

CHAPTER 7

SMALLER SCALE DEVELOPMENTS

- 7.1 Smaller scale developments include new infill developments within established built environments, small groups and residential schemes, conversions of redundant buildings to appropriate new uses, extensions to existing buildings and minor householder alterations.
- 7.2 The single building and smaller scale design parameters and guidance already given in previous chapters are especially relevant to each of the above types of development. The following sections supply detail on further considerations unique to small developments. Smaller scale developments within Conservation Areas should be read in conjunction with the Conservation Areas SPD.

INFILL DEVELOPMENTS

Context

- 7.3 Infill plots are small-scale plots within existing developed areas. The basic context and criteria for small development infill plots is contained in Chapter 5. To retain the semi-rural character of villages it is appropriate to retain some vacant plots.
- 7.4 New uses may include (but are not limited to) residential and commercial. Mixed-use developments may be appropriate, and will be encouraged where they positively add to the variety of life of the area. Unsuitable new uses would be those that have an adverse impact on traffic congestion and use patterns in the locality.

Criteria

- 7.5 Each infill plot has unique characteristics. Infill plots typically relate to a street or village frontage, and to adjacent buildings and gardens.
- 7.6 Proposals will be expected to relate well to the topography and geography of a site and to acknowledge the pattern of historical use of that site.
- 7.7 New buildings should respect important vistas within and views out of streets and settlements. The aim should also be to create new views and juxtapositions of elements which add to the variety and texture of the setting.
- 7.8 Proposals for infill developments must respect their surroundings. These may contain buildings from the fourteenth to the nineteenth centuries, but that does not mean that the new development should necessarily be pastiche or attempt to mimic historic styles. High quality design, relevant to

context, is the most important factor, and a contemporary solution that provides modern spaces, while at the same time considers the scale, materials, grain and elevational rhythm of its context may provide a better solution. Today's high-quality buildings are tomorrow's heritage.

- 7.9 What may be a difficult site to develop, or a landmark site within a settlement, should generate innovative design solutions and architectural excellence.

ANCILLARY BUILDINGS

Context

- 7.10 Ancillary buildings include garden buildings, garages, stables and boathouses. They are subservient to a main building, usually a dwelling.

Criteria

- 7.11 The location, scale, proportions and materials would be characteristic of a subservient building.
- 7.12 Garden buildings include summerhouses and sheds. Traditionally, sheds are simple and constructed in brick, flint, clay bat or weatherboard on a timber frame and have a subservient roof material such as thatch, pantile, slate or corrugated iron. In Cottenham, traditional black boarded sheds sit prominently gable on to the road frontage, interspersed between houses, but elsewhere sheds tend to be smaller or set well back in rear gardens. Summerhouses are set within a landscape which may be extensive or intimate. They may hark back to historic examples using substantial materials such as flint or brick, or be much more lightweight in character using timber boarding on a timber frame. They use local materials, sometimes in an imaginative and contemporary way, and have simple balanced proportions. Contemporary garden buildings sometimes have large expanses of glass, which may not be appropriate in a historic context and should be sited carefully to avoid becoming a hazard to birds or bats.
- 7.13 Garages are generally prominent within the streetscape. Within a historic context specific care is needed to ensure they merge into their surroundings. Often the traditional cartshed is used as a basis for the design of a detached garage, but the depth of a garage, even when limited to 5.5 or 6 metres, is greater than many traditional single storey outbuildings and a double garage is almost square, giving roofs that are uncharacteristic of traditional forms. Often where the building is prominent, the depth is visually reduced by incorporating a lower eaves level on one side giving a lean-to with a catslide roof. Where the gable is seen, the lean-to may be set back nominally to give a balanced symmetrical gable. First floors above garages are discouraged as they tend to give a top-heavy appearance.

Garage doors are better set in the long elevation rather than the gable as they resemble cart openings but are unlike any proportions of doors traditionally found in gables. Doors to traditionally designed garages in sensitive settings, such as in Conservation Areas, should be traditional side-opening timber doors with traditional wide vertical boarding and external strap hinges. Apart from the garage door, there should be very few openings and care should be taken to avoid the building appearing domestic.

- 7.14 Stables and other buildings for animals are generally set to the rear of a site and are agricultural in character with traditional walling and roof materials as described for sheds. New stables are often timber framed with boarding rather than traditional masonry. Poor quality examples have narrow shiplap boards and fibre cement or felt roofs at a very slack pitch. These are not long-lasting and not appropriate for a traditional or historic setting.
- 7.15 Boathouses are appropriate additions to the waterfront where there is a built-up river frontage and groups of boathouses already, but elsewhere they disturb the tranquility of open views across rural watercourses and meadows. Reflecting the unfussy natural surroundings, they are characteristically low, single storey, lightweight and simple, with timber frame and timber weatherboarded walls.

CONVERSIONS

Context

- 7.16 The buildings proposed for conversion include rural and agricultural buildings, industrial buildings, large houses and outbuildings, commercial and community buildings.
- 7.17 In all cases, the District Council will expect sufficient detail to determine the principle of conversion; to include the significance and character of the building, the efforts made to keep the building in its existing use, and the full implications of the proposed change of use including proposed and necessary changes to the structure, fabric and setting. The retention of the building in its existing use is normally preferable, and if so, the justification for a change of use should include extensive marketing of the building.
- 7.18 The intention with all conversions is to sustain, enhance and preserve the quality of our built and natural environment. This involves preserving the language of existing buildings, whilst adding to them in ways that respect contemporary building materials and methods of construction. Designs for conversions must aim to facilitate new and sustainable uses without compromising the character of the existing building.

Criteria

- 7.19 Every conversion is unique. To determine how appropriate a building is for conversion, consideration should include location, accessibility, the character of the surrounding area, and the character and condition of the building.
- 7.20 Policy ET/7 in the Development Control Policies DPD states that conversion of rural buildings to employment uses will be permitted subject to specified criteria being met including that the buildings are in keeping with their surroundings and that their existing characters are retained. Policy HG/8 says that conversion of rural buildings to residential use will only be accepted in exceptional circumstances and subject to specified considerations and criteria including that the buildings are in keeping with their surroundings and that their existing characters are retained. Under PPG15 it is accepted that the best way to ensure the retention of a Listed Building is for it to have an appropriate and viable use. Where the original use has ceased and cannot be reasonably reinstated, or the building is designated as being at risk, the local authority will encourage sympathetic conversion, if it represents the best way to retain a Listed Building. However, conversions of Listed Buildings that result in significant loss of historic fabric or elements of the building's special character, and thereby compromise the reason for their listing, will not be supported. There is also a presumption against conversion should the Listed building represent a significant, sensitive and comparatively rare example of a particular period or type of building that would potentially be harmed by any works for conversion, or by works inherent in the specific type of conversion proposed. In those cases, a low key use such as non-intensive storage would be more appropriate. The building should also be capable of conversion without significant extension.

Special Characteristics

- 7.21 Special opportunities arise within each situation, and these should be taken advantage of; notable places are made through recognising and enhancing these particular local characteristics.
- 7.22 The conversion may be directed to a specific type of use by the context, local infrastructure, access roads and local transport links, existing links to communications, and the local provision of employment or residential buildings.
- 7.23 It is important to understand the special characteristics of the particular building and what makes it capable of conversion. These may be structural, spatial, environmental and architectural.
- 7.24 To understand the building and the impact of the proposals, a historical study and impact of alternative uses will be required and this should inform

the proposals. The extent of information required to establish the acceptability of proposals should be available at an early stage and would include plans, elevations, sections and surveys with overlays of any inserted floors and clarification of any disturbance of an historic timber frame.

- 7.25 An understanding of the original structure, materials and modes of construction forms an essential basis for any proposal for conversion. Evidence in the form of a structural engineer's report will normally be required to accompany planning proposals.
- 7.26 Buildings originally constructed with specialised uses may pose a challenge for new use proposals. Examples include churches, chapels and schools, and agricultural and industrial buildings such as barns, stables, drying sheds, maltings and mills. Part of the character of the building may incorporate minimal or no window openings, very low floor to ceiling heights, large undivided internal volumes, fittings and fixtures from the previous use, insubstantial structure, exposed finishes giving minimal thermal provision, large windows or an open rural non-domestic setting. The loss of any element of that character is likely to weaken the interest of the building, and this would need to be considered against the justification and principle of conversion, benefits of the scheme to the future of the building, its setting or local community, and identification of the most sensitive design reasonably possible.
- 7.27 Rural and agricultural buildings are characterised by simple traditional elevations and materials. The barn may be a large black weatherboarded box or a box in undisturbed brickwork and will provide a challenge to any designer to provide any windows to sizes required under the Building Regulations without significantly damaging the structure or interrupting the simplicity of the form. In the limited instances where any new build is justified, the character of rural buildings limits it to structures that resemble simple modest traditional farm buildings. Domestic additions such as conservatories or garden rooms are therefore alien in this setting. New outbuildings should be resisted, but where a new building would enhance the group it should respect the scale, form, setting, massing and materials of the original building. Existing ancillary buildings and structures should be retained and repaired. If small, they may be able to accommodate meter boxes or storage. The interior of a barn would normally be an open volume that does not readily accommodate subdivision into rooms or inserted intermediate floors. If there is an attached smaller building, it may better accommodate the smaller spaces. Even where some subdivision is accepted, it would be expected that the majority of the internal volume would remain open. Original features such as doors, vents, boarding, floor bricks and threshing floors should be retained and may limit the use of the building. Original divisions and larger features such as stable stalls should be repaired and retained although in some justified cases they may be

relocated within the same space. New fixtures and fittings should retain a simple character in detail and materials, in sympathy with the existing quality of the building; this does not mean reproduction 'heritage' ware, but appropriate design functionality. The setting may be rural and open, so vulnerable to harm by subdivision, car parking and domestic paraphernalia. Conversions should involve a minimum of change to a building's setting, especially the large simple open external areas and rural agricultural boundaries characteristic of the farmstead. Where re-surfacing is considered appropriate, gravel or bound gravel, and occasional limited brick or granite paving may be considered.



A contemporary addition and interior to a converted barn. ('Quaker Barns', Hudson Architects)

- 7.28 Commercial buildings proposed for conversion are often in village centres or as part of an industrial or agricultural group. The change of use of buildings such as pubs and post offices often represents a significant loss of village and rural facilities. Any proposal for change of use of a community facility should investigate the history of that use, the possibilities of retaining the use including the extent and results of the marketing process, the potential relocation of the community facility, alternative new uses, and the implications of each alternative use on the character and setting of the building, to include highways and parking provision, and signage. If the building has a long historic link with its original use, such as a historic building originally built as a pub, the impact of the proposed change of use is expected to be more harmful than it is to a more recently established use. Signage is an important element of commercial buildings and again if the signage is historic or relates to a historic name of the building, such as the earliest pub names, its loss will not be supported. It will be expected that the proposal would include some enhancement of the site and building where reasonable.
- 7.29 Restoration of original built fabric is considered an essential part of any conversion. Equally, the objective with any repair or addition is to clearly identify the building's evolution.

- 7.30 Converting historic buildings can involve complex structural work. For structural surveys, façade retention, underpinning, internal demolitions and temporary works, advice must be sought from a professional structural engineer and negotiated with the Council as necessary.
- 7.31 Integrating new work with the old fabric is essential to the success of the conversion. However, contemporary insertions should not necessarily be designed in a way which tries to mimic historical styles. A well-considered and detailed contrast can often be a better way to respect and enhance the existing built environment.
- 7.32 Innovative plan forms and uses are often required to successfully convert a building from its historic use to another. Rather than compromising the fabric and character of the existing building, new uses will be expected to be adapted to fit the constraints and challenges of the building. Some new uses with less flexibility, more subdivision and requirements for numerous new openings are inherently more difficult to accommodate in this way.
- 7.33 There is an assumption that original openings in the building envelope will be retained, complete with historic frames, doors, windows and shutters, and that new openings in the historic fabric will be kept to a minimum. Original openings that have been subsequently blocked may be re-opened as part of the adaptations. New openings should be justified and only considered where necessary to achieve minimum day lighting levels and it is noted that open plan internal layouts are often easier to light from existing windows. The effect of new windows on the building's elevations must be carefully considered and they should refer to the size and proportions of existing openings.
- 7.34 A sparing use of rooflights may be acceptable to achieve internal day lighting levels, provided that they are compatible with the style of the building and do not clutter a roof or distract from a simple form. Depending on the design and materials, they can be compatible with an industrial or domestic character but are less easily accommodated on some structures such as a barn, small scale agricultural building or building with a thatched or pantiled roof. They may take the form of cast metal conservation rooflights or, in certain instances larger areas of carefully detailed patent glazing may be appropriate. Dormer windows are usually too fussy unless the building is domestic in character, and are at variance to the simple rooflines found in other vernacular and agricultural buildings. The positioning of any rooflights should reflect structural bays.
- 7.35 Modern materials, detailing and techniques of construction can add to the quality of a conversion project and may be appropriate when having to repair or replace larger areas of fabric, provided any potential differences in the structures (such as thermal movement and permeability are resolved);

for example, large openings such as barn doors could be suitable for an expanse of minimally framed glazing.



Contemporary sliding metal window applied to surface of existing brickwork wall, separating new materials and elements from old, clearly showing the building's evolution (Hudson Architects)

- 7.36 Old roofs can be a haven for protected wildlife species, such as bats and owls. It is an offence to damage or disturb their habitat, and their presence may have implications for any conversion work. Advice should be sought from the Council's Ecology officer and reference made to the Council's Biodiversity SPD.

EXTENSIONS

Criteria

- 7.37 All extension proposals must offer a high quality of accommodation and design that will sustain, enhance and preserve the quality of our built and natural environment. By definition, extensions are additional components and should consequently remain ancillary or subservient to the original building. Every extension site is different, and will have a different level of impact depending on whether it is at the front, side or rear of a property, or involves work to the roof.
- 7.38 Extensions should always complement the form and character of the original building rather than seek to transform it into something else. This may be achieved either by continuation of the established design form, or through an appropriate contrast in high quality contemporary design. The design of an extension should not necessarily be pastiche or attempt to mimic historic styles. High quality of design, relevant to context, is the most important factor, and in certain cases a contemporary solution that provides modern spaces, while at the same time considers the scale, materials, and elevational rhythm of its context may provide the better solution.



Extended cottage, Barrington. The openings of the right-hand extension balance the front cottage elevation, with painted render and a clay pantiled roof. The dark stained open timber frame of the left-hand carport helps it to recede from view.

- 7.39 The scale of an extension and its position will normally emphasise a subservience to the main building. This will usually involve a lower roof and eaves height, significantly smaller footprint, spans and lengths of elevations, and the use of different and traditionally subservient materials.
- 7.40 Some buildings are more sensitive to extension than others. Symmetrically designed buildings or buildings with a complete design (such as lodges) or inherently small size may not be able to accommodate an extension without becoming unbalanced or dominated by the extension, or by detracting from the original design. Buildings that have been extended before may also be limited by the cumulative impact of the extensions.
- 7.41 An analysis of the immediate surroundings should form the foundation of any design. This must consider:
- Whether or not the property is Listed, or is contained within a Conservation Area.
 - The location of the extension in relation to the public zone of the street and the nature of that streetscape.
 - The effect that the extension will have on adjacent properties and land.
 - The effect that the extension will have on the existing property.
 - The forms and scale of existing built structures near the site.

- Traditional and contemporary building materials used in the locality.
- The condition of the land upon which the extension is to be built.

Location

- 7.42 Many South Cambridgeshire villages present important frontages to the surrounding landscape, contain Conservation Areas and contain or frame numerous strategic views (both within the settlement and out to the landscape). Extension proposals may be to Listed or unlisted buildings, and the sites may be adjacent to buildings of particular architectural merit or important open spaces within the fabric of a settlement. Consequently, the impact of the extensions on the wider village, or landscape, must be considered. Further detailed advice should be read in conjunction with the Council's Listed Buildings and Conservation Areas SPDs.

Streetscape

- 7.43 Adjacent buildings can often provide pointers for the design of an extension. This includes the relationship between the surrounding buildings and the street, and the placement of adjacent buildings (together with any extensions) within their grounds. The immediate context should frame the design approach.
- 7.44 Extensions on a street frontage should typically follow the pattern set by previous developments on adjacent buildings. This includes the distance from the building's front walls to the pavement edge, and storey heights of buildings. Extensions can dramatically change the character of a street; for example, infilling between detached or semi-detached houses can change the appearance from one of individual villas to a terrace. Consideration must therefore be given to the existing character of the street, to ensure that the extension will not compromise the established rhythm or visual identity.

HOUSEHOLDER MINOR CHANGES

Criteria

- 7.45 Householder applications can be submitted for minor works to single non-listed dwellings, including dwellings in a Conservation Area. The relevant works include conservatories, side or rear extensions and garden sheds and the intention is that the information required with this type of application is simplified. The design will still be expected to be of high quality and appropriate for the context of the building.

LISTED BUILDINGS

Criteria

- 7.46 Special consideration must be given when considering alterations, extensions and other development affecting Listed Buildings, curtilage Listed structures, and their settings. There must be a reasoned justification for the size, use, form, materials and details employed. The character, setting and particular interest of a Listed Building must always be respected and the impact on the historic fabric will be assessed on a case-by-case basis. More detail is contained in the Council's Listed Buildings SPD.



Extended listed building, Little Abington. The existing cottage (a former public house) was extended to provide a new hall and kitchen/dining room. An existing flint wall was extended on the street front, with a mainly glazed aspect to the rear garden (Snell David Architects).

CONSERVATION AREAS

Criteria

- 7.47 The character of a Conservation Area may be assessed in the relevant Conservation Area Appraisal, or in the absence of an Appraisal, an analysis of the special interests of the Conservation Area should be made at an early stage to inform the design.

- 7.48 The impact of proposed development within a Conservation Area, or within its setting, should be considered prior to making any application, and its special interest should be respected and preserved in any proposals.
- 7.49 Specific guidance relating to Conservation Areas is contained in the Council's Conservation Areas SPD.

CHAPTER 8

ENVIRONMENTAL SUSTAINABILITY

- 8.1 Sustainability should be at the heart of good design within the creative process of developing or reshaping our built environment (structures and infrastructure). In the fullest sense this embodies the three principles of:
- i. Concurrency – meeting current needs;
 - ii. Resilience – lasting in the face of change, and;
 - iii. Adaptability – being able to adjust to future needs.
- 8.2 Underlying each of these is the need to effectively and fairly manage our use of the Earth's resources so that present and future generations can live within the planet's capacity to support us all. This approach lies at the heart of what is termed 'environmental sustainability' and is perhaps most easily communicated through the concept of 'one-planet living'. We are currently exceeding this threshold. If everyone in the world lived as we do in the United Kingdom we would require the natural resources of at least three planet Earths. This relationship between the productive land area required to support our lifestyles and the amount of productive land that could be evenly allocated to each man, woman and child on the earth is referred to as our ecological or environmental footprint. In South Cambridgeshire the average ecological footprint per resident is 5.3 global hectares (this is 'actual' hectares adjusted for land type and quality), a figure which very seriously exceeds the average 'earthshare' of 1.8 global hectares per person. This is clearly unsustainable in the broadest sense of the word.
- 8.3 Apart from eroding the Earth's natural capital we have also, through the extensive and almost exclusive use of fossil fuels to power our lives, released (and continue to release) excessive quantities of carbon dioxide (CO₂) and other greenhouse gases into our atmosphere. This is enhancing the global greenhouse effect to the point where our climate is destabilising and changing in increasingly threatening ways. This parameter is often referred to as our 'carbon footprint' and can be expressed in tons of CO₂ per capita of population. In terms of local emissions in South Cambridgeshire, Central Government has calculated the average figure as 10.2 tons CO₂/person/year (2006). To meet Local Area Agreement targets this must be 9 tons by 2011 and to meet Central Government targets we would be looking at 6-7 tons by 2020 and no more than 2 tons by 2050.
- 8.4 The gravity of the over-exploitation of environmental resources and climate change – and its implications – is now accepted by most scientists and politicians. Together they dominate, and will continue to dominate, the twenty-first century concept of environmental sustainability. Many of the technological solutions to mitigate the situation already exist. The challenge for sustainable design and construction professionals (and the institutions

that support them) is to ensure that this crucial sector does not fail in its responsibilities of ensuring that the transition to low carbon sustainable living is made within the pressing timeframes required (CO₂ emissions must peak by around 2016 and then decrease year on year by at least 3-4%).

- 8.5 The understanding and sphere of influence of both of these components has swollen dramatically over the past five years, as the planning system has found it necessary to re-evaluate what it means to protect and enhance the environment and to use natural resources prudently.
- 8.6 The rapidity with which the imperatives of environmental sustainability have impacted on the world of design and construction presents a new challenge to architects, urban designers, quantity surveyors, policy makers, developers and builders to keep up in terms of skills, knowledge, budget and management.
- 8.7 Sustainable design and construction are now a key concern of the planning system. The environmental sustainability design criteria raised and discussed within the following text are fundamental to twenty-first century design and must be included from the outset of any development and planning application process.

THE DEVELOPING POLICY CONTEXT

- 8.8 As the extent and urgency of the environmental sustainability agenda has been recognised, so planning policy has developed by way of response. The relevant principles behind South Cambridgeshire's Local Development Framework (LDF) current Core and Development Control Policies have hardened nationally and regionally since they were adopted – especially in terms of target setting and how they should be delivered in practice.
- 8.9 The fundamental sustainable design and construction parameters of planning for a lasting built environment still hold, but the context and pressure has changed with a new and urgent focus on reducing carbon emissions, decentralised energy, water conservation and climate change adaptation. Since the adoption of the Development Control Policies DPD in July 2007, new important drivers have subsequently been formally brought forward. These stand to strengthen the role and relevance of environmental sustainability in land-use decision making. As additional or revised accountabilities they reflect the priority and urgency that is now attached to tackling the imperatives of the climate change agenda. Of these the following have been specifically taken account of in subsequent sections of this guidance:
- Planning and Climate Change Supplement to Planning Policy Statement 1 (December 2007)

- Government policy commitment to modify the Building Regulations to achieve zero carbon homes by 2016 and zero carbon buildings by 2019 (Building a Greener Future, July 2007)
- Definition of zero carbon homes (consultation closed March 2009)
- UK Renewable Energy Strategy (July 2009)
- Heat and Energy Saving Strategy (consultation closed May 2009)
- UK Low Carbon Transition Plan (July 2009)
- Code for Sustainable Homes: Technical Guide (May 2009)
- EU Energy Performance of Buildings Directive (October 2008)
- Cambridgeshire Together Local Area Agreement Targets on climate change (2008-2011)
- Flood and Water Management Bill (draft April 2009)

SUSTAINABLE DESIGN AND CONSTRUCTION

- 8.10 Elements of the built environment are designed and constructed at any one time to meet a set of specific needs. These needs will focus upon occupational requirements, with space, amenity and access functions designed around them. These requirements are generally immediate, i.e. 'we need this building here and now because...'
- 8.11 Environmental sustainability demands that these requirements are placed within a wider context. One that encompasses more than the present needs of the initial occupier. As the pressures of population, household numbers and conventional economic growth continue, so do the pressures upon land, natural resources, energy and water supply and waste management: meaning that the cumulative impact of development becomes greater. This impact builds in a way which is not always apparent or immediately relevant to the developers of a single site and is likely, where recognised, to be traded off against what seem more immediate and relevant matters. This gap between the individual benefit and the long term broader social, and even global, benefit is where the parameters of sustainable design and construction step in to unite the two. Sustainable design and construction recognises that underlying the ebb and flow of social and commercial activity driving our everyday lives that there is an imperative to look after the environmental capital upon which this socio-economic activity is essentially built. Compromise the environment in a world where natural resources are stretched up to and beyond their capacity to last indefinitely, and the social and economic activities that define our way of life will contract, decline or collapse. The 2006 Stern

Report made it clear that steps taken today to mitigate climate change will be far more cost effective than trying to manage unmitigated consequences in the future.

- 8.12 The purpose of this Sustainable Development section of the District Design Guide is therefore to ensure that the development of our built environment, from the extensive growth areas to the single home extension, actively incorporate measures that will not undermine the local and global environment for the wider use of present and future generations.
- 8.13 It is important to remember that sustainable design and construction in itself does not have to follow any particular 'look' or 'style' and often does not necessarily need to be more costly or complicated than more traditional means. As an approach it should therefore be sufficiently flexible to accommodate the other design criteria, parameters and guidance presented throughout this document.

POLICY CRITERIA

- 8.14 South Cambridgeshire's planning policy direction, as expressed through the LDF, is very clear as to the environmental sustainability criteria that it expects applicants for planning permission to take account of within their proposals:
- Minimise the use of energy and resources.
 - Reduce carbon emissions.
 - Maximise the use of renewable energy sources.
 - Incorporate water conservation measures.
 - Use sustainable drainage systems.
 - Adaptation to the impacts of climate change.
 - Use sustainable building methods and materials.
 - Recycle construction waste.

- 8.15 The above policy criteria will raise a series of questions in the minds of applicants as they draft or assess their proposals. The following text has been designed to support applicants when considering their answers to these questions.

ENVIRONMENTALLY SUSTAINABLE DESIGN AND CHOICE

- 8.16 In taking account of each of the above policy criteria during the design process various choices will have to be made. These relate to:
- Layout and orientation.
 - Building form and structure.
 - Technology availability and suitability.
 - Occupancy behaviour.

- 8.17 The choices made will either enlarge, reduce or contain the ecological and carbon footprints of any proposed development. It is therefore crucial that each is dealt with transparently so that the reasoning behind each choice is clear for all to see.
- 8.18 The sustainability elements of this District Design Guide will inevitably have an impact upon the more physical and tangible elements of layout, orientation, building form and structure. Managing the use of energy and resources, meeting carbon reduction targets and adapting to climate change will, however, extend beyond installation on the ground. The majority of measures will quite likely bring future residents and occupants into contact with some degree of unfamiliar technology, equipment, operation and maintenance. Unless the rationale and benefits behind such measures are specifically introduced to and understood by those that will be living with, using and maintaining them, then their full potential will almost certainly be compromised. As a matter of good practice therefore, all applicants should look to ensure that fully accessible user guidance and technical information is directly passed on to future occupants so that they are able to make the very most of all the sustainable design and construction features included within the new development.

ESSENTIAL CONSIDERATIONS AND OPTIONS

- 8.19 The following sections are intended to provide guidance on fulfilling the local planning authority's policies as they relate to sustainable design and construction as presented within the Development Control Policies DPD of the South Cambridgeshire LDF, alongside subsequent drivers such as the Planning Policy Statement 1 Climate Change Supplement and issues around behaviour and occupier engagement. All policies should be taken account of and if a compromise is proposed then it should be fully validated – cost on its own is not grounds for compromise.
- 8.20 Sustainable design and construction is a tremendously creative, expanding and developing field. Guides such as these are very readily overtaken by events and technical advances. The advice and guidance offered should therefore be seen as a flexible framework. A framework in which there is room for creativity, new approaches and the finer details (that only come from thorough site appraisal) in meeting the authority's adopted policies.
- 8.21 'Major development' (over 1,000m² or 10 dwellings) applications require the submission of a Sustainability Statement to demonstrate how the sustainability criteria have been fulfilled (alongside the submission of a Water Conservation Strategy and a Resource Re-use and Recycling Scheme).
- 8.22 In considering each of the following elements it is important to remember that they do not stand alone from each other. They all contribute to the integrated design of a whole project – from the ground up and from 'cradle

to grave' every element has an effect on every other. This complexity means that it is very difficult to set out a definitive approach. In tying together location, orientation, structure, infrastructure, adaptability, construction and materials so some degree of trade-off is inevitable. There is no exact science to help, but what is essential is that any compromises are clearly described and the decision-making process succinctly explained.

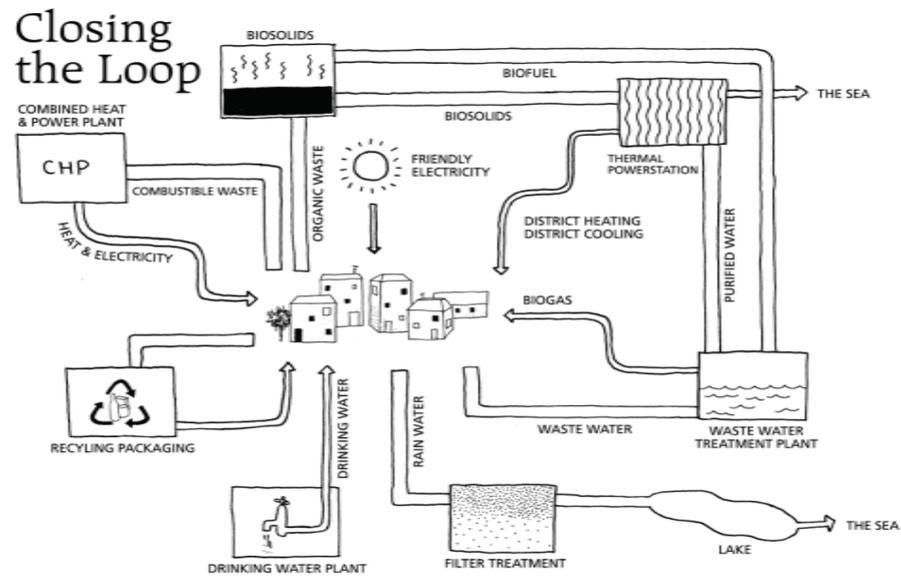
SITE APPRAISAL

- 8.23 There remains a prevalence amongst developers, architects and builders to view environmental sustainability options as post hoc 'bolt-ons' to site and building design. This frequently means that new development is unable to take full advantage of its site's potential, especially in terms of layout and orientation to best facilitate sustainable energy and resource use (e.g. solar gain, shading, drainage, access etc.). Therefore, in order to make the most of a site it is necessary to get a full understanding of its opportunities and constraints from this perspective. In a nutshell, an effective site appraisal should ensure that:
- Sustainability proposals are working with a site rather than being imposed upon it;
 - The opportunity to develop the best site-specific solution is more likely to be realised, and
 - Environmental sustainability lies at the heart of a site's functionality.
- 8.24 The extent of such an appraisal would depend upon the size of the development – a small application, such as a home extension, would only require a brief statement and/or annotated plans.
- 8.25 The principal environmental sustainability issues to be covered by the site appraisal would include:
- Movement and accessibility.
 - Water and biodiversity.
 - Sunlight.
 - Wind speed and direction.
 - Microclimate, soil, drainage and water table.
 - Existing buildings and potential for re-use.
 - Levels of atmospheric and noise pollution.
 - The potential for a combined heat and power scheme.
 - Site stability and contamination.
- 8.26 The above should be set alongside more conventional issues such as the character of the area, historic interest and building features.

- 8.27 The importance of establishing the site's intrinsic sustainability potential is an invaluable first step in meeting the authority's policy requirements in the most effective and economically viable way possible. At the end of the appraisal process, detailed information should be held on previous use, layout, building orientation, solar energy potential, vegetation, wind energy potential, landscaping, movement and transport, and water.

Minimise the Use of Energy and Resources

- 8.28 Desired outcome: consideration of this over-arching criteria at the outset of the design process is crucial to realising the full environmental sustainability potential of any proposed development. A comprehensive review of the environmental implications and interrelationships of design choices relating to layout and orientation, building form and structure, materials, adaptation to future conditions and occupancy behaviour should be carried out in the round. The integral and systemic nature of many measures to minimise the use of energy and resources make it hard to over-emphasise the importance of including these issues within the early feasibility stages of examining alternative design and construction approaches and cost implications.
- 8.29 Principles: The concept of 'one-planet living' is useful in understanding the goals of environmental sustainability. However, when it comes to developing the working principles for development proposals its relevance fades as the need for realistic quantification in assessment and accounting processes comes to the fore.
- 8.30 It is more useful to breakdown the energy and resource flows that are likely to emanate from proposals and then understand how they can be worked up within the new development in such a way that they will contribute to closing the energy and resource 'loops' of which they are inseparably a part of. On-site renewable energy generation, rainwater harvesting, grey-water recycling, passive solar gain, natural ventilation, use of thermal mass, composting and space for growing food are all examples of measures which can subsequently minimise energy and resource use through employing thoughtful, creative and innovative approaches to design and construction.



Closing the loop.

- 8.31 **Essential requirements:** all schemes, whatever their size, will benefit from the inclusion of a sustainability statement, or similar document, that clearly illustrates the environmental sustainability choices that have been made in relation to the development's: orientation and layout; building form and structure; materials to be used; ability to adapt to future conditions, and; the behaviour of the envisaged occupants.
- 8.32 **Delivery options:** there are a range of baseline assessment tools available that will facilitate the bringing forward of environmental sustainability choices, from carbon and ecological foot-printing to baseline energy analysis, formal pre-construction assessments and comprehensive checklists.

Reduce Carbon Dioxide Emissions

- 8.33 **Desired outcome:** new development, specifically where it does not replace previous development, will in almost every case increase carbon dioxide concentrations in the atmosphere: attracting new emission sources through the running of building services, transport to and from, and the consumption patterns of its occupants. Sensitive, yet practical, design can have a tremendous influence upon reducing these emissions through measures that reduce demand and improve the efficiency of heat and power usage. Applicants should demonstrate how their proposals will maximise the incorporation of energy conservation and efficiency measures – aiming for a minimum 10% reduction in CO₂/m²/year compared to the current (2006) Building Regulations (Policy NE/1 of the Development Control Policies DPD). Specified levels for carbon reduction are increasingly being tied to

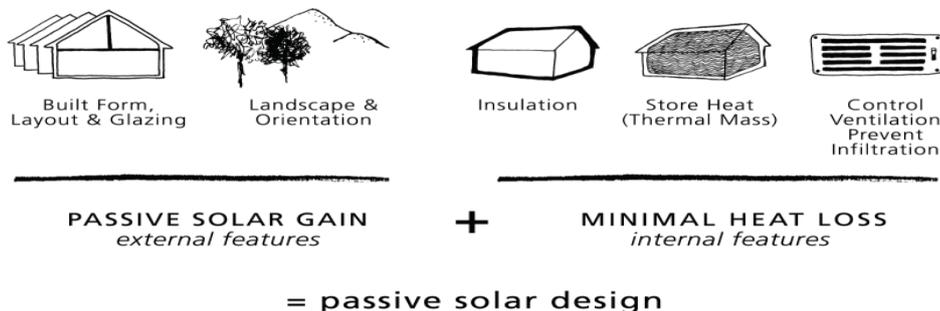
the Code for Sustainable Homes (to be extended to cover other premises through the Code for Sustainable Buildings). All new dwellings will be expected to achieve a 25% reduction in CO₂ emissions over the 2006 Building Regulations by 2010, 44% by 2013 and achieve a zero carbon emissions figure by 2016 (for other buildings this is likely to be 2019). The zero-carbon emissions target includes the non-regulated energy used within homes – the Code Level 6 figure for carbon emissions is therefore in excess of the 100% at Code Level 5 that is only for regulated energy supplies. The development and implementation of the Code for Sustainable Homes (/Buildings) is unifying the standards for sustainable design and construction and the technical guidance available will increasingly prove a useful reference document. Applicants are encouraged to realise as high a level of the Code as possible.



Specified levels for Carbon reduction

- 8.34 **Principles:** by far the greatest release of carbon emissions into the atmosphere is tied to energy generation from fossil fuels (other relevant sources that may need to be considered include some specific chemical processes, land use change and influences upon certain 'natural' processes). For the purposes of this guide the overriding principle is to apply sustainable design and construction techniques to significantly reduce, and where possible break, the functional link between the needs of a building and its use of fossil fuels to meet those needs.
- 8.35 BREEAM (the Building Research Establishment's Environmental Assessment Method) is regarded by the UK's construction and property sectors as the measure of best practice in environmental design and management for non-residential buildings. The methodology defines the level of performance of a particular building type on a scale from pass to excellent and consideration should be given to achieving a BREEAM rating of at least good for all new commercial structures within South Cambridgeshire.

- 8.36 Essential requirements: this reduction and disconnection in the use of fossil fuels will require that all new developments, renovations and extensions make assessments of building, transport and occupancy energy needs. Such assessments should take the form of a tabulated calculation covering each potential energy use for residential and/or non-residential purposes – showing the baseline figures and the figures that will be achieved after the proposed energy conservation / efficiency measures have been applied (see Appendix 10).
- 8.37 Energy consumption for the proposals should be calculated using SAP or SBEM methodologies (for non-regulated domestic-type uses BREDEM-12 should be used). Calculations should include all end uses / private infrastructure (e.g. communal areas and car parks lighting/heating) and process loads. All energy values should be converted using the carbon emission factors set out in the current version of the Building Regulations. Alternatively the benchmarks set out in the London Renewable Toolkit may be used (converted into kgCO₂/year/m²).
- 8.38 Delivery options: the importance of determining the optimum layout, orientation and overall landscape parameters to improve the energy conservation and efficiency functions of a development cannot be overstated (the implications for maximising sustainable energy generation will also be a part of this process).
- 8.39 Energy efficiency in design is tied to identifying natural orientation factors (e.g. topography and tree cover) to harness solar gain and associated benefits such as thermal mass (balancing day and night heat storage) and natural day lighting. The design will also need to incorporate passive shading features to curtail summertime over-heating.



Passive Solar Design

- 8.40 Designing to conserve heat is the other parallel consideration through good insulation, attention to window size and placement, draught management and ventilation. Examples of how these issue can be taken to fully integrated delivery can be found in “Passive House” standards where conservation and efficiency measure are taken sufficiently seriously that a

conventional central heating system is no longer required. Low energy lighting and appliances, alongside the use of energy management systems, are all other important measures that should be taken account of when developing proposals.

Maximise the Use of Renewable Energy Sources

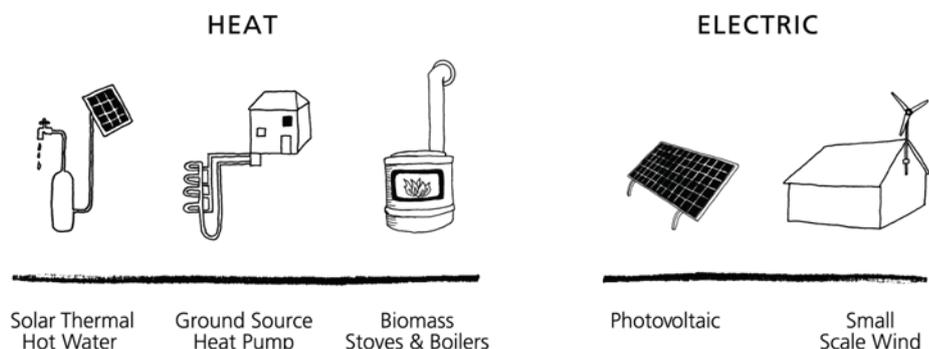
- 8.41 Desired outcome: the incorporation of renewable energy sources within building designs permits the further reduction of carbon emissions beyond that which can be achieved by conservation and efficiency measures alone.
- 8.42 Serious consideration should also be given to the potential of exporting excess or supplementary heat and power to either the national grid or nearby properties as a means of increasing viability and allowing the development to offset other related carbon emissions (e.g. transport) or become a site of net carbon reduction. These opportunities are only likely to become more accessible as less flexible means of remuneration are superseded or supplemented by schemes such as ‘feed-in tariffs’ and ‘renewable heat incentives’.
- 8.43 Principles: in order to save unnecessary cost and capacity in renewable energy installations it is essential that all of a development’s potential energy conservation and efficiency measures have been utilised.
- 8.44 A careful and rigorous assessment procedure will need to be carried out early in the design process in order to determine the effective technology, or mix of technologies, that can be incorporated within the development site to meet as great a proportion as possible of heating, cooling and electricity needs.



Efficiency Measures

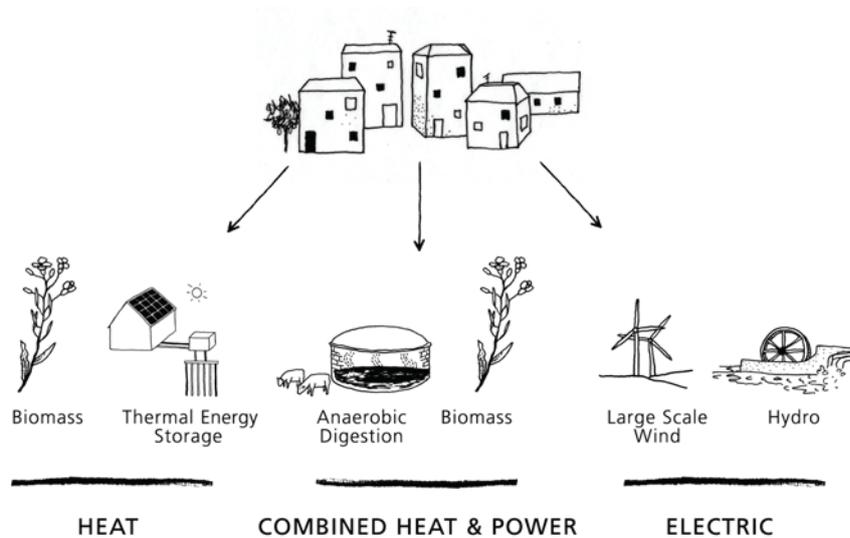
- 8.45 In terms of carbon reduction, it is important to recognise that carbon emission factors vary depending upon the fossil fuel source that is being replaced – for example the current Building Regulations (2006) state that a kWh of electricity accounts for the emission of 0.42kg of CO₂, whereas a kWh of gas accounts for 0.19kg of CO₂. These emission factors also highlight the differences between heat (e.g. for space and water) and power (e.g. to run electrical appliances) and why it is therefore so important to use kgCO₂/year/m² as opposed to kWh/year/m² when assessing carbon

reduction through energy conservation, efficiency and renewable energy generation measures.



Building integrated renewables

- 8.46 **Essential requirements:** applicants with proposals greater than 1,000m² or 10 dwellings will be expected to ensure that 10% of their predicted energy requirements are met through the inclusion of on-site renewable energy technologies (Policy NE/3 in the Development Control Policies DPD). Some areas of the district have higher standards (see the relevant Area Action Plans for details). This requirement should be calculated in kgCO₂ not kWh for the reasons outlined above (see Appendix 10).
- 8.47 In order to bring forward the most appropriate renewable energy solutions for such a development, applicants should include (at the outline submission stage) a feasibility assessment of the options that have been considered. This assessment, when combined with baseline data on predicted energy use, target emissions and measures to improve conservation and efficiency (refer to previous sections) will comprise the Energy Statement that must accompany the application.
- 8.48 For major developments, applicants are strongly encouraged to consider options for site-wide solutions as early as possible in the development process. Such options have the potential to deliver major cost, energy and carbon savings but will almost certainly need to be integrated within development plans from the outset.



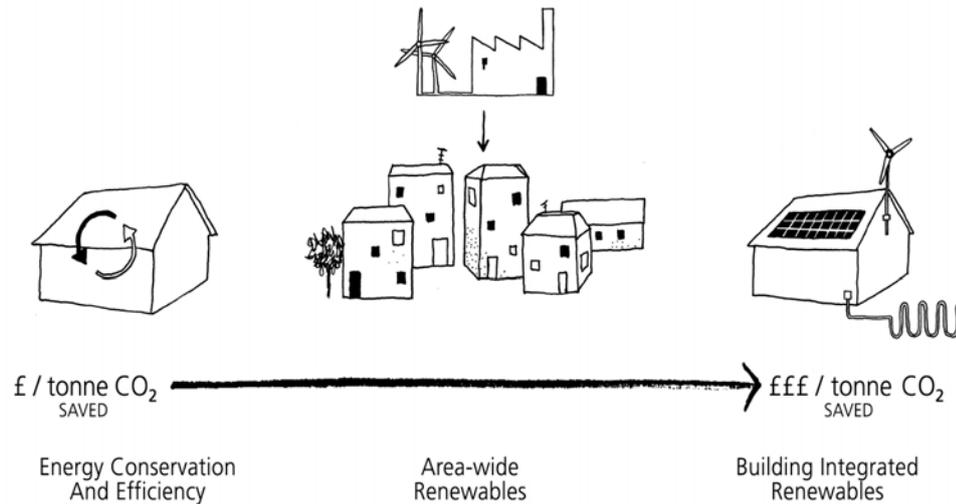
Area wide renewables

8.49 Delivery options: in considering their feasibility assessment it can be useful for applicants to present the options in a hierarchy of suitability and viability. Selection of the most appropriate technology, or mix of technologies, is at the applicants discretion with the following as a guiding list of those that may be considered:

- Solar thermal hot water systems.
- Solar photo voltaic (PV) cells/panels.
- Ground, air or water source heat pumps.
- Wind turbines.
- Geothermal.
- Biomass (boilers, stoves and combined heat and power).
- Anaerobic digestion.

8.50 Should the applicant have any queries regarding suitability then they should contact the Council's Strategic Sustainability Officer in advance of submission.

8.51 The delivery scale of all the above technologies may in theory be varied to lesser or greater extents for different scales of development from single buildings to community or district schemes: bringing varying benefits in terms of cost per unit and user interaction.



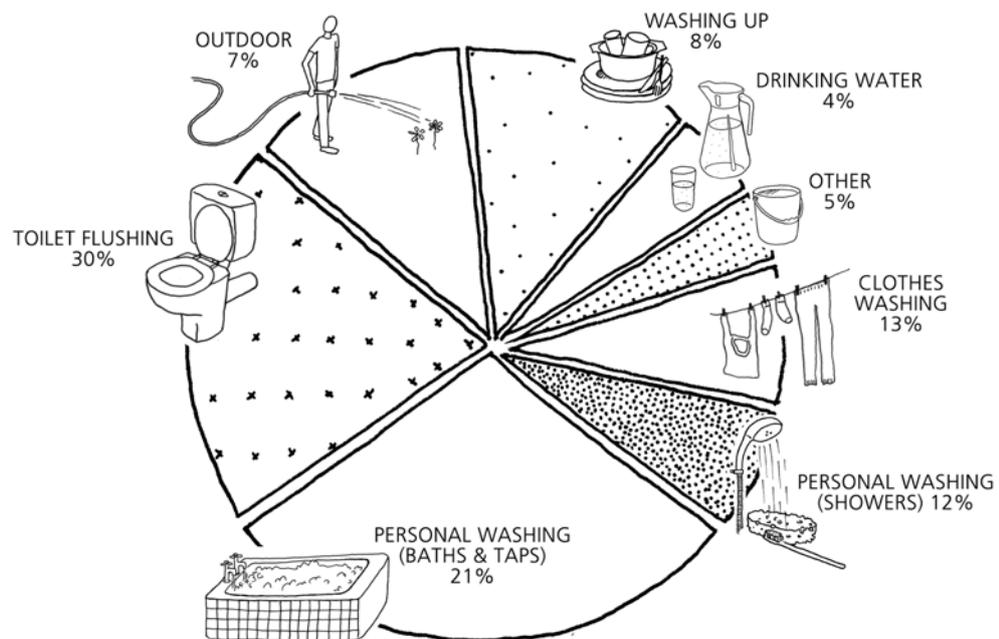
Towards zero carbon

- 8.52 Currently biomass, anaerobic digestion and geothermal technologies have the greatest potential to be scaled up to provide district/community level heating schemes. Typically within the UK, the former two are also used to generate electricity. When used for both applications they are known as combined heat and power (CHP) systems (they may even incorporate a cooling function and are then known as CCHP systems). Scaling up to the district / community level can greatly improve the viability of multi-unit development schemes seeking to achieve the higher levels of carbon reduction (50% plus).
- 8.53 Clearly if a CHP system uses fossil fuels it cannot be regarded as renewably powered. It can however, with the correct infrastructure, still bring significant carbon savings through cutting electricity transmission losses and using 'waste' heat. If applicants are considering such an approach, they should contact the Strategic Sustainability Officer as early as possible in the application process to discuss their proposals in relation to the authority's renewable energy policies.

Incorporate Water Conservation Measures

- 8.54 Desired outcome: alongside energy, responding to the sustainable supply and use of water within the design and construction process is almost certainly the most pressing resource management issue that new development must tackle and lead on. This is especially the case in the East of England where rainfall is the lowest in the country (South Cambridgeshire averages less than 50mm per month). As with energy,

consumption has increased dramatically in recent decades. At the domestic scale, each of us now averages a daily consumption in excess of 150litres of water – almost all of which is delivered to premises as a drinking standard (with not insignificant carbon emission implications) even though the vast majority is used for washing, toilet flushing and watering the garden.



Water use in home

- 8.55 Again as with energy, new development will, unless very tightly accounted for, increase gross water resource usage. Reducing 'mains' water consumption is thus considered a priority outcome in the consideration of planning applications.
- 8.56 The importance of reducing consumption is recognised within the Code for Sustainable Homes where water usage is set as a mandatory standard for Levels 1 and 2 at 120 ltrs/person/day, Levels 3 and 4 at 105ltrs/person/day, and Levels 5 and 6 at 80 ltrs/person/day.
- 8.57 Principles: As with most sustainable resource management issues, the design principles for reducing water usage are held within a hierarchical framework. The first level, as always, involves reducing need or demand for water in domestic, business and industrial activities attached to the development. The second level is to intercept and use rainwater before returning it to mains, or ideally a sustainable, drainage system. The third level involves a more concerted interception of water already used within a residential or commercial process for a lower grade use such as waste removal (e.g. toilet flushing) or municipal or domestic irrigation.



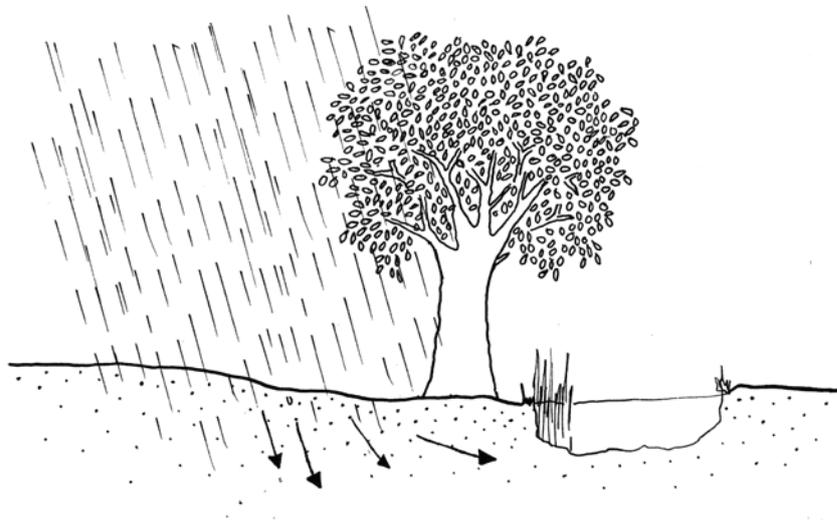
Water saving hierarchy

- 8.58 For the hierarchy to generate maximum and lasting returns, the behaviour of the building occupants will play a vital role. As with energy, applicants should take specific steps to raise awareness of the problem of profligate consumption and the importance of personal responsibility in minimising waste and improving efficiency in use.
- 8.59 Essential requirements: planning policy within South Cambridgeshire requires that new development incorporate all practicable water conservation measures and that for development over 1,000m² or 10 dwellings a Water Conservation Strategy be submitted to demonstrate how such measures will be brought forward and implemented. Some areas of the district have higher standards (see the relevant Area Action Plans for details).
- 8.60 For larger developments, the interception of surface water run-off for domestic or commercial purposes may have implications for local water courses and water tables. In such instances a careful balance must be struck between rainwater harvesting and the release to surface run-off.
- 8.61 Delivery options: behaviour change and the reshaping of commercial processes to bring down demand is clearly a crucial element of water conservation. Thoughtful design may be used to encourage this change. For example, through incorporating smaller baths and the more accessible location of water meters (along with home information packs or building user guides) or use of sub-metering to enable effective water management by the occupants. Attention should also be given to landscape and garden planting that does not require supplemental watering (xeriscaping).
- 8.62 Other more technical responses to maximise water efficiency should be specified as a matter of course, e.g. aerated taps and shower heads, low flush toilets and water efficient appliances. Basic rainwater harvesting using water butts should also be included as a standard where the opportunity exists. For industrial and office units, that often have significant roof areas, rainwater collection should similarly be the norm (where uses

can run from commercial processes to toilet flushing). Greywater recycling is a more sophisticated approach and will almost certainly be required for level 5 and 6 of the Code for Sustainable Homes (where the standard required is 80 litres/person/day). Community scale schemes are now coming forward and have the very real potential to enhance financial viability for multi-user developments.

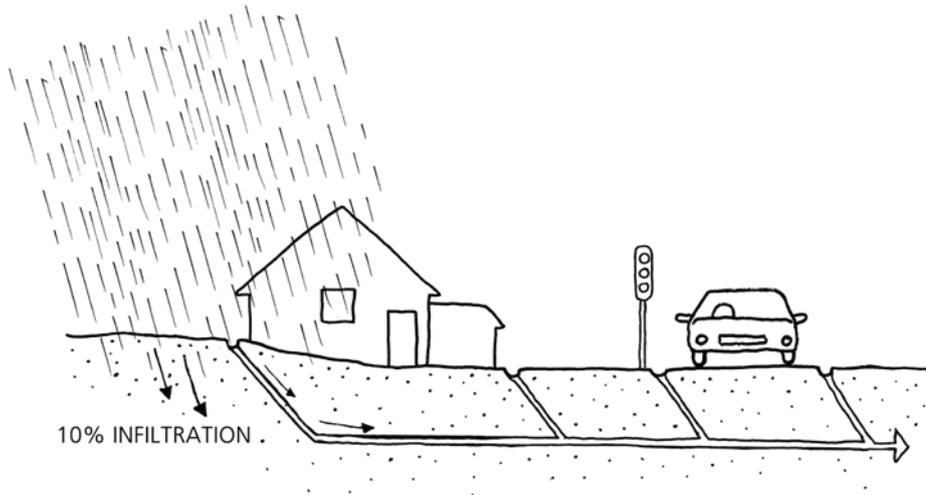
Use Sustainable Drainage Systems

- 8.63 Desired outcome: the essential purpose of a sustainable drainage system (SuDS) is to manage the precipitation falling upon a development in such a way that it mimics the natural drainage of the undeveloped site.



90% infiltration to water table and water courses

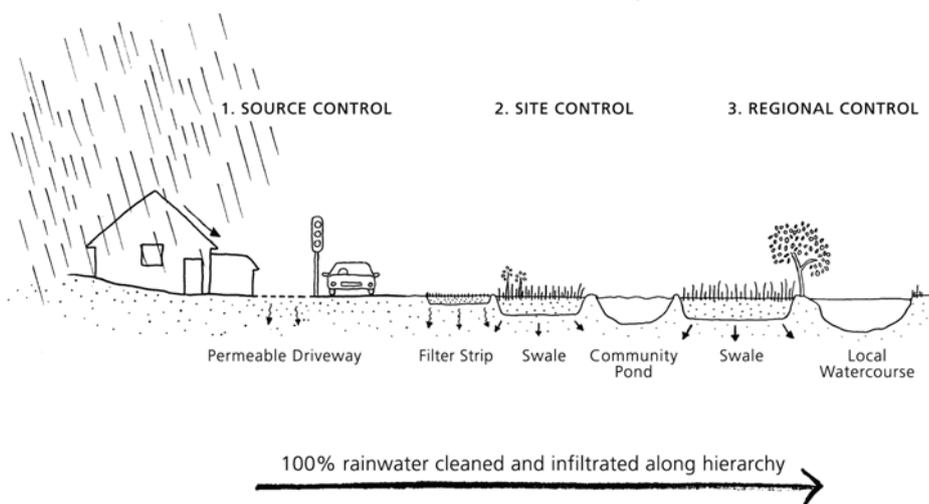
SuDS pre-development conditions



90% by pipe, mixed with pollution from roads, and leading to sewer or water course

Typical post-development drainage

- 8.64 SuDS offer a more environmentally, socially and frequently economically sustainable alternative to conventional underground piped systems with street level grates or storm drains.
- 8.65 High quality SuDS can reduce flood risk, provide community amenity value (e.g. ponds) and promote biodiversity through the creation of new or improved wildlife habitats.
- 8.66 Principles: a well designed SuDS will consist of a series of infiltrating water transport features known as the 'management train'. This promotes evaporation and infiltration as close to the point of precipitation as possible, with the balance being progressively cleaned / filtered in its journey to the nearest watercourse.



SuDS hierarchy

- 8.67 Essential requirements: the extent of a SuDS scheme will depend upon the size of the proposed development and the extent of open space available. Even in the smallest development, however, valuable elements and features should be considered for incorporation. Good quality SuDS will require careful design consideration to ensure that they are straightforward to maintain whilst, primarily, ensuring that the scheme satisfactorily fulfils its drainage role and, secondarily, maximises its landscape, amenity and biodiversity value. The authority will be fully supportive of such schemes.
- 8.68 Long term adoption of larger schemes, extending beyond private property boundaries and into public open space, will be an important issue. In such cases, applicants should discuss appropriate arrangements with the authority.
- 8.69 Delivery options: the management train diagram above illustrates some of the elements that applicants may seek to include within a SuDS scheme. The scale of the development and inclusion of roads will be important factors in the design of delivery options.
- 8.70 Smaller scale schemes within the boundaries of private property could include: green roofs, permeable driveways and parking, soakaways, proprietary treatment systems, and, geocellular storage (preferably combined with rainwater harvesting).
- 8.71 SuDS in road transport corridors could include: filter strips, swales, rain gardens (bioretention), filter drains, and, canals and rills.
- 8.72 Larger scale SuDS incorporating significant open space could include any of the above plus ponds and wetland, and infiltration and retention basins. Where basins and ponds are to be incorporated, they should be designed to appear as natural as possible (with contours blending into the landscape, and with different margin depths and shelves to maximise opportunities for the enhancement of biodiversity) or form part of a wider landscape design strategy that may introduce alternative forms into the landscape depending upon the context. Well designed SuDS schemes also favour other multi-functional uses such as the provision of green infrastructure for public access.

SUSTAINABLE URBAN DRAINAGE SYSTEMS

- 8.73 Conventional drainage systems that pipe surface water run off away from hard paved areas, can cause problems elsewhere, especially following periods of intense, or prolonged rain. Opportunities to incorporate Sustainable Drainage Systems (SUDS) into the design of external areas should be explored. SUDS comprise a range of techniques that allow surface water to be managed in a more natural manner as close to its origin as possible, through the use of permeable surface treatments, filter strips

and swales and basins and ponds. As well as helping to lessen the risk from flooding, such techniques can also offer benefits in terms of pollution control (through improved filtration), habitat creation and visual amenity.

- 8.74 Applicants developing SuDS should be aware that certain conventional landscape design and planting practices may require modification to facilitate an effective management train, account for different soil / moisture profiles, reduce soil erosion, and promote nature conservation. Access to an appropriate degree of SuDS engineering expertise will be an important issue for applicants – especially for larger schemes.

Mitigate Against the Impacts of Climate Change

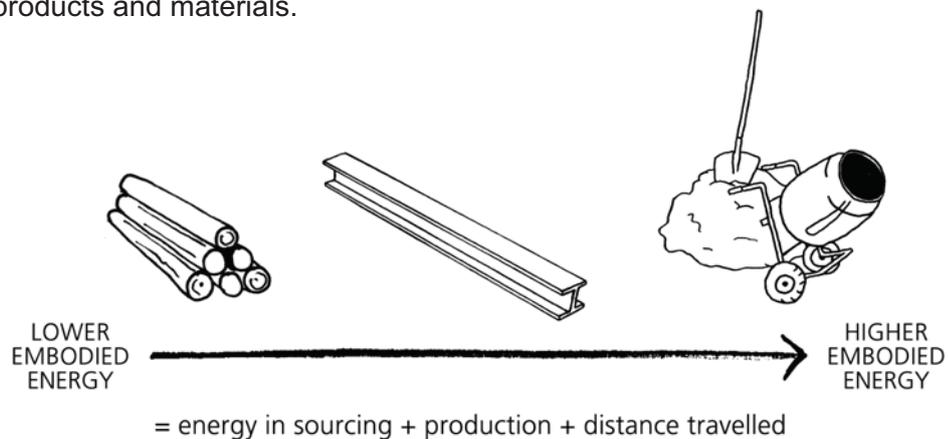
- 8.75 Desired outcome: there is scientific consensus that human induced climate change is almost certainly upon us today. Limiting the impact, by reducing emissions, is a priority issue. Adapting to the level of climate change to which we are already committed is also a matter of great importance and one in which sustainable design and construction stands to play a prolific role. Although some uncertainty remains as regards precise timings and the upper and lower levels of impact, there is agreement that we should expect greater seasonality with less stable weather patterns bringing more extreme weather events as long-term changes in climatic conditions begin to make themselves felt. All new development should therefore be proactively designed to mitigate against such impacts, which include:
- Increasing risk of heatwaves and extreme temperatures.
 - Wetter winters, more intense downpours and drier summers (increasing seasonality).
 - Greater risk of drought and flood.
 - Higher potential for more intense and frequent storms.
- 8.76 The outcome should be a design process that ensures that development takes account of the expected changes over its envisaged lifetime or be readily capable of adaptation without compromising carbon reduction measures (e.g. avoiding the use of fossil-fuelled cooling equipment).
- 8.77 Principles: the longevity of the built environment renders adaptation a current rather than future issue. The driving principle is of designing in the capacity for resilience to the impacts of future climate change. This designing-in should seek to ensure that occupants do not become dependant on the high use or retrofitting of costly and resource intensive building services to maintain their wellbeing – e.g. cooling and water supply in the case of heatwaves and drought respectively. Thoughtful adaptation strategies will deliver multiple benefits: enhanced liveability and quality of life in communities of the future, protection of investment, reduced insurance costs and enhanced biodiversity.

- 8.78 Essential requirements: in order to satisfactorily fulfil the Council's policy on mitigating against the impacts of climate change within new development, applicants should demonstrate that their proposals deliver built-in resilience to such impacts: high temperatures, storm / flood risk (including strong winds), water stress, and earth movement in areas of subsidence risk.
- 8.79 Delivery options: the scale of a proposed development will influence the extent of the delivery options available to applicants. Designing for larger developments will permit the inclusion of a more comprehensive cascade of measures. For most scales, however, the options available generally share a similar approach.
- 8.80 Managing high temperatures:
- Promotion of evaporative cooling through the use of green open space, water bodies and features (e.g. SuDS).
 - Provision of shading, to reduce excessive solar gain, through street and building orientation and structural features along with planting.
 - Careful and creative design to maximise passive ventilation potential.
 - Use of cool building materials, reflective surfaces and green roofs and walls to curtail heat penetration.
 - Inclusion of thermal storage or mass – absorbing heat during hot periods which can be dissipated when it is cooler (ground coupled systems make use of sub-surface storage).
- 8.81 Managing flood risk:
- As a point of principle avoid developing on sites at high risk of flooding.
 - Effective land management, SuDS features and planting to reduce the rate of surface run-off.
 - Widening drains and drainage features.
 - Removing pinch-points in flood pathways.
 - Raising water sensitive services and equipment beyond potential flood-line.
 - Use of specific flood resilient materials and building features.
 - Managing water availability and quality risks.

- Collect and store rainwater (harvesting from roofs and SuDS).
- Incorporation of rainwater recycling.
- Installation of water efficient fixtures, fittings and appliances.
- Managing ground conditions.
- In areas of high risk take expert advice over structural reinforcing and retaining options.

Use Sustainable Building Methods and Material

8.82 Desired outcome: the use of sustainable building methods and materials is an area of huge creative expertise within design and construction. One that stands to significantly reduce the negative natural resource, energy and carbon emission implications of the building process. From the climate change perspective, conventional methods of construction and materials used will 'embody' within them a relatively high amount of fossil-fuel derived energy – the carbon emitted in the production of building materials and their bringing together in the completed building. Approximately 10% of national energy consumption is used in the production and transport of construction products and materials.



Embodied energy

- 8.83 Sustainable building methods and materials should be used to bring down this embodied figure whilst also sustaining the source of natural materials used without degrading habitats and the long-term wellbeing of indigenous populations (e.g. timber and aggregates).
- 8.84 Principles: materials such as concrete, UPVC, PVC and extruded polystyrene all require high volumes of energy and resources to make them. These, and others such as alkyd (oil-based) paints and phosphogypsum (used in plasterwork) also generate pollution and toxic compounds – dangerous to ecosystems and human wellbeing. To counter these, and

other issues, the principles associated with the use of sustainable building materials should incorporate the following distinct procurement and quantity surveying elements:

- Employ re-used and recycled materials as a first course of action.
- Do not use or waste unnecessary materials.
- Where practicable, source materials that require the minimum energy use in their production.
- Where possible, source materials locally to reduce transportation impacts.
- Source materials that have been ethically harvested, processed or manufactured.
- Carefully monitor the use of materials during the construction process.



USING LESS
MATERIAL



LOW
EMBODIED
ENERGY



ETHICAL
SOURCING



MONITORING
MATERIALS DURING
CONSTRUCTION

= sustainable sourcing

Sustainable sourcing

- 8.85 In terms of construction methods, there is a marked division between those employing 'modern methods of construction' (pre-fabrication of industrially produced materials and partial off-site construction) and those wishing to utilise natural materials in an expressly ecologically sensitive manner in what is termed 'low impact construction' (these are the 'deep green' buildings typified by projects practised at a small scale and usually in rural areas ideally using locally sourced natural materials with very low embodied energy in their fabric e.g. cob, rammed earth, hemp, straw bale or green timber). Both of these strategies to sustainable construction share an approach founded upon drawing all of the above principles into an integrated design for the whole project.
- 8.86 Essential requirements: applicants should make an early assessment of their outline proposals in consideration of how they could practically incorporate sustainable building methods with verifiably sustainable

materials (including recycled) that have, as far as possible been locally sourced.

8.87 Delivery options: this guide cannot provide comprehensive information on the sustainability of all building materials – other publications such as the BRE Green Guide to Specification are far better placed for this purpose. In making a choice, the applicant will need to find a balance which meets their sustainability priorities. This is an inevitably complex area and one in which the full lifecycle environmental implications of a material (from production to disposal / re-use / recycling) must also be taken account of. It is, however, an area that applicants should look to take account of.

8.88 As a preliminary primer, material specification should, where applicable, actively consider including the use of:

- Certified timber.
- Natural insulation products.
- Natural flooring material.
- Timber framed windows.
- Structural timber frame.
- Timber cladding.
- Natural paints.
- Products with a high recycled content and naturally sourced.

and, excluding the use of:

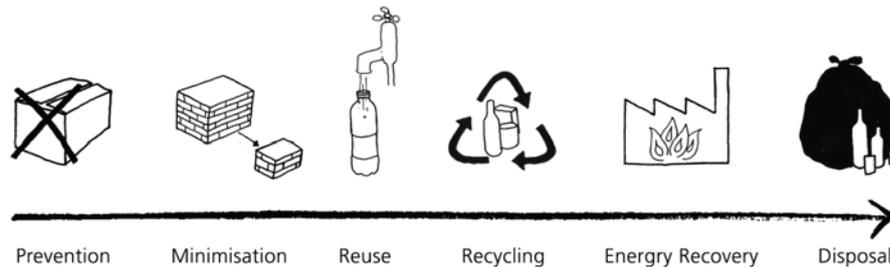
- Organic solvent based floor finishes, paint, glues, stains and adhesives.
- Energy intensive products (e.g. PVC, aluminium, copper and lead).
- Virgin aggregates.

Recycle Construction Waste

8.89 Desired outcome: approaches to recycling construction waste are closely tied to the use of sustainable building methods and materials as discussed in the previous section. It is a very significant issue, with construction and demolition waste representing 24% of total UK waste by weight. Development therefore adds significantly to the burden of existing waste that must be managed. Unfortunately a significant proportion of this waste is still disposed of to land fill. The recycling or reuse of this waste should therefore be a priority for all applicants and carefully planned to cover all waste arising during construction.

8.90 Principles: applicants are expected to ensure that their proposals incorporate the principles of the waste management hierarchy. The least preferred option is disposal to landfill and the most preferred option is, through careful design, to negate or reduce the demand for materials that

more conventionally, or less thoughtfully, would otherwise have been required.



Waste hierarchy

- 8.91 **Essential requirements:** applicants should prepare a Resource Re-use and Recycling Scheme to cover all waste arising during the proposed construction and/or demolition. Where possible, this should include the appropriate accommodation of construction spoil within the development and maximising the re-use and recycling of any suitable raw materials currently available on site during construction, such as redundant buildings or infrastructure. The Site Waste Management Plans Regulation 2008 places a legal requirement upon applicants to have a Site Waste Management Plan (SWMP) for all new construction projects costing more than £300,000. A SWMP will need to forecast how much of each type of waste will be produced on site and how it will be managed.
- 8.92 **Delivery options:** applicants should demonstrate how they are planning to use recycled material, reduce waste and ensure that as much of this is re-used or recycled as possible. Acting upon these objectives will probably require that the site incorporates facilities for waste sorting and recycling alongside procedures to minimise waste and maximise recycling during construction and demolition.

CHAPTER 9

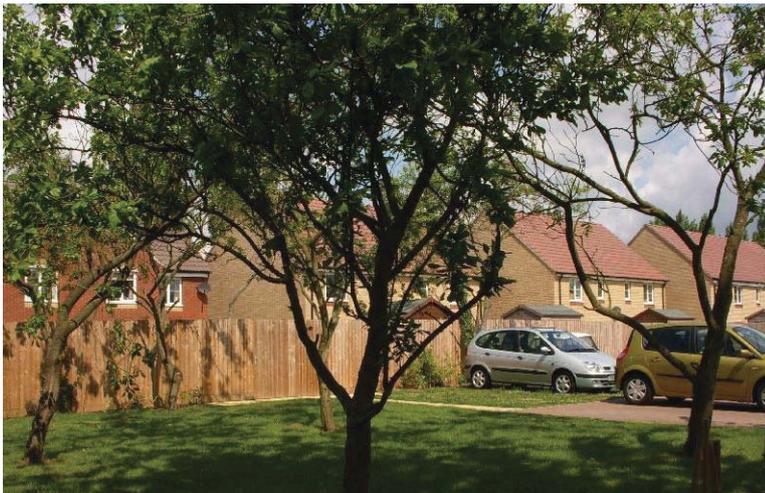
BIODIVERSITY

- 9.1 Biodiversity is the word used to describe all flora and fauna. It originates from “Biological Diversity” and was first used after the Rio Conference in 1992. The UK Government has pledged to reduce the decline in biodiversity and as such has produced a series of Biodiversity Action Plans (BAPs) to guide conservation work with respect to important species and habitats. BAPs have also been produced at the county level by the Cambridgeshire and Peterborough Biodiversity Partnership. The BAPs can be viewed at:

www.ukbap.org.uk

www.cambridgeshire.gov.uk/biodiversitypartnership

- 9.2 Biodiversity conservation should be considered as a key element of good design as interaction with wildlife enriches people’s lives and green spaces provide health benefits as well as adding value to developments.



Retention of old fruit trees to conserve an orchard within a new housing estate at Heydon

- 9.3 The distribution of species and habitats is influenced by the landscape. This can result in particular species being found in certain parts of the district and in turn reinforces an area’s local distinction or landscape character. For example, the Western Claylands extend from Wimpole to Hatley St George and include some the best ancient woodlands within the district. Their ground flora can include bluebells, wood anemone and oxlip. In contrast one would not expect to find these plants naturally within the Fen Edge landscape character where willow trees tend to dominate and extensive woodlands are not characteristic. Consideration must therefore be given to species’ introduction when considering landscape schemes within different landscape character areas as they will ultimate influence the biodiversity to be found there.

- 9.4 Development should contribute to the protection and further enhancement of biodiversity, and where possible, seek to restore and add to biodiversity. For example, the Trumpington Meadows development of 1,200 homes will result in the restoration of extensive wildflower flood meadows adjacent to the River Cam where arable production had been undertaken in recent decades.



Flood meadow restoration at Trumpington Meadows to deliver locally distinctive riverside habitats of willows and meadows alongside the River Cam.

- 9.5 Biodiversity and sustainable development sit side-by-side. Sustainable developments should aim to have a minimal impact upon the environment. Where change is unavoidable new opportunities may present themselves for habitat enhancement or creation such as community woodlands as open spaces and carbon sinks to help counter-act the effects of climate change.



Creation of Stockbridge Meadows community park in Melbourn following adjacent house building.

- 9.6 In addition to biodiversity conservation is the system of legally protected species and designated sites. A Protected Species is a species which receives protection under UK or European legislation – the protection could be partial (prohibiting sale, for example) or full, in which case the disturbance, killing or injuring of just one of the species could constitute an offence. Details of the species afforded protection under the various pieces of legislation can be found on Natural England’s website (www.naturalengland.org.uk). Development should avoid causing harm to such species.
- 9.7 Similarly, a number of sites (Sites of Special Scientific Interest, Special Area of Conservation and Special Protection Areas) are legally protected under UK or European legislation due to their importance for wildlife. At a level below these are County Wildlife Sites which receive no legal protection but are a material consideration within planning policy. All such sites are considered as Designated Sites within the SCDC Biodiversity SPD which should be referred to for further guidance. Development should avoid harm to such sites.

BIODIVERSITY CONSERVATION IN DEVELOPMENTS

- 9.8 The existing ecology of the site will need to be properly understood prior to submitting a planning application otherwise it is not possible to deliver effective species and habitat conservation. It is likely that a Priority Species Survey and Assessment or a Biodiversity Site Survey and Assessment will be required to support a planning application. The extent of such surveys can be established through pre-application discussions with planning staff. The SCDC Biodiversity SPD, chapter 3, provides detailed guidance on this aspect and should be referred to of particular importance are tables 1 and 2 which list development types and biodiversity sites that will trigger the need for specific biodiversity information..
- 9.9 Consideration should be given to the type of habitat found at a site and the species that it could support. For example, watercourses and drainage ditches may provide habitat for water voles. Redundant buildings (especially those in rural areas) may be used by barn owls or colonies of bats, while large mature gardens and undeveloped areas within villages can often provide refuges for biodiversity. These green areas may be acting as “stepping stones” or corridors for species such as great crested newts and, therefore, small infill plots should never be disregarded as having no biodiversity potential. When considering in-fill development it may be necessary to provide habitat features, such as native hedge and grass strip planting, to provide continuity of habitats.
- 9.10 Applicants should be aware that some developments may require the collation of ecological data over an extended period of time in order to assess likely impacts and to propose a mitigation scheme. This is

particularly likely in the case of protected species where Natural England will require survey information to support its protected species licensing procedures.

- 9.11 To assist the consideration of various development types on certain species and to illustrate what form of mitigation might be appropriate six development types are explored in Table 9.1. The contents of the table are not definitive and each development will have to be considered on its own merits.

Table 9.1: Potential Impact of Smaller Scale Developments on Biodiversity

Development Type	Initial Surveys	Possible Impact	Possible Mitigation
Barn conversion	Bat survey Barn owl nest site survey	Loss of bat roost Loss of barn owl nest site	Time works to avoid disturbing hibernation or breeding periods. Erection of artificial nest sites or create specialist bat roosts.
Listed building alteration	Bat survey to find roost and emergence points. Breeding bird survey or search for nest sites.	Loss of bat roost or access to bat roosts. Loss of bird nesting opportunities	Provision of new access points. Provision of specialist artificial nest sites for house sparrows, starlings or swallows.
House extension and Backland Development	Breeding bird survey Great crested newt survey	Loss of mature garden shrubs Loss of garden pond	Provision of new planting and suitable nest boxes Reconsider design to retain pond, or recreate pond in new location
Creation of boathouse on river or lake	Water vole survey Otter survey Kingfisher nest site survey	Loss of water vole habitat Disturbance of otters Disturbance of kingfisher nest site	Retention of natural water frontage. Sensitive lighting Sensitive screening
Outhouse demolition	Bat survey Search for newts around building periphery (inside and out) Search for nest sites	Loss of bat roost Loss of great crested newt hibernation site Loss of potential bird nesting site	No demolition whilst bat using the structure Provision of alternative hibernation site. Provision of suitable nest boxes

New dwelling on disused plot	Breeding bird survey Phase 1 Habitat Survey (see South Cambridgeshire Biodiversity Strategy) Invertebrate survey Badger survey	Loss of scrub habitat Loss of deadwood habitat for invertebrates Disturbance of badger sett	Provision of suitable nest boxes Provision of new native planting Retention or replacement of deadwood habitat Retention of suitable screening and habitat around sett
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- 9.12 Applicants are strongly encouraged to enter into pre-application discussions and to seek advice from Council's Ecology Officer on biodiversity matters.

CHAPTER 10

ENVIRONMENTAL HEALTH ISSUES

WASTE / REFUSE COLLECTION AND RECYCLING-OPERATIONAL

- 10.1 Adequate, safe and secure provision should be provided for the storage of the waste and recycling materials collection receptacles (Council or Private Contractor), for all residential (domestic) and non-residential buildings (commercial) uses, without creating a nuisance or being unsightly for the occupants or the general streetscape.
- 10.2 To prevent the storage of such materials becoming a nuisance or unsightly in the future, the design of storage facilities should be sufficiently large to accommodate future expansion of recyclable materials collected and therefore an increase in the number of recycling containers required to be stored.
- 10.3 Access for refuse, delivery and emergency vehicles is best provided by means of permeable grid layout, but where dead ends are unavoidable, turning heads must be provided. Development layouts and the provision of operational waste and recycling provision on-site must accord with Building Regulation H6 and the requirements of the Recycling in Cambridgeshire and Peterborough Partnership (RECAP) Waste Management Design Guide 2008 (RECAP Guide) and the Cambridgeshire Design Guide for Streets & Public Realm. The RECAP Guide was originally published by the RECAP Partnership in 2008 and adopted as SCDC policy in 2008. It has been recently revised by the County Council together with Peterborough City Council as a draft Supplementary Planning Document (SPD) and will be subject to public consultation in February / March 2010 and likely adoption in mid to late 2010.
- 10.4 Guidance contained within the emerging County Council draft Supplementary Planning Documents will also relate to policies 16 and 28 in the emerging Minerals & Waste Core Strategy covering Waste Minimisation, Re-use, and Resource Recovery and the provision of Household Recycling Centres. This draft Supplementary Planning Document entitled "The Location and Design of Waste Management Facilities" will also be subject to public consultation in February / March 2010 and likely adoption in mid to late 2010. It will guide the design and location for strategic Waste Management Facilities in Cambridgeshire to ensure high quality design in accordance with best practice and to demonstrate how these facilities can be developed in both urban and rural settings.

- 10.5 The RECAP Guide addresses the issue of waste management in new developments and redevelopments of a residential, commercial or mixed (residential and commercial) nature. It is to be used by:
- Developers and designers to ensure effective segregation, storage and collection of waste materials; and
 - Planning Authorities in assessing each planning application to ensure that waste management needs are adequately addressed.
- 10.6 The Guide covers the following areas:
- Waste Storage Capacity
 - Waste Storage Points
 - Waste Storage Methods
 - Waste Collection
 - Recycling Centres
 - Bring Sites
 - Waste Management in flats & apartments
 - Technical Appendices
- 10.7 The aims of the Guide are as follows:
- Detail the waste segregation, storage and collection requirements that designers and developers need to satisfy.
 - Provide a strategic tool for use by Planning Authorities when assessing development applications.
 - Address the unique waste management problems presented by high density (residential) developments.
 - State the requirements for developers regarding the funding and provision of additional waste management infrastructure.
 - Highlight the financial implications of waste management upon developers.
 - Highlight examples of good practice demonstrating what can be achieved.
 - Contribute to sustainability and reduced environmental impact.
- 10.8 The RECAP Guide includes a 'ToolKit' to be used by developers to set out how they have addressed waste management requirements as part of their planning application. The ToolKit is on the 1App list of required documents

and as such a completed ToolKit must accompany any planning application in order for it to be registered as a valid application.

- 10.9 The purpose of the County Council Draft SPD on Waste Management Design Guide mirrors that of the RECAP Guide and sets out a series of development principles based on recognised good planning and design practice.
- 10.10 The Draft SPD provides advice on the design and provision of waste management infrastructure in new developments and redevelopments of a residential, commercial or mixed (residential and commercial) nature, including advice on:
- **Internal storage capacity:** including a requirement to provide between 35-40 litres of space within the kitchens of new homes to give residents sufficient space to allow for recycling and composting (as appropriate).
 - **External storage capacity:** the Guide sets out recommendations for amount of space which is required to store bins for different types of waste to serve residential and commercial developments including different standards for communal bins in relation to flats / apartments. In the case of commercial development the amount of space required is dependant upon the use of the land e.g. requirements for restaurants and fast food outlets are greater. For residential development it is dependant upon whether it is a house or the number of rooms in the case of flats / apartments (excluding kitchens and bathrooms). For example a single house would need to provide 775 litres, with a one bedroom flat with a living room in a 4 floor development would need to provide 320 litres.
 - **Location of waste storage:** issues which should be considered in relation to location of bins including ensuring that they are accessible for both users and collection crews and that the amenity of residents is protected.
 - **Waste storage infrastructure:** sets out a minimum specification for compounds to store residential and commercial waste above-ground and guidance in relation to the design of underground facilities.
 - **Highway design:** requirements for the design of new roads given the emphasis away from car dominated environments in urban design to take into account the need for waste collection vehicles to serve new developments effectively.

- **Additional waste management measures:** identifies a range of complementary measures, which can be introduced to support the effective management of waste e.g. educational schemes.

NB: the above detailed capacities are indicative and may need adjusting subject to local and national requirements / priorities and the final version of any adopted County Council SPD - Waste Management Design Guide.

- 10.11 The Cambridgeshire Design Guide for Streets & Public Realm (Cambridge Horizons 2007), complements national design guidance, such as the Government's Manual for Streets to promote the highest possible standards in all new developments, large and small. The purpose of the Design Guide for Streets & Public Realm is to set out the key principles and aspirations that should underpin the detailed discussions about and requirements for the design of streets and public spaces that take place on a site-by-site basis. The aim is to integrate street design with the RECAP Guide so that there are adequate street widths and access arrangements to accommodate refuse / recycling vehicles so that suitably located waste / recycling collection points can be reached and serviced.
- 10.12 The Environment Services Team within Health and Environmental Services can provide further information and advice.

AIR QUALITY

- 10.13 Air pollution and poor air quality can have detrimental impacts on health and the amenity of users of land in terms of odour, dust and nuisance. Policy NE/16- Emissions within the Local Development Framework aims to improve air quality in the district and helps to implement the objectives of the Air Quality Action Plan (AQAP), relating to land use.
- 10.14 The District Council and the planning system has a key role in protecting people from unacceptable risks to their health and in providing an adequate protection to the amenity value of land. Low Emission Strategies and S106 agreements can act as a main instrument to minimise the impact of development on the local community and to ensure the developer carries out measures to provide benefit to the environment and community.
- 10.15 Part IV of the Environment Act 1995 sets out the system of local air quality management in which local authorities take the lead in the form of the National Air Quality Strategy (NAQS). The NAQS contains health based air quality objectives for common pollutants.
- 10.16 Under the above legislation, South Cambridge District Council is required to carry out periodic reviews of air quality in their area and to assess against the stated objectives. Where such objectives are unlikely to be met by the target year, local authorities are required to designate an Air Quality Management Area and consequently create and implement an Air Quality

Action Plan, which contains the measures required to reduce pollutant concentrations and lower emissions in order that the national objectives are met. This not only aids in the objectives for sustainable development, it also improves the quality of life for existing communities.

- 10.17 Air quality is a material planning consideration and clear links have been established between air quality and land-use planning with transport identified as the main source of pollutants in towns and cities. By guiding the location of new development and preventing or mitigating the exposure of sensitive receptors to poor air quality, reducing the need to travel and promoting smarter and cleaner transport choices by considering a Low Emission Strategy (LES), land use planning and design will form an important element of an integrated strategy to achieve the air quality standards and objectives.
- 10.18 Air pollution and climate change are intrinsically linked. Both arise from the emission of combustion processes to the atmosphere. Exhaust emissions including carbon dioxide, nitrogen dioxide and particulate matter, continue to increase from transport and transport is the main reason for the Air Quality Management Area (AQMA) declaration in South Cambridgeshire following a national trend for concentrations of nitrogen dioxide and particulate matter to breach health based standards. South Cambridgeshire's AQMA is located along a stretch of A14 to the North of Cambridge City and further information and a map of the AQMA can be viewed in Appendix 4B and via the following link: http://scambs-airquality.aeat.co.uk/index.php?action=chapter&f_page_id=7
- 10.19 Low Emissions Strategies (LES) provide a package of measures to help mitigate the transport impacts of development on local air quality and on climate change. The LES is secured through a series of planning conditions and legal obligations.
- 10.20 The LES will bring together the Council, the County Council, the Highways Agency and, through the improved use of S106 agreements, developers in working towards improving the local air quality and reducing emissions. In addition, it will help towards achieving the target within the new National Indicator NI194: Air quality – % reduction in NOx and primary PM10 emissions through local authority's estate and operations.
- 10.21 The South Cambridgeshire Local Development Framework contains Policy NE/16, relating to emissions and air quality. The policy reads:
1. Development proposals will need to have regard to any emissions arising from the proposed use and seek to minimise those emissions to control any risks arising and prevent any detriment to the local amenity by locating such development appropriately.

2. Where significant increases in emissions covered by nationally prescribed air quality objectives are proposed, the applicant will need to assess the impact on local air quality by undertaking an appropriate modeling exercise to show that the national objectives will still be achieved. Development will not be permitted where it would adversely affect air quality in an Air Quality Management Area.

10.22 When will air quality and emissions be considered?

- The Council will identify any developments that have the potential to contribute significant emissions to the local area.
- Any developments within or adjacent to an AQMA boundary.
- Proposals that will result in increased congestion, a change in traffic volumes – an AADT or peak traffic flow which increases by more than 5% for roads with more than 10,000 AADT.
- Proposals which change the traffic composition (i.e. increase the proportion of HGV's).
- Proposals that include car parking or the increase in provision for more than 300 spaces.
- Developments that could give rise to significant dust emissions in areas where people and/or commercial activities could be exposed.
- Pre-application discussions with the developer to exchange ideas and determine the extent of the LES and possible contributions towards air quality improvements using S.106 agreements.

10.23 What will the LES include?

The LES will include all proposals to mitigate the impact of emissions including transport emissions arising from the development. This could be travel to work plans, residential travel plans, priority parking for low emission vehicles or the infrastructure for recharging electric vehicles.

10.24 Emissions Impact Assessment

This will be an identification and quantification of all emission sources from the development.

10.25 Package of mitigation measures

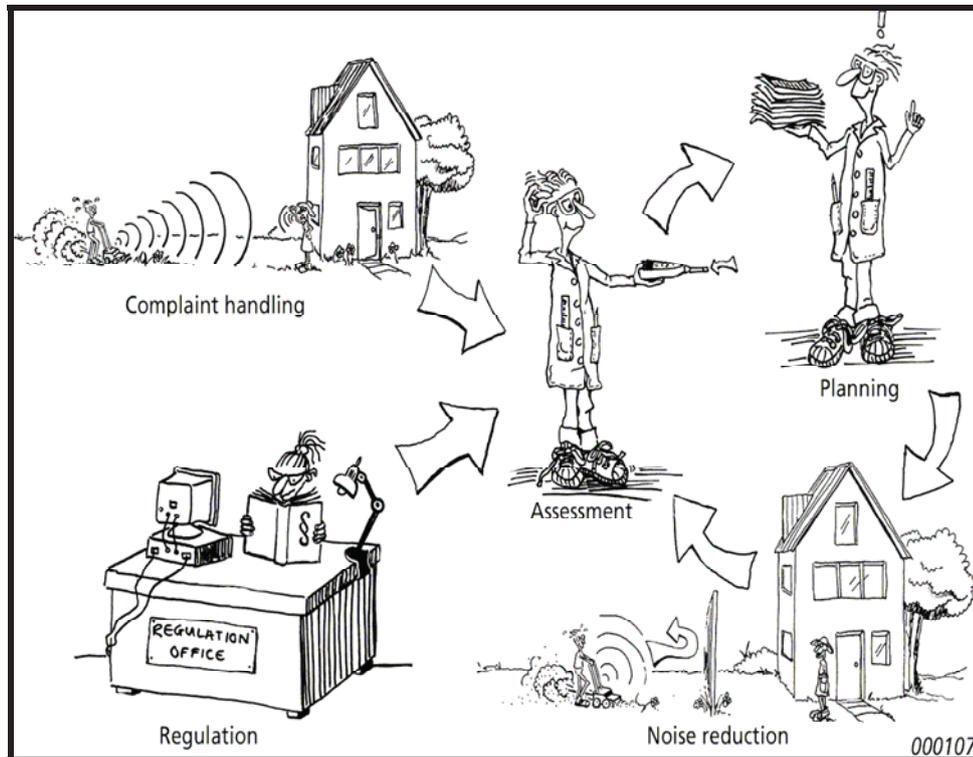
This should be a full detailed explanation of the mitigation measures intended by the developer, also including a statement of intent for S.106 contributions if this is necessary. It will be linked to the Emissions Impact Assessment to show how reductions, using a variety of methods and technologies, will be achieved.

- 10.26 Applicants should be directed towards the following documents for help in achieving a low emission development:
- Low Emissions Strategies – using the planning system to reduce transport emissions - Good practice Guidance - January 2010, prepared by the Beacons Low Emission Strategies Group August 2009, available free to download at:
<http://www.defra.gov.uk/environment/quality/air/airquality/local/guidance/documents/low-emissions-strategies-2010.pdf>
 - Air Quality – A Guide for Developers South Cambridgeshire District Council, 2009, available free to download at: (coming soon).
 - Planning Policy Statement 23 (PPS23) Planning and Pollution Control, Defra, 2004, available free to download at:
<http://www.communities.gov.uk/publications/planningandbuilding/planningpolicystatement23>
- 10.27 Further guidance is provided in Appendix 4:Air Quality.

NOISE

- 10.28 It is a fact of life that we all make noise, that is we all make “unwanted sound” in one form or another, often unintentionally. Noise is an unavoidable part of our lives. However, it can have an adverse effect on people’s quality of life and there is emerging medical evidence that exposure to unwanted sound can affect our health and welfare.
- 10.29 In relation to noise control, prevention by preempting and avoiding or mitigating to an acceptable level, is better than cure. Protection against noise in the construction, design and layout of residential developments is essential to ensure that existing or future residents are not subjected to unacceptable levels of noise in their own homes or external amenity areas, part of sustainable development in terms of noise.
- 10.30 The likelihood of noise affecting future residents is a key factor in assessing the suitability of a site for residential use.
- 10.31 Planning Policy Guidance 24-Planning and Noise (PPG 24, 1994) guides Local Planning Authorities (LPAs) on the use of their powers to minimise the adverse effects of noise and outlines the considerations taken into account in determining planning applications both for noise-sensitive premises and for those, which generate noise. PPG 24 acknowledges that noise can have a significant effect on the environment and on the quality of life enjoyed by individuals and communities, so its consideration and control is an important part of sustainable development in providing a healthy and quality living environment and is integral to place making.

- 10.32 With higher densities, more mixed-use development, and more demand for late night activities, good acoustic design needs to be actively promoted if noise is not to become a threat to SCDC growth areas and quality of life. Environmental Health Officers and/or acousticians should be involved at an early stage.



*Environmental Noise Protection and Planning for Good Design
Brüel&Kjær Sound&Vibration Measurement A/S*

- 10.33 Noise can be a material consideration in the determination of planning applications and the planning system is tasked with guiding development to the most appropriate locations whilst advising on noise design issues.
- 10.34 The underlying principles of PPG24 advocate the use of the planning system to ensure that, wherever practicable:

- New noise-sensitive developments are separated from major sources of noise such as road, rail and air transport and certain types of industrial development having regard to both the likely level of noise exposure at the time of the application and any increase that may reasonably be expected in the foreseeable future.

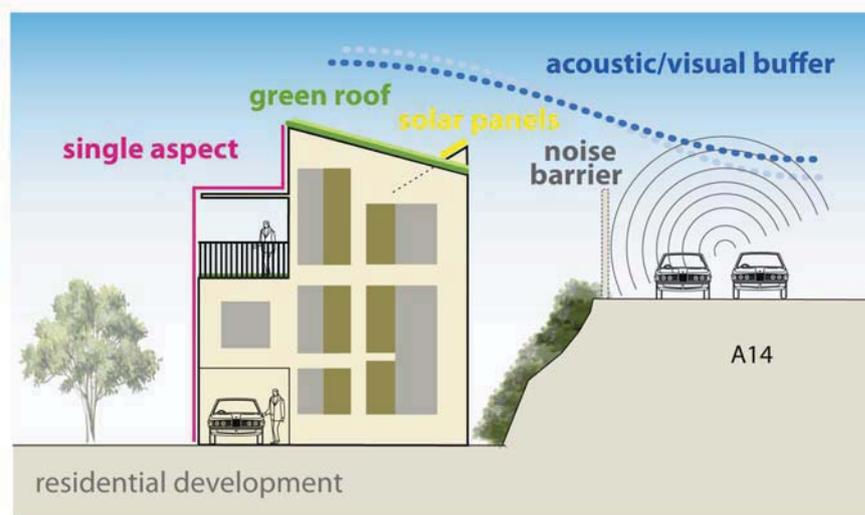
This includes the introduction of new noise sensitive development such as new residential dwellings, schools and hospitals into or locating near to an existing noisy environment, such as noise from road, rail traffic, aircraft, commercial / industrial and or agricultural related and existing building services plants or equipment.

- New development involving noisy activities that have the potential to generate noise should, if possible, be sited away from noise-sensitive land uses.

Development that have the potential to generate noise are likely to be commercial / industrial and agricultural uses with associated process equipment and or building services plant of one description or another, usually air-conditioning / ventilation equipment. In addition, noise associated with vehicular movements to a development for example deliveries / collections or a significant increase in general traffic movements off site outside the development site can also have an impact on residents. Applications associated with pubs, clubs and places of entertainment are dealt in the attached appendix on other noise issue.

- 10.35 Planning balances various competing environmental, social and economic needs and where it is not possible to achieve separation of incompatible land uses, for example noise sensitive development from noisy activities, local planning authorities should consider whether it is practicable to control or reduce noise levels by careful urban design, or to mitigate the impact of noise, through the use of conditions or planning obligations. However, an inflexible approach would inhibit regeneration and development and place more pressure on green-field sites.
- 10.36 Solutions to acoustic problems can be technically complex and expensive and very expensive if considered retrospectively. In all but small developments or particularly quiet locations, it is likely that specialist advice will be required from acoustic consultants.
- 10.37 Delaying contact with such specialists until later in a project may result in avoidable additional costs being incurred at the design and construction stages.
- 10.38 Where it is unlikely that residents will be able to keep windows open or sit on/in a balcony / garden without being bothered by one or more external noise sources, such as traffic, industrial noise or customers of entertainment venues, noise will be a material planning consideration and will require careful consideration at the pre-application and design stage.
- 10.39 Mitigation of the effects of noise can be achieved by:
- i. Control at the source (measures to reduce noise emissions at source such a quiet plant, noise insulating buildings, plant enclosures or quiet road surfaces and or noise barriers).
 - ii. Control of the transmission path (adequate distance separation, building location, form and orientation, screening / noise barriers).

- iii. Control of noise at receiver (sound-conscious design: internal planning such as non habitable rooms providing a buffer, orientation of noise sensitive rooms and balconies and gardens way from noise by barrier dwelling blocks, single aspect courtyards schemes and staggered terraces, careful fenestration, noise insulation scheme for the building envelope of noise sensitive buildings and also buildings generating noise, reduced external amenity, acoustic ventilation).
- iv. By controls over the operations that generate the noise (such as controls over the hours of operation, deliveries / collections).



Environmental Noise Mitigation Measures-Planning for Good Design

- 10.40 The applicant is encouraged consult the LPA at an early stage about the possible use of such measures and whether they are desirable or achievable, as this may enable the incorporation of such noise mitigation measures into the design of the proposal before it is formally submitted for determination, the concept of “Sound-conscious urban design”. Noise mitigation measures integrated into the overall design of the development should be first in a hierarchy of noise mitigation measures. The control of the noise at the receiver in terms of noise insulation of the building envelope shall be a last resort and the final line of defense against adverse external noise.
- 10.41 Further environmental noise guidance, LDF policies and standards are detailed in Appendix 6 - Noise, which should be followed for all residential development, in areas where internal or external noise is a determining factor and when noisy commercial / industrial type development is proposed.

ODOUR

- 10.42 Odour, dust or fumes from plant serving any planning applications for commercial, industrial and agricultural buildings should be considered in relation to nearby sensitive receptor development. When determining an application the Council may include a condition requiring the submission and approval in writing by the local planning authority of the location and type of such plant and details of any equipment for the purpose of extraction and/or filtration and/or abatement of fumes and or odours before the use of the plant commences.
- 10.43 It will be necessary to ensure adequate discharge and or abatement of odours to ensure odour nuisance and or malodours are not caused and to protect the amenity of neighbouring premises.
- 10.44 Extraction, filtration and odour / fume abatement systems must also be designed so that they do not have an unacceptable impact on visual amenity.
- 10.45 The installed systems must not appear as an incongruous feature in the street scene. To be acceptable the proposed extraction system will have to be:
- Located preferably to minimise its visual impact on the street scene;
 - Of a colour, finish and design to blend in with the buildings to which it is attached, incorporating cladding where appropriate; and
 - Installed within the building where practicable and particularly where the proposal is within a conservation area or within the setting of a listed building.
- 10.46 If unacceptable smells and fumes cannot be prevented by means of an effective extraction or abatement system, or if ducting cannot be installed without significant detriment to visual amenity, planning permission will not normally be granted.
- 10.47 Odour can be a prevalent problem at low levels of concentrations and has the potential to impact on a wide area and affect amenity.
- 10.48 When there is the potential for odour and or fumes to be generated, SCDC may require the submission of a detailed odour assessment with a planning application, if it is felt that there will be serious detriment to the amenity of the area.
- 10.49 To satisfy the odour and or fume filtration / extraction condition, it is recommended that an effective and appropriate odour/fume extract system

be installed to ensure an odour nuisance is not caused to the occupiers of neighbouring premises. For example for food premises any system will need to deal with the two main phases of contaminants within cooking emissions: the particulate (grease, small food and smoke particles) and gaseous (odour vapour / volatile organic compounds).

10.50 Examples of systems available are as follows:

- An extract system running upwards, either internally or externally with the flue height terminating above roof ridge level to which it is attached by at least one metre. A minimum operating efflux velocity of 10 to 15 metres a second should be achieved. However, the effectiveness of this system is dependent on buildings nearby. If buildings nearby are likely to have an effect on the dispersion and dilution of odour, the flue height should be at least one metre above the ridge of that building.
- If an appropriate height cannot be achieved, a high efficiency odour abatement measure should be incorporated, such as:
 - grease filters with pre-filter particulate filtration (electrostatic precipitator or passive pre-filters) followed by activated carbon filters;
 - grease filters with pre-filter particulate filtration (electrostatic precipitator or passive pre-filters) followed by an odour neutralisation system;
 - a high dilution / high velocity system (HDHV) with a minimum operating efflux velocity of 10 to 15 metres a second.

10.51 This list is by no means exhaustive as there are other similar systems on the market. Each system has its own advantages and disadvantages in terms of cost, physical size, pressure loss, maintenance requirements, odour arrestment effectiveness and associated noise generation.

10.52 It is recommended that flue terminals such as rain cowls / caps do not impede the final discharge termination point.

10.53 Further advice regarding the control of odour from end uses, is contained in the following guidance documents:

- Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems (January 2005- Product Code: PB 10527) produced by Department for Environment, Food and Rural Affairs (DEFRA).

- Protecting our Water, Soil and Air: A Code of Good Agricultural Practice for farmers, growers and land managers, DEFA 2009
- Technical Guidance Note IPPC SRG 6.02 (Farming) “Odour Management at Intensive Livestock Installations”, Environment Agency, Guide to Odour Management, May 2005
- Integrated Pollution Prevention and Control (IPPC), DRAFT Horizontal Guidance for Odour Part 2 – Assessment and Control, Technical Guidance Note IPPC H4: October 2002
- BS EN 13725:2003: Air quality. Determination of odour concentration by dynamic olfactometry

POTENTIAL CONTAMINATED LAND

- 10.54 The actual or possible presence of contamination is a material planning consideration. Persons submitting planning applications are expected to declare any knowledge they may have about potential land contamination. In many cases it will be an advantage to determine whether there are likely to be any contamination issues on site before submitting an application for planning consent. On large-scale developments it could form a part of a pre-application enquiry where any necessary investigations can be determined prior to submitting a planning application.
- 10.55 On any site where there is the potential for contamination to exist, or the proposed use would be particularly vulnerable to the presence of contamination i.e. residential, a contamination assessment, also known as a Phase 1 Desk Study Investigation, should be submitted as part of the application. An essential part of any Phase 1 Investigation is a site walkover to establish current land use as well as a review of historical land uses to identify potential sources and receptors. The Phase 1 Investigation should produce a ‘Conceptual Site Model’ and Preliminary Risk Assessment that characterises all plausible pollutant linkages. This will form the basis of any subsequent work undertaken as part of a Phase 2 Intrusive Investigation.
- 10.56 On review of the information submitted as part of the application, the Council may attach a condition to the application requiring a Phase 2 Intrusive Investigation of the site followed by, if necessary, remediation and validation. A Phase 2 Site Investigation should determine the nature, extent and severity of contamination by means of intrusive investigations. The Site Investigation Report should include borehole / trial pit logs, sample locations and copies of all laboratory analyses. It should provide an updated Conceptual Site Model and details of remedial options.
- 10.57 The site investigation procedure involves specialist technical knowledge and it is essential that competent and experienced professionals conduct all phases of the site investigation. Health and Environmental Services and

Development Control will work together to ensure that the application sites are appropriately investigated, managed and, if applicable, remediated. It is ultimately the developer's responsibility to ensure that the site is suitable for its proposed use.

- 10.58 The primary aims are to avoid or mitigate risks to human health and the environment to ensure that the proposed development will be suitable for use.
- 10.59 Further detailed guidance is provided in Appendix 5 to this document.

FOOD HEALTH AND SAFETY

- 10.60 Food safety and health and safety principles are traditionally not part of the formal planning process. This has led to some poor design of commercial premises design, which has required improvement once the workplace is operational. Early consultation with the Environmental Health should avoid the need for costly remedial work; the Service runs a monthly surgery where businesses can attend to discuss plans with an Environmental Health Officer. Surgeries are run on the last Thursday of each month.
- 10.61 The appropriate design and construction of premises and equipment help food businesses maintain and manage high standards of food safety. Regulations EC No 178/2002, 852/2004 and the Food Hygiene (England) Regulations 2006 require food premises to meet certain standards; covering layout, design, construction, equipment and facilities.
- 10.62 All persons managing commercial premises as a workplace have a general duty to ensure the health safety and welfare of employers, members of the public and persons affected by the business. Integral to this is design, choice of building fabric, organisation of the workplace and specification of workplace features such as flooring. Environmental Health Officers apply the Construction (Design & Management) Regulations 2007 in some developments for early, proactive intervention on design issues. Advice on this aspect can be sought by contacting Health & Environmental Services and raising your queries with an officer.
- 10.63 Further detailed guidance is provided in the Appendix 8 to this document.

LIGHT POLLUTION

- 10.64 In a predominantly rural environment such as South Cambridgeshire, the impact of lighting associated with development can have an adverse impact upon both the surrounding landscape and residents of surrounding properties. In certain circumstances lighting is critical in terms of public safety and security but in others, the amount of light emitted only serves to create a form of pollution either through windows of bedrooms. In such

cases, the District Council will seek to reduce the amount of pollution, particularly in the context of new development where lighting is required for the road system or security lighting for remote developments.

- 10.65 Therefore it is necessary to try to find a balance between the need for lighting and the negative implications associated with it. Lighting in itself may not need planning permission but the Council will use planning powers where appropriate to manage the effects of lighting to achieve the objective of this part of the SPD which is to reduce excessive, intrusive and unnecessary lighting in both rural and urban areas.
- 10.66 Problems of glare, (the uncomfortable brightness of a light source when viewed against a dark background), and light trespass, (the spilling of light beyond the boundary of the property on which the source is located), are other forms of light pollution. Such light pollution is a waste of electricity and therefore increases energy consumption and emissions.
- 10.67 Designers are advised to have regard to the type of location in designing lighting proposals and devising techniques for limiting light pollution and its impacts.
- 10.68 Policy NE/14 requires that development proposals which include external lighting should ensure that:
- a. The proposed lighting scheme is the minimum required for reasons of public safety and security;
 - b. There is no light spillage above the horizontal;
 - c. There is no unacceptable adverse impact on neighbouring or nearby properties or on the surrounding countryside;
 - d. There is no dazzling or distraction to road users including cyclists, equestrians and pedestrians;
 - e. Road and footway lighting meets the District and County Councils' adopted standards.
- 10.69 Further guidance and policies are contained within Appendix 7.

LITTER AND DOG BINS

- 10.70 The provision of litterbins and dog bins is entirely functional but can have a considerable impact on the appearance of the street or location. SCDC has therefore adopted a standard design, colour and specification for all litter and dog bins. In future large developments consideration will be given to the provision of litterbins that facilitate recycling of segregated litter. The

assumption that the provision of litterbins will prevent littering is not always right. The provision of litterbins is not linked to resident or property numbers but the local land use, e.g. a parade of shops or the route from a school to the nearest sweet shop is likely to benefit from a litterbin rather than a normal residential street.

10.71 This council has also decided to provide and install all bins to ensure the appropriate standard and method of fixing. This provides better continuity of / and the service as control is lost once a developer has moved on.

10.72 Problems encountered:

- Poor design.
- Poor siting / location – obstructions, spoiling views etc.
- Embellishments drawing too much attention to bins.
- Servicing arrangements / problems.

Guidelines

10.73 The Environment Operations section of SCDC's Health And Environmental Service should be consulted at the earliest opportunity to seek advice and guidance regarding all proposals to provide litter and / or dog bins.

10.74 Provision of dog bins in areas adjacent to where children are allowed to play is not encouraged in order to minimise the risk to Toxocara Canis infection: a common worm infection in dogs. Infective stages of this parasite can be found in the environment - particularly in areas frequented by large numbers of dogs - kennels, public parks and exercise areas. Children can be infected by picking up the disease from the environment or from handling dogs.

10.75 All bins located on land other than public highway (as defined by the Highways Act, 1980) will not be emptied by SCDC unless the developer or landowner pays for this service. Consideration should therefore be given how the bins are serviced once provided.

Types

10.76 The Council's standard is the Glasdon Topsey twist-lock in dark green with the Council logo, stubber plate and fire retard for litter and the Glasdon 55 litre Retriever for dog waste.

DRAINAGE AND FLOODING-SCDC AWARDED WATERCOURSES

10.77 SCDC has adopted an integrated approach to water cycle management that aims to manage all of the components of the water cycle (rainwater, storm water, sewage, ground water, surface water and recycled water) to secure a range of social, economic and environmental benefits. Reference should

be made to the South Cambridgeshire Strategic Flood Risk Assessment 2005 (SCDC SFRA 2005). The Assessment provides a detailed and robust assessment of the extent and nature of the risk of flooding to specific growth areas within South Cambridgeshire and its implications for land use planning. It enables South Cambridgeshire to better meet the obligations created by Planning Policy Guidance Note 25: Development and Flood Risk. SCDC's SFRA 2005 can be downloaded from:
<http://www.scams.gov.uk/Environment/Planning/DistrictPlanning/LocalDevelopmentFramework/Archive/FloodRisk.htm>."

- 10.78 There is a policy commitment to minimising flood risk, managing surface water and achieving sustainable drainage principles in new and existing development whilst ensuring that the re-use and recycling of water is given priority. This approach is in line with Planning Policy Statement (PPS) 25: Development and Flood Risk (2006) that emphasises, "all forms of flooding and their impact on the natural and built environment are material considerations".
- 10.79 Notwithstanding PPS25 there are additional requirements that may fall on developers in connection with the South Cambridgeshire's Awarded Watercourses system. In addition to the awarded drains / watercourses, it should be noted that the Environment Agency, Internal Drainage Boards and other landowners / bodies have responsibility for other watercourses. These will also need to be given careful consideration by developers in order to mitigate any potential adverse impact such as flooding".
- 10.80 The Council is responsible for the maintenance of approximately 280 km of awarded watercourses at a variety of locations within the SCDC area. The watercourses are controlled using the Land Drainage Act 1991 and the Council's Land Drainage Byelaws. Copies of the Byelaws and information on the location of the awards are available from the Council's Drainage Manager.
- 10.81 Any works in the vicinity of the award drains will require careful consideration and may require consent under the terms of the Byelaws. In particular, the Byelaws designate a 5-metre maintenance strip, along both sides of the awards, that must remain clear at all times. Additionally, any proposal to increase the rate of flow or volume in an awarded watercourse will require the prior consent of the Council. Developers should be aware that, under certain circumstances, a contribution to the cost of the award drain maintenance may be required by the Council.
- 10.82 SCDC's Drainage Manager in Health and Environmental Services can provide further information and advice on drainage and the impact on awarded watercourses.

HEALTH IMPACT ASSESSMENTS

- 10.83 Policy DP/1 Sustainable Development of the LDF requires a Sustainability Statement and a Health Impact Assessment for all major developments, to be submitted with the application demonstrating that the principles of sustainable development have been applied.

Health Impact Assessment – Policy Context and Purpose of HIA's

- 10.84 New communities and developments should be planned and designed at the beginning of the process to take full advantage of the opportunities to improve the health of local people and to reduce health inequalities.

Health Impact Assessment - Background

- 10.85 Spatial planning and development has the potential to impact on human health and wellbeing. This is because a wide range of social and environmental factors affects the health of local communities within South Cambridgeshire. These are known as the “Wider Determinants of health” and include:
- Individual lifestyle factors such as smoking habits, diet and physical activity.
 - Interactions with friends, relatives and mutual support within a community.
 - Wider influences on health including - living and working conditions, unemployment, water and sanitation, health care service, housing, food supplies, education, and the work environment.
- 10.86 Ensuring these issues are considered at the planning and design stage can improve both the physical and mental health of the population. Guidance expressed within this District Design Guide SPD can contribute to sustainable planning, good design and the development of community resources. These can encourage environments which: increase people's sense of safety and wellbeing, their opportunities for social interaction and community connectivity, improve air quality and water conservation and promote active travel and physical activity.
- 10.87 It is important to consider the effects of the wider determinants of health on not only the physical environment (e.g. air pollution, traffic patterns, housing stock) but also the social environment, which refers broadly to the social norms and values shared by members of social groups, as well as the quality, content, and volume of interpersonal interactions within urban and rural and between urban and rural communities. It is also known that these wider determinants are not distributed equally among populations (e.g. those people living in areas of deprivation tend to have poorer health

outcomes). By considering these effects and their distribution, development policies and plans can enhance the potential to influence health and wellbeing, and health inequalities.

Health Impact Assessment – Aims and Objectives

10.88 Health Impact Assessment should:

- Appraise the potential positive and negative health and well-being impacts of the proposed development on planned new communities and the adjacent existing communities in the development area.
- Highlight any potential differential distribution effects of health impacts among groups within the population by asking ‘who is affected?’ for the impacts identified.
- Suggest actions / mitigations that aim to minimise any potential negative health impacts and maximise potential positive health impacts, referencing where possible the most affected vulnerable groups.

Building Healthy Communities

10.89 In addition to Health Impact Assessments, which look at the impacts the development will/may have on health, it is also important to examine in detail how the proposed development is going to ensure that the new community is a vibrant and healthy one. Building new houses and shops does not build communities. Infrastructure within new communities will need to be more than the roads connecting the built environment; it has to include the social infrastructure as well. The social infrastructure will include, but is not limited to, the opportunities to meet neighbours, to get information and to take part in running the local organisations and councils.

10.90 To assist in the preparation of a Health Impact Assessment, further guidance will be provided in an additional Supplementary Planning Document to be published in 2010.

CHAPTER 11

NATIONAL LEGISLATION AND STANDARDS

BUILDING REGULATIONS

- 11.1 Building Regulations were originally created to ensure the health and safety of people in and around buildings and more recently to provide accessible and thermally efficient buildings.
- 11.2 South Cambridgeshire District Council's Building Control section provides advice and guidance on Building Regulations and works closely with the Council's own Planning, Design and Conservation sections wherever there is an impact on design and the historic environment. The applicants and Building Control consultants who are not currently part of the Council's own Building Control team are encouraged to work with the Council at an early stage to identify any issues, provide a flexible and informed design that protects the interests of the context and to ensure that the works comply with Council standards.
- 11.3 Those works that affect buildings in a Conservation Area or buildings identified as being of architectural and historical interest would need to be discussed with the Conservation Section. Early consultation is encouraged in order to identify if any element is unacceptable and to negotiate any alternatives in conjunction with the Building Control section. English Heritage's guidance, Building Regulations and Historic Buildings, 2004 provides advice for work to any buildings of Historic interest.
- 11.4 The Council's Listed Buildings and Conservation Areas SPDs, together with Appendix 9, provide specific guidance for the application of Building Regulations to work with historic buildings.
- 11.5 The Dorset Model is an accepted alternative method of compliance for Part B for thatched roofs but needs additional consultation with the Fire Authority and neighbours.

DISABILITY DISCRIMINATION ACT

- 11.6 The Disability Discrimination Act (DDA) was introduced in 1995 and updated in 2005. It aims to allow equal access to services for all. The Act requires the provision to be reasonable, and the level of reasonable accessibility will therefore vary according to the limits of the specific building and the uses involved.
- 11.7 For new buildings, commercial buildings and buildings open to the public, it is expected that at least primary functions are accessible to all. Where the most accessible option is potentially damaging to a Listed building, other

provision such as alternative facilities and a Management Plan may be reasonable.

- 11.8 Part M of the Building Regulations provides practical guidelines for the implementation of elements of the DDA. Access Audits / Statements and Management Plans are encouraged for any works that form part of Part M or the DDA. British Standard 8300 provides additional guidance on the requirements.
- 11.9 English Heritage's guidance, *Easy Access to Historic Buildings*, 1999 provides advice for application of the DDA to any buildings of Historic interest.
- 11.10 Access Audits / Statements and Management Plans are encouraged for any works that form part of Part M or the DDA. British Standard 8300 provides additional guidance on the requirements under Part M.



Disabled access ramp and steps introduced into a tight site at the Michaelhouse Centre, Cambridge.

LIFETIME HOMES

11.11 Policy HG/2 in the Development Control Policies DPD requires a proportion of new dwellings to be designed to incorporate the Joseph Rowntree Foundation's Lifetime Homes standards. The 16 features designed to make homes more flexible and accessible are (see www.jrf.org.uk):

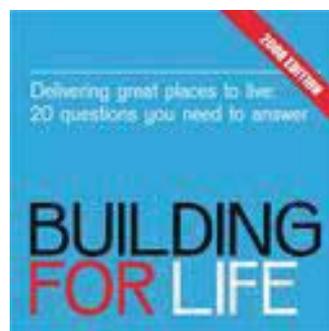
1. Where car parking is adjacent to the home, it should be capable of enlargement to attain 3.3 metres width.
2. The distance from the car-parking space to the home should be kept to a minimum and should be level or gently sloping.
3. The approach to all entrances should be level or gently sloping.
4. All entrances should be illuminated and have level access over the threshold, and the main entrance should be covered.
5. Where homes are reached by a lift, it should be wheelchair accessible.
6. The width of the doorways and hallways should accord with the Access Committee for England's standards.
7. There should be space for the turning of wheelchairs in kitchens, dining areas and sitting rooms and adequate circulation space for wheelchair users elsewhere.
8. The sitting room (or family room) should be at entrance level.
9. In houses of two or more storeys, there should be space on the ground floor that could be used as a convenient bed space.
10. There should be a downstairs toilet that should be wheelchair accessible, with drainage and service provision enabling a shower to be fitted at any time.
11. Walls in bathrooms and toilets should be capable of taking adaptations such as handrails.
12. The design should incorporate provision for a future stairlift and a suitably identified space for potential installation of a house lift (through-the-floor lift) from the ground floor to the first floor, for example to a bedroom next to the bathroom.
13. The bath/bedroom ceiling should be strong enough, or capable of being made strong enough, to support a hoist at a later date. Within the bath/bedroom wall provision should be made for a future floor to ceiling door, to connect the two rooms by a hoist.
14. The bathroom layout should be designed to incorporate ease of access, probably from a side approach, to the bath and WC. The washbasins should also be accessible.
15. Living room window glazing should begin at 800mm or lower, and window should be easy to open/operate.
16. Switches, sockets and service controls should be at a height usable by all (i.e. sockets 450 – 600mm, switches, door handles and thermostats 900 – 1200mm).

- 11.12 In addition to these items, the design and layout of new housing should also make provision for the secure storage of bicycles and discrete space for wheelie bins / waste / recycling receptacles in accordance with the RECAP Waste Management Design Guide. Further information on the provision wheelie bins and or waste / recycling provision is provided in Chapter 10 - Environmental Health - Waste / Refuse and Recycling-Operational.

BUILDING FOR LIFE

- 11.13 The Council encourages new residential developments of 10 units or more to achieve a minimum 'silver standard' under the CABA Building For Life scheme. The standard provides a means of assessing the design quality of new developments. Building for Life assessments will be scored out of 20, with scores categorised as:

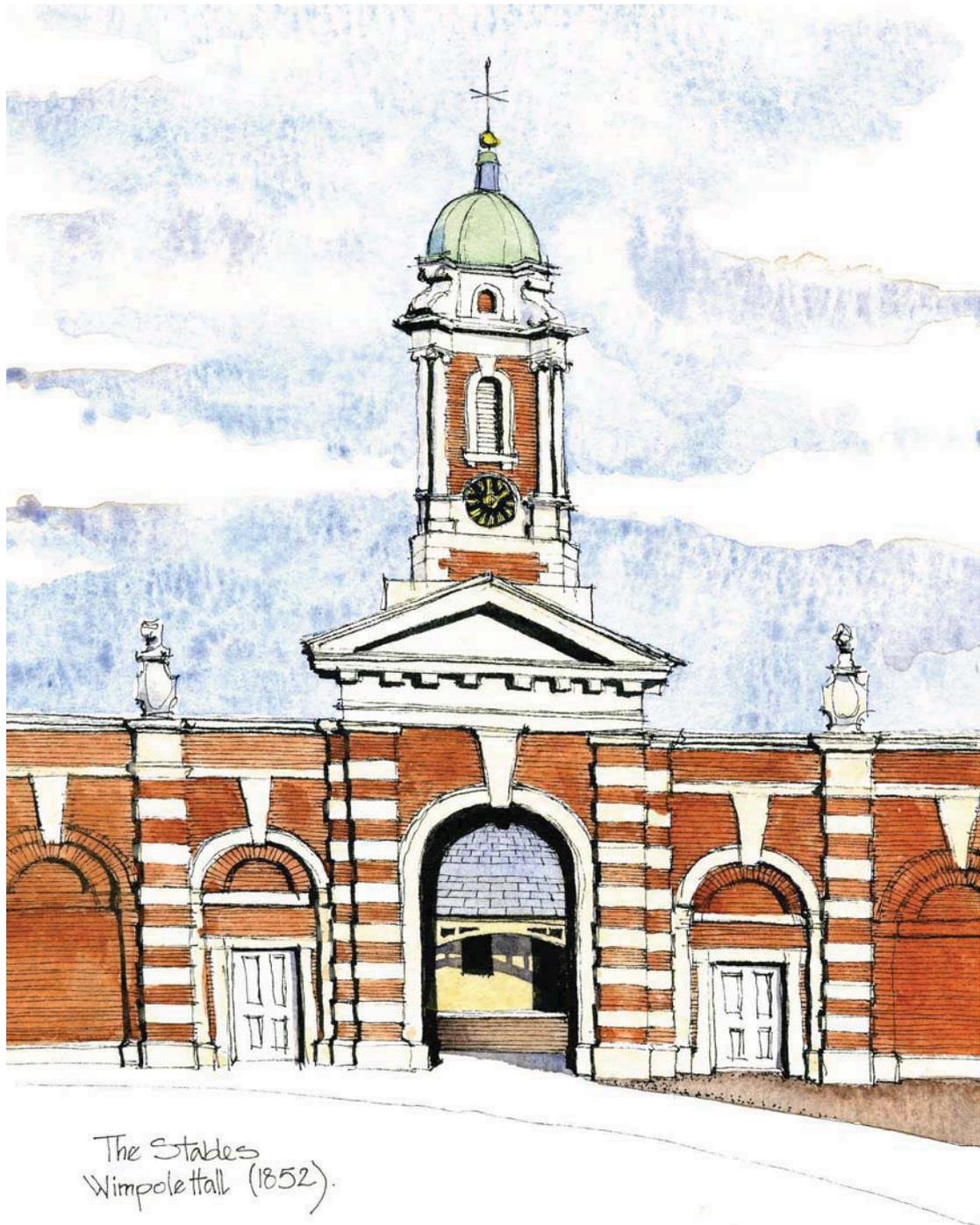
- Very good - 16 points or more
- Good - 14-15 points
- Average - 10-14 points
- Poor - 10 points or less



- 11.14 Results of the Building for Life Assessments will be reported on as part of the Councils Annual Monitoring Report. The assessment is required for Indicator H6: Housing Quality which records the number and proportion of total new build completions on housing sites reaching very good, good, average and poor ratings against the Building for Life Criteria.
- 11.15 The criteria provides a valuable framework to help planners assess the quality of a proposed development and have been set to embody what housing developments should be: functional, attractive and sustainable. Developers should be aware that their application will be assessed against the Building for Life criteria and so are encouraged to submit evidence of how the proposed scheme meets each of the design criteria as part of their planning application. This could be included within the Design and Access Statement, which will often be the first place assessors will look when undertaking the assessment. The Council expects the developers to use the Building for Life criteria (see <http://www.buildingforlife.org/about>) as the basis for development briefs to help speed up planning approvals and win local community support.

PART III

PROCEDURES AND APPLICATIONS



CHAPTER 12

DESIGN DOCUMENTATION

INTRODUCTION

- 12.1 In order to fully understand development proposals, brought forward for consideration, and to enable the Council to fully engage with developers and their architects, the Council wishes to see how the design has been influenced at all stages of the design process. To assist this it will be of great assistance to have sight of options that have been dismissed.
- 12.2 The following is an indicative list of the design stages and the documentation the Council wish to see evidence of.

SITE SURVEY

- 12.3 The site survey is a factual exercise, compiling information about the site and its context. During later discussions it may be necessary to make reference to this information to establish matters of fact, therefore this should be available for reference.

SITE APPRAISAL

- 12.4 Prior to any design work being undertaken, it is essential that the site in its context is fully understood. This is where the development proposals should be thoroughly assessed against all the facts from the survey, which should result in the clear identification of the constraints that result from existing features or previous use etc. together with the opportunities the site offers. A result of the appraisal process should be the identification as to how a development will be integrated into the existing communities, townscape, landscape and movement patterns.
- 12.5 The site appraisal should also acknowledge the Government's policy of promoting the re-use of brownfield sites over greenfield development.
- 12.6 The following checklist identifies areas of research that should be completed before design work commences. Evidence of this research should be summarised in design and planning statements accompanying a planning application. This list should not be considered as the definitive list of matters to be considered.

Table 12.1: Site Appraisal Checklist

Issue	Possible research required	Reason
Planning background	<ul style="list-style-type: none"> • Identify relevant Development Plan allocations and policies • Identify other planning constraints (presence of listed buildings/ conservation areas and preserved trees etc) • Identify relevant planning guidance affecting the site (e.g., planning briefs, village design statements and planning obligations SPD) • Identify any live planning permissions on the site or in the immediate locality 	<p>To understand the Council's broad approach to the area / topic / site.</p> <p>To help determine the significance of site features.</p> <p>To appreciate how the Council wishes to see a site developed and understand how development of the site could fit into a wider planned context.</p> <p>To determine whether something similar has been tried before.</p>
Relationship of the site to surroundings	Facilities, connection routes, morphology, architecture, etc. Townscape and landscape.	To understand the context of the site.
Accessibility	<ul style="list-style-type: none"> • Identify train stations, bus services, cycle, footpath and road networks in vicinity of site, together with potential access points • Identify proximity to local facilities. • Rights of way 	<p>To determine how well connected site is and scope for improved connections.</p> <p>To determine how well connected site it – this will inform the form / intensity of development that is appropriate.</p> <p>To establish who has access over the land, when and for what purpose, together with the implications for the design.</p>

Existing buildings, features and uses	<ul style="list-style-type: none"> • Visual inspection/planning history search • Historic buildings analysis in respect of any buildings of regional, national or local importance • Historic analysis in respect of any structure to be demolished within a Conservation Area • Historic Parks and Gardens • Buildings and structures, both historic and recent. • Services (both above and below ground, together with related ancillary structures such as substations). 	<p>To identify important buildings and uses.</p> <p>To establish how to ensure compatibility between new and existing uses.</p> <p>To establish the relative significance of buildings and scope issues for future consideration.</p> <p>To establish the relative significance of the landscape for future consideration. The analysis should include an assessment of condition and value.</p> <p>To establish where existing facilities are located, their suitability for future use and their impact on the design if they have to remain in situ.</p>
The property market	<ul style="list-style-type: none"> • Contact with local agents. 	<p>To determine the ability of an area to support non-residential uses. To guide the type of accommodation provided.</p>
Topography	<ul style="list-style-type: none"> • Views • Levels survey • Orientation 	<p>To inform design process. Identify relationship to sun path, exposure to prevailing wind etc.</p>
Landscape features	<ul style="list-style-type: none"> • Refer to Landscape Character study. • Identify natural and man-made features and landscape – field patterns (which may be ancient and include ‘ridge and furrow’ patterning), trees and hedgerows, other landscape features, water-bodies and watercourses. 	<p>To determine significance of landscape character.</p> <p>The analysis should include a tree report with an assessment of condition and potential for wildlife habitat. The analysis should include the contribution of water-bodies to drainage/flood prevention and ecological value.</p>

<p>Biodiversity (wildlife conservation)</p>	<ul style="list-style-type: none"> • Pre-application discussion with respect to the level of biodiversity information to support an application • Refer to Biodiversity SPD <p>Undertake desktop study using Cambridgeshire and Peterborough Biological Records Centres www.cpbrc.org.uk and Natural England's www.natureonthemap.org.uk</p> <p>Protected Species awareness www.naturalengland.org.uk</p> <p>Undertake Survey and Assessment.</p> <ul style="list-style-type: none"> • Arboricultural survey in accordance with BS 5837:2005 	<p>Some development types may not require biodiversity information, others may be more complex</p> <p>Detailed guidance on species, sites and the necessary information to support planning applications.</p> <p>Enables applicant to gain site information.</p> <p>Need to understand the likelihood of Protected Species being present on site.</p> <p>Provides biodiversity information to enable the LPA to assess level of likely impact. To determine the significance and amenity value of trees on and near the site.</p> <p>To determine the significance and amenity value of trees on and near the site.</p> <p>To determine the presence of protected species and levels of biodiversity, to help devise mitigation strategies and enhancement measures.</p>
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<p>Geology and ground conditions</p>	<ul style="list-style-type: none"> • Desktop study • Intrusive investigations for potential contaminated land. 	<p>To understand the nature of historic and adjoining uses that may lead to contamination. To identify geology and soils to inform foundation design and direct the selection of plant species for landscape works.</p> <p>To identify the specific nature and degree of any potential contamination and the steps / measures required to ensure development is suitable for proposed end use.</p>
<p>Risk of flooding</p>	<ul style="list-style-type: none"> • Identify watercourses, drainage ditches, lakes, ponds and drains. • Check Environment Agency flood maps (available on their web site at www.environment-agency.gov.uk). Undertake flood risk assessment for both the site and the risks/implications downstream. • Check the Council's Strategic Flood Risk Assessment • Check with the Council's Drainage Manager • Check with the Inland Drainage Board • Check with landowners <p>Pollution</p>	<p>Identify potential sources of flooding.</p> <p>To determine flood risk and whether a Flood Risk Assessment is required. To establish whether the principle of development is acceptable and determine what special measures may be required to enable development.</p> <p>To identify the extent of any quality issue and determine design implications and considerations.</p>

Archaeology	<ul style="list-style-type: none"> • Scheduled Ancient Monuments • Desktop study • Intrusive investigations. 	<p>To identify specific features associated with the site.</p> <p>To determine the likelihood of items of interest or features of significance being damaged or destroyed during the course of development .</p> <p>To determine the specific nature of deposits to enable a strategy for dealing with the archaeology to be devised.</p>
Noise	<ul style="list-style-type: none"> • Site visit, enquiry to SCDC • Noise pollution testing Noise measurement / assessment Noise Predictive Modelling 	<p>To identify significant noise generators or noise sensitive uses in the locality.</p> <p>To determine how likely the site is to be affected by noise, and what measures are required to make particular use combinations or types of development work and deliver a suitable noise environment (see PPG24), (including flight paths). Noisy development impact.</p>
Air quality	<ul style="list-style-type: none"> • Site visit/enquiry to SCDC Council • Pollution testing Air Quality Monitoring Detailed Air Quality / Emission Monitoring 	<p>To determine the whether air quality is an issue ie locating sensitive receptors in an air quality management area and whether the area is an air quality management area.</p> <p>To identify the extent of any air quality issue and determine design implications and considerations.</p>
Utilities	<ul style="list-style-type: none"> • Letters to utilities asking form information on the presence of equipment, capability of their systems to accommodate new development. 	<p>To identify work required to enable development and establish hidden costs may be involved in developing the site.</p>

Health	<ul style="list-style-type: none"> • Contact local Primary Care Trust & Public Health Specialist at SCDC • Health impact assessment. Building Healthy Communities 	<p>To identify the scope of any issue with capacity at local surgeries.</p> <p>To determine the impact of new development on existing health facilities and identify appropriate measures to offset impact.</p>
Education	<ul style="list-style-type: none"> • Contact Cambridgeshire County Council Schools Service 	<p>To determine whether there are capacity issues at local schools that need to be addressed through planning obligations relating to new development.</p>
Energy Survey	<ul style="list-style-type: none"> • Renewable energy options 	<p>To identify scope for onsite renewable energy generation including determining an optimal layout and orientation to maximise benefit from solar gain.</p>
Party Wall Act.	<p>Development in close proximity to, or abutting, existing property fabric is subject to the requirements of the Party Wall etc Act.</p>	<p>This sets out duties in respect of notifying and procedures, and includes facade retention, structural demolitions, temporary works and surveys to minimise adverse impacts. Advice must be sought from a professional structural engineer and/or surveyor where appropriate. Although this is not a planning matter consideration should be given to it to prevent future problems.</p>

- 12.7 The information gathered through the site analysis should be graphically summarised in the form of a Site Appraisal Diagram, which should then be included as part of any subsequent planning application (thereby enabling the Council to fully understand those aspects that may have influenced the design).
- 12.8 The output from this analysis should be summarised into a Site Appraisal drawing that should pull together the principal constraints and opportunities in a graphical form. It is anticipated that this site appraisal will form part of any subsequent planning application, helping those assessing the application to understand the thought process that was behind the design.

DESIGN CONCEPT

- 12.9 At the outset of the design process it should be made clear to the Council what the intended design concept is, and how following the site analysis it is appropriate for the development and the site context. The concept should clearly identify the underlying ethos of the scheme in relation to the social, commercial and/or educational purpose, the visual and aesthetic intent and imagery, the environmental performance, etc. A clear design concept will ensure that all subsequent stages of the design process are undertaken in the context of clear direction to ensure the correct decisions are taken to achieve a particular end.

CONCEPT DIAGRAMS

- 12.10 A concept diagram illustrates how the key principles of the design concept will be applied to the site in the context of the site appraisal, indicating how the development proposal responds to the constraints and opportunities presented by the site and its surroundings.

PARAMETER PLANS

- 12.11 The design principles should be plotted to produce parameter plans that establish the key structuring principles of the development. These should include the movement network and hierarchy, development areas, open space areas, frontages, building heights, etc.

MASTERPLANS

- 12.12 On large-scale sites a masterplan will be needed to complete the overall structuring of the development proposals. Larger scale development sites are likely to be realised in a number of phases, often with different developers preparing detailed proposals for adjacent phases. It is essential that the overall masterplan for the development clearly identifies through routes, pedestrian and cycle ways, structural landscape areas and the like that may need to be continued from one developer's site onto an adjacent site. The site specific proposals prepared by the separate developers will then be expected to acknowledge these common aspects, and to incorporate them into their individual proposals in a positive manner.
- 12.13 The Commission for Architecture and the Built Environment (CABE) has been tasked by the Government to ensure that significant projects within the Sustainable Communities Plan (which include developments such as Northstowe) are well designed and based on proper masterplanning. The Department for Communities therefore agreed that CABE should become a non-statutory consultee for such projects and CABE encourages developers and local authorities to seek their advice at an early stage in the

development of these projects. Initial contact with CABE should be via the Design Review Programme Officer at CABE.

DESIGN AND ACCESS STATEMENTS

- 12.14 Planning and Listed Building applications must be accompanied by a Design and Access Statement. Section 327A of the Town & Country Planning Act 1990 specifies that applications not accompanied by a Design and Access Statement shall not be “entertained”. This means that they cannot be registered as valid applications.
- 12.15 Design and Access Statements are not required with planning applications for changes of use (not involving operational development), householder applications outside a Conservation Area, advertisements, reserved matters, engineering or mining operations, and tree works.
- 12.16 A Design and Access statement is required with Listed Building applications, although the Access statement can be omitted for applications only involving internal works.
- 12.17 A statement covering design concepts and principles and access issues must now be submitted with an application for planning permission and listed building consent. The key facts are:
- A Design and Access Statement is required for all Planning Applications (outline or full).
 - South Cambridgeshire District Council is precluded from entertaining an application unless it is accompanied by a Design statement and an Access statement, where required.
 - One statement should cover both design and access, allowing applicants to demonstrate an integrated approach that will deliver inclusive design, and address a full range of access requirements throughout the design process.
 - A Design and Access statement is a concise report accompanying and supporting a planning application to illustrate the process that has led to the development proposal, and to explain and justify the proposal in a structured way.
 - Design and Access statements must not be used as a substitute for drawings and other material required to be submitted for determination as part of the planning application itself. They provide an opportunity for developers and designers to demonstrate their commitment to achieving good design and ensuring accessibility in the work they

undertake, and allow them to show how they are meeting, or will meet the various obligations placed on them by legislation and policy.

- The level of detail required in a design and access statement will depend on the scale and complexity of the application, and the length of the statement will vary accordingly. Statements must be proportionate to the complexity of the application, but need not be long.
- For local planning authorities, Design and Access statements will enable them to better understand the analysis that has underpinned the design and how it has led to the development of the scheme. This will help negotiations and decision-making and lead to an improvement in the quality, sustainability and inclusiveness of the development.
- Design and Access statements will allow local communities, access groups, amenity groups and other stakeholders to involve themselves more directly in the planning process without needing to interpret plans that can be technical and confusing. This will help to increase certainty for people affected by development and improve trust between communities, developers and planners. It will also enable the design rationale for the proposal to be more transparent to stakeholders and the local planning authority.

What is required in a Design & Access Statement?

- 12.18 A design and Access Statement should include (as required by Circular 01/06):
- A contextual appraisal of the site.
 - A Statement explaining the design principles in terms of amount, layout, scale, landscaping and appearance.
 - A Statement explaining access in terms of how access for all will be achieved to building entrances and in terms of movement and circulation around the site, and also access and provision for emergency and waste vehicles.
 - A rationale of how the proposed design reflects the local, regional and national policies.
- 12.19 For detailed information go to Section 3 of DCLG Circular 01/2006, the Cabe Design and Access guidance document and the Cambridgeshire Design Guide for Streets & Public Realm (Cambridge Horizons 2007), which complements the Government's Manual for Streets.

LANDSCAPE DESIGN

- 12.20 This should be read in the context of the Council's Landscape in New Developments SPD, where full details of the documentation required are set out. For small schemes information could be included in drawings, but most large schemes will include a series of drawings with supporting written information.
- 12.21 Information required will typically include:
- Survey and appraisal.
 - Landform.
 - Details of utilities.
 - Significant landscape features; including significant trees, hedgerows, or other areas of significant vegetation (for further information see the Trees and Development Sites SPD).
 - Visual qualities context.
 - Special designations e.g. SSSIs.

LANDSCAPE DESIGN DETAILS

- 12.22 Design proposals will typically include:
- Treatment to site boundaries.
 - Access and circulation.
 - Areas of hard and soft landscaping.
 - Significant features such as landscape structures or public art.
 - Consideration of sustainability including haul roads.
 - Details of proposed management.
- 12.23 Design proposals will include:
- Plant lists with details of species.
 - Specifications for hard surfaces, walls, railings and other hard materials.
 - Details of biodiversity enhancement.
 - Informal and formal open space, including sports provision.
 - Public access and rights of way.

HERITAGE STATEMENTS

- 12.24 Heritage statements are required for non-householder Planning Applications within or adjoining Conservation Areas, adjoining Listed Buildings, or impacting on other Heritage assets. The level of information required will vary dependant upon the complexity of the scheme, but should contain a brief history of the development site, including a planning history and maps, and an assessment of the significance of the building and impact of the proposals. The Heritage statement should be submitted separately to the Design and Access statement and it is recommended that the

information for the Heritage statement is obtained at an early stage in order to inform the design. For further information the Council's "Guidance for the Production of Heritage Statements" should be consulted and is on the Council's website.

CONSERVATION STATEMENTS AND CONSERVATION PLANS

- 12.25 Listed Buildings, and in particular those listed at Grade I and II*, should have more detailed Conservation Statements in the form of Conservation Plans. These Conservation Plans will help ensure the future well-being of these important structures, and will also include an assessment of significance. A Conservation Plan should be an A4 document illustrated with drawings and photographs arranged under the following headings, though this may need to be adapted to suit individual heritage assets:
- **Summary**
A brief single page statement summarising the main conclusions of the plan.
 - **Background**
Authorship and circumstances of the plan, its scope and any limitations of the study, a note of all consultations undertaken and a statement concerning the adoption of the plan by all the major stakeholders in the Listed Building concerned.
 - **Understanding the asset**
An analysis of the site that draws together documentary and physical evidence, and is illustrated with images, maps and phasing plans.
 - **Assessment of significance**
An assessment of the significance of the asset both generally and in detail for each of its main components, making value judgments about the degree of historical, biological, wildlife, geological, cultural, aesthetic, archaeological, social and other types of significance.
 - **Defining Issues (i.e. vulnerability)**
Details of the issues that have affected the significance of the site in the past affect it now or may do so in the future.
 - **Conservation Policies**
Puts forward policies for the conservation of all aspects of the significance of the asset, which show how: its significance will be retained, defines a conservation philosophy, prioritises repairs and, where relevant, identifies appropriate new uses.

- Implementation and review
Identifies a strategy for implementing the Conservation Plan and sets out who will review the Plan and when.
- Appendices
To contain detailed information that is summarised elsewhere within the document.

SUSTAINABILITY, WATER CONSERVATION AND RECYCLING STATEMENTS

- 12.26 Major development' (residential development of 20 or more dwellings or 0.5ha. and other development of 1,000m² or site area of 1ha. or more) applications require the submission of a Sustainability Statement and a Health Impact Assessment to demonstrate how the sustainability criteria have been fulfilled, in accordance with Policy DP/1 in the Development Control Policies DPD.
- 12.27 They also require a Water Conservation Strategy and a Resource Re-use and Recycling Scheme.
- 12.28 All planning applications should be accompanied by a completed RECAP Waste Management Design Guide ToolKit to allow the effective evaluation of the waste management requirements for a development. Further information on the RECAP Guide is provided in Chapter 10 - Environmental Health - Waste / Refuse and Recycling - Operational.
- 12.29 SCDC local requirements require the submission of noise information if it is considered a determining factor. It is not always obvious when and what level of noise information is required and government guidance recommends that the local planning authority should not require a level of detail to be provided that is unreasonable or disproportionate to the scale of the application. To ensure a smooth passage through the planning system, even when a full environmental assessment is not mandatory, proposals for developments on noisy sites, or sites which generate noise should take account of noise. Further information on the requirements is contained in Appendix 6 Noise.
- 12.30 This list is not exhaustive – refer to the 1App standard application form for local requirements.

