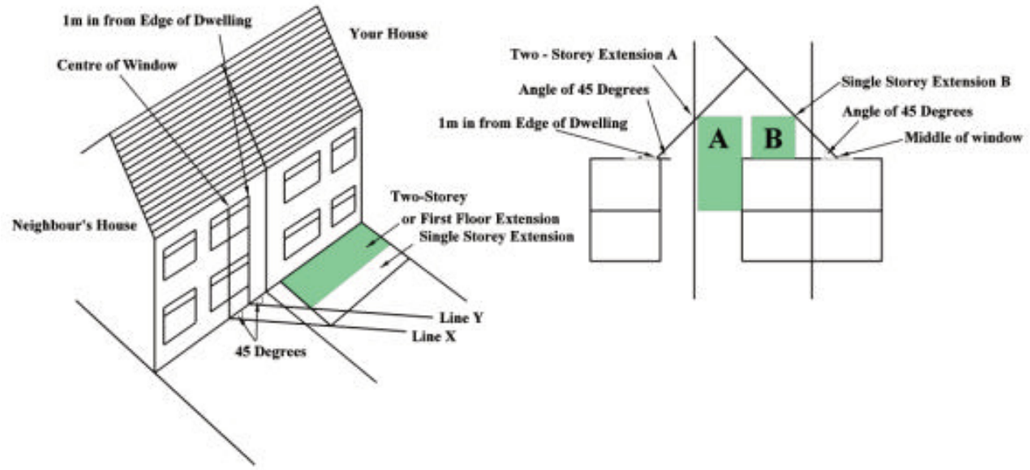
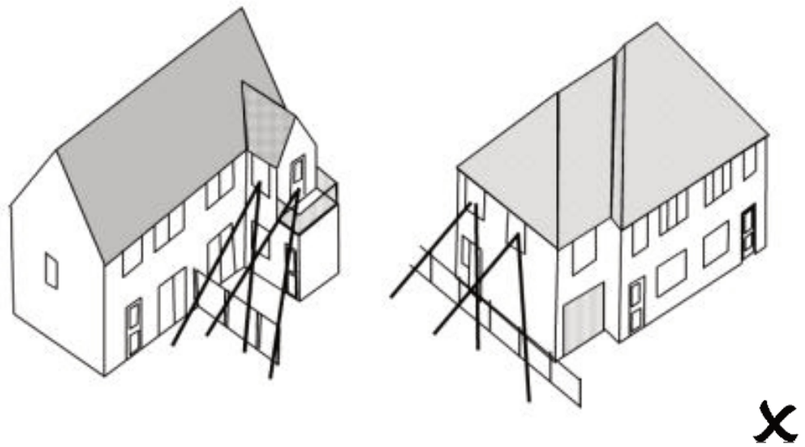


Diagram of 45° Guideline (not to scale)

Overlooking

7.12 An extension should not result in any significant loss of privacy to adjoining dwellings or gardens. The main priority is privacy to habitable rooms and private gardens. Therefore, extensions should not be built with side facing windows near to boundaries that overlook a neighbour's property. In addition, changes in ground level may have an affect on privacy and should be taken into account e.g. raised patio areas. It may be possible to install windows that are more than 1.7m above the floor level of the room in which they are in, and obscure glazed, if light and ventilation is required.



Extensions where adjacent properties are overlooked

Single-storey extensions:

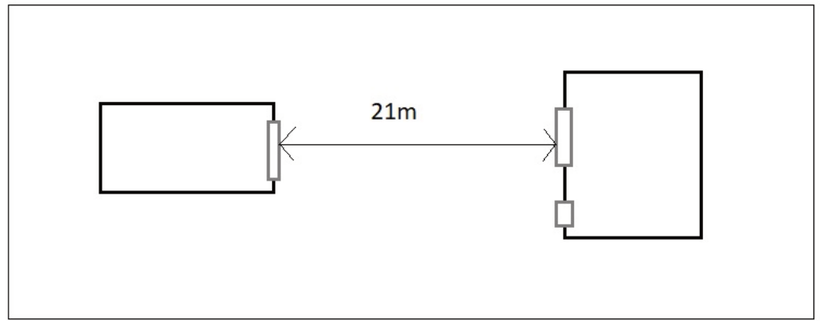
7.13 Fences or walls should effectively screen windows in single-storey extensions. If it is not possible to screen or use obscured glazing in flank windows, they should be omitted or the application may be refused if privacy to adjoining occupiers is affected.

Two or more storey extensions:

7.14 Windows in extensions of two or more storeys generally have unrestricted views and may not be acceptable where excessive overlooking occurs. In certain circumstances, the use of opaque/frosted glazing may also be acceptable as a method of eliminating overlooking. Balconies and roof gardens can also adversely affect the privacy of neighbours and will generally be unacceptable. In some instances screening may be used to mitigate this, however care must also be taken no to affect light or adversely affect the visual appearance of the building.

The position of clear-glazed windows affects the privacy of neighbouring properties

7.15 The distance between windows opposite each other should also be taken into account. It is recommended that as a general guide, there should be a distance of no less than 21 metres window to window. Factors including the height of land, angle between affected windows, and any screening present should also be considered which may affect the acceptable distance. This distance is also recommended when new dwellings are being developed as well as extensions.



Recommended distance between opposite facing windows at the same level. The distance required may be greater if, for example, upstairs windows of a two-storey dwelling afford views into windows at a single-storey level.

Private Gardens

7.16 Extensions should leave an appropriate private outdoor amenity space for the property; as a guide, buildings should cover no more than 50 percent of the existing garden area.

SECTION C: DESIGN AND APPEARANCE

Scale

7.17 The siting, size and design of an extension must not dominate the existing building, and should be sympathetic with and appear subservient to the original dwelling.

7.18 Extensions that are too large in relation to the existing dwelling, or are out of keeping with the streetscene can have a detrimental impact on the original character of the building and the surrounding area. Extensions should not have an overbearing appearance. Extensions that would dominate the existing building or be over-prominent in the streetscene will not be permitted.

An acceptable extension that does not dominate

7.19 In the countryside, particularly in the Green Belt, the Council will seek to limit the size of residential extensions to an appropriate size and scale for that building and locality. Within the Green Belt it is important to ensure that extensions do not result in disproportionate additions over and above the volume of the "original" dwelling. This will typically be around a quarter of the original volume.

7.20 The design of an extension should be sympathetic to that of the existing building and be in character with the surrounding area.

7.21 When considering an extension, it is important that the extension should relate to the design of the original building. Every effort should be made to integrate the extension into the original design of the dwelling. This will usually require sensitive design and use of materials.

Windows and Doors

7.22 The type, proportions, sub-divisions and materials of new windows and doors should be in keeping with those of the original dwelling.

7.23 In addition to respecting the general proportions of windows and doors, the detailed design is also an important consideration. The new windows should be arranged to line up vertically, horizontally and proportionally with the existing windows on the original dwelling, in order to provide a semblance of balance and continuity.

7.24 Furthermore, avoid mixing different types of windows and doors on the front elevation, and ensure that dormer windows relate in shape, position, design and size to the existing windows. When dealing with older properties of character (including listed buildings) and buildings in Conservation Areas it is extremely important to ensure windows and doors are set back in their reveals and not flush with the brickwork.

An unacceptable extension where the new windows are not sympathetic with those of the original dwelling

Roof

7.25 An extension should have a roof that reflects the original dwelling in design, angle of pitch, shape and materials.

7.26 There are essentially two types of pitched roof shapes to dwellings, hipped and gabled. All extensions with two or more stories must have a roof pitch that is in keeping with the existing dwelling. Single-storey side extensions are encouraged to have matching roofs. No extension should interrupt the roof profile where there is a clear, consistent roof form and line in a group of dwellings.

Extensions should have similar roof pitches

Materials

7.27 The materials used in extensions should match or be sympathetic with the existing dwelling in terms of type, colour and texture.In Conservation Areas or for Listed Buildings, material samples will need to be submitted and approved prior to the commencement of the development. Materials must be approved to the satisfaction of the Planning Officer dealing with the planning application, and not by the Building Control Officer.

Detailing

7.28 It is important in designing the details of the extension to reflect those of the existing dwelling. Buildings often have distinctive architectural features that contribute to their character and these can be used to good effect to assist in reflecting the design of the extension with the original.

Unnecessary detailing

SECTION D: GUIDANCE FOR TYPICAL EXTENSION TYPES

7.29 Extensions should positively enhance the existing character of the area. The following sections provide advice on examples of typical extensions:

Front Extensions

7.30 The design and appearance of the fronts of dwellings and the distance between the buildings and the street are important aspects in defining the character of residential areas. Front extensions, which project beyond the front of the original dwelling, can completely change the external elevation of the dwelling and affect the character of the immediate street scene and overall character. Therefore, generally only modest extensions which do not extend significantly forward of the building line that reflects the character of the existing property or area will be allowed.

An unacceptable front extension

Porches and Canopies

7.31 Porches should reflect the character of the original dwelling in terms of scale, details and materials used in construction. Window and door details are important in ensuring that the character of the porch aligns with that of the front elevation, and blank featureless porches are not encouraged. Canopies should be designed carefully so that they reflect existing features and use appropriate materials.

A porch that reflects the character of the original dwelling

Side and Rear Extensions

7.32 In traditional detached and semi-detached dwellings, extending at the side almost invariably involves developing up to the side boundary. The spaces between buildings, particularly at first floor level, often make an important contribution to the character of an area. Two storey side extensions that reach a property boundary may contribute towards an inappropriate "terracing effect" that would adversely affect the character of the area. This is particularly noticeable where an extension continues the roofline of the original building and where a neighbouring property could also be extended in a similar manner, thereby closing the original gap between dwellings, blocks or terraces or pairs of semi-detached housing.

7.33 To reduce the effect of terracing, it is desirable to maintain a minimum of a 1 metre gap between the dividing side-boundary at first-floor level or above, in order to provide a visual break between properties. This is especially relevant for extensions above single-storey, such as two-storey and first-floor extensions.

"Terracing" effect ***1 metre gap avoids "terracing"***

7.34 Setting back the extension from the front wall of the dwelling will help the original building maintain its dominance, particularly if it extends as far as the boundary. Such a set back will be required unless:

- There is a stagger in the building line;
- There is a marked change in levels between properties.

7.35 Side and rear extensions to properties on corner plots will be required to take into account the visual impact upon the side road and not be unduly prominent nor out of character with the streetscene. The design of the flank element of the extension will be particularly important in such locations to ensure that featureless blank expanses of brick are not visible and alter the character of the area; well designed windows or other decorative features such as brick detailing will be required as a result.

7.36 If building up to the boundary of a property is unavoidable, foundations, guttering and other construction should be kept within the boundary of the developing property. The use of a pitched roof is recommended on extensions. In order to reflect the character of the property a flat roof construction will not be acceptable if visible in the streetscene and the original dwelling has a pitched roof.

Acceptable side extensions

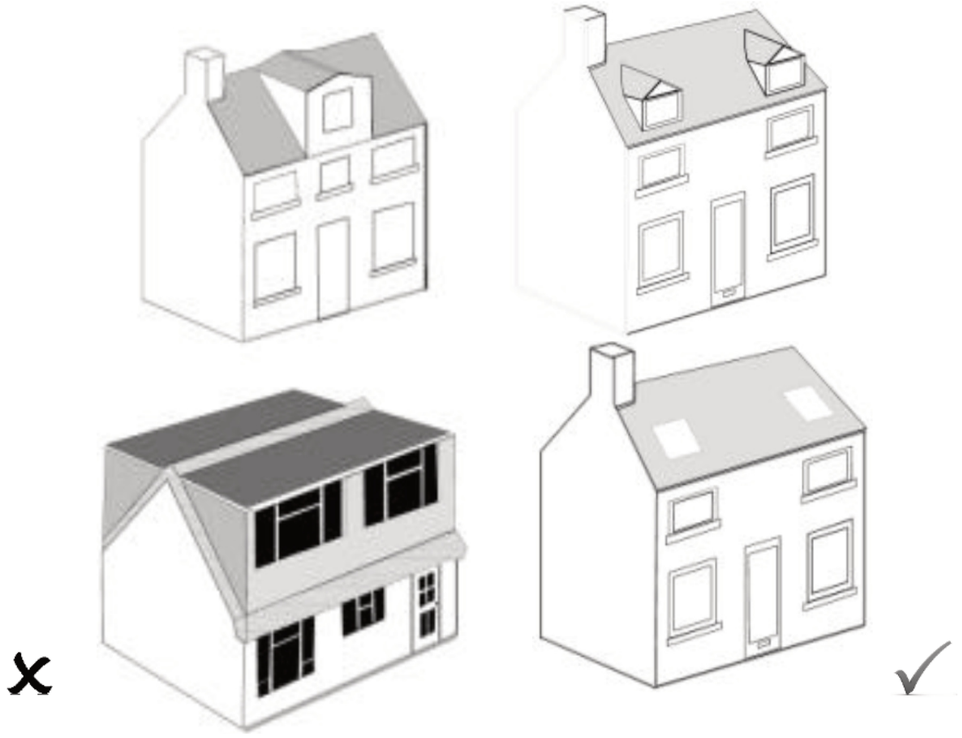
Roof and Dormer Extensions

7.37 In certain circumstances roof and dormer extensions can be developed under "permitted development rights", but they will always need Building Regulation Approval. Please refer to the Planning Portal website or seek the advice of a planning officer.

7.38 Roof extensions and dormers should not dominate the roof by being overly large, bulky or higher than the ridgeline of the original roof.

7.39 Care should be taken to retain characteristic features such as chimneys and ridge tiles. The roof and sides of dormers should be covered in materials to match or compliment the main roof. Dormer windows should also complement the existing dwelling in terms of its proportions, size and positioning. Dormers should be set in from the side and set down from the roof.

7.40 Rooflights and solar panels fitted to an existing roof should wherever possible face away from the street. Roof alterations that form a gable end where the original roof was hipped and large side facing dormers often appear out of character with the design of the existing building, streetscene and character of the area and will not be permitted.



Dormer windows should complement the existing dwelling

SECTION E: OTHER HOUSEHOLD ALTERATIONS

Parking – Garages and Hardstanding

7.41 Parking spaces should ensure they are of a sufficient size to facilitate their use. Garages should allow larger vehicles to open doors once parked within. For some types of garage and where space is limited, a single garage door could be used as an alternative to two to help maintain space. A large singular garage door may however affect the aesthetics of the property so consideration should be given to the overall design. Warwickshire County Council recommend the size of a parking space as a minimum of 2.4m width by 4.8m length. Larger parking spaces for modern vehicles should be considered where space is available. Accessible spaces for disabled people should incorporate a further 1.2m width marked transition zone to the side of the bay to facilitate entry or exit to or from a vehicle.

7.42 Garages and outbuildings should be sympathetically related to the main dwelling, whether they are adjoined or freestanding. Detached garages may not be acceptable in prominent locations, such as corner properties or in front of the building line.

7.43 The development of a residential extension should not reduce existing parking, servicing and turning facilities that would result in on-street parking or affect highway safety. In order that vehicles can be parked in front of garages without overhanging the pavement, the following distance between the garage doors and the footpath should be observed:

7.44 The normal distance to garage doors from the footpath should be at least 5.5 metres. This is to prevent cars overhanging the highway whilst the garage doors are being opened. However, other dimensions may be appropriate depending upon the type of garage door.

Ancillary Outbuildings

7.45 Ancillary outbuildings may not be acceptable in prominent locations such as corner properties or in front of the building line. Careful consideration should also be given to the height of the structure and its effect on neighbour amenity. Where near to a boundary, a hipped or sloping roof design, together with its overall height, may help reduce the overbearing impact on neighbours.

Walls and Fences

7.46 Walls, fences or any other means of enclosure to the front or side of dwellings can significantly change the appearance of an area therefore before such structures are introduced, the character and appearance of the area should be considered when planning permission is required. The character of Conservation Areas, open plan estates

and areas with natural vegetated boundaries should be retained as much as possible, thereby preventing loss of existing hedgerows, and preserving or enhancing heritage. Enclosing these areas with unsympathetic walls or fencing may not be appropriate and may lead to a decrease in biodiversity. It is important to note that planning permission is often required for the enclosure of landscape strips to the side of a dwelling whether it is included within the curtilage of the dwelling or not. If fencing is appropriate in overall design terms, hedgehog highways schemes help to maintain biodiversity by allowing a network of species to travel freely between and within estates assists with biodiversity. To achieve this, the insertion of 13 square cm holes in the gravel boards of fencing or within walls should be incorporated so that hedgehogs can move freely through developments. The details of Hedgehog Highway schemes may be required by condition.

7.47 New fences and walls should not reduce the visibility of drivers when entering and exiting their driveway. In order that sufficient visibility is provided the height and design of fences or walls to the back of the pavement would be observed. Fences and walls maybe covered by permitted development rights, however, it is important to note that planning permission is often required for. For further explanation please contact a Planning Officer on 01788 533759 or visit the Planning Portal online.

Hardstanding

7.48 The replacement in whole or in part of a surface (hardstanding) may require planning permission depending on its size, type of surfacing and drainage. Please contact a Planning Officer on 01788 533759 or visit the Planning Portal online for further information. Drainage should be carefully considered and utilise permeable paving and sustainable drainage systems where possible to help manage flood risk and run-off. Further information is detailed in Section 5 of the main SPD.