BOROUGH PLAN BACKGROUND PAPER: Sustainable Design and Construction Background Paper

Nuneaton and Bedworth Borough Council

2015

Nuneaton & Bedworth
United to Achieve

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1 INTRODUCTION

This paper provides a synopsis of design standards, national policy and relevant evidence base documents to inform policy development in relation to sustainable design.

1.1 The Enplanner Toolkit

In 2011, the Bedworth Borough Council, in partnership with the Coventry, Warwickshire and Solihull Planning Authorities, Advantage West Midlands and the Carbon Trust produced a renewable energy toolkit, the Enplanner. The Enplanner is to provide assistance to both planning applicants and planning officers to meet the local planning requirements for renewable energy generation and lower carbon development.

The use of the Enplanner will be encouraged as part of the planning application process.

1.2 Nuneaton and Bedworth Residential Design Guide Supplementary Planning Guidance (SPG) 2004

This SPG sets out the basic principles of good design for residential development appropriate to Nuneaton and Bedworth. It aims to encourage the development of more sustainable communities in a safe, pleasant and more manageable environment. It covers a range of issues including:

- Good urban design
- Layout of new housing development
- Security
- Landscaping
- Parking
- Materials and openings
- Extensions and alteration to existing houses
- Privacy, aspect and light

This SPG will need to be renewed and updated in light of the National Planning Policy Framework and the Borough Plan.

2 RESIDENTIAL DESIGN STANDARDS

Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable design aims to reduce negative environmental impacts through skillful, sensitive design and connect people with open spaces. "Sustainable design and good design are mutually reinforcing. Good design is not just defined by how a building, space or place looks. It is also about whether it is responsive to context, adaptable, uses resources efficiently and delivers value over its whole life"[1].

2.1 Building for Life Standard 12 (BfL12)

[1] Commission for Architecture and the Built Environment
http://webarchive.nationalarchives.gov.uk/20110118095356/http://www.cabe.org.uk/sustainability gathered on 14/02/2012

BfL12 helps Local Planning Authorities to assess the quality of proposed and completed developments and acts as a point of reference for preparing local design policies. BfL12 is endorsed by Government as a useful tool for well-designed homes and neighbourhoods[2] and is based on the new National Planning Policy Framework.

The point of BfL12 is that new housing developments should be attractive, functional and located in sustainable places. The scheme is composed of 12 questions (see Appendix 1) to help structure discussions between local communities, the local planning authority, the developer and other stakeholders. BfL12 is based around a 'traffic light' system. For example, the more 'greens', the better a development will be, whereas a red light gives warning that an aspect of a development needs to be reconsidered. Similarly, where a proposal is identified as having one or more 'ambers', there is a need to rethink whether these elements can be improved. It may be that local circumstances justify why the scheme cannot meet the higher standard expected of a green, but this needs to be drawn out in a transparent discussion.

Schemes that achieve 12 'greens' are eligible for 'Building for Life Diamond' status as exemplars of outstanding design, giving developers and local authorities the opportunity to acknowledge and promote good design.

Any extra cost to the developer to meet this standard is considered to be miniscule, especially when compared to long-term social and environmental costs associated with poor design. Appendix 2 sets out a statistical justification for adopting a sustainable design policy which includes BfL12.

2.2 Lifetime Homes Standard

This scheme aims to ensure that homes are suitable for everyone, from young families to older people and individuals with a temporary or permanent physical impairment. Data from the 2011 Census shows that 35% Nuneaton and Bedworth's population has a long-term limiting illness or disability, indicating a need for housing adaptability. The principles of Lifetime Homes, therefore, will support the growing need for choice, flexibility and independence among disabled people of all ages across the Borough, as well as promoting high quality and thoughtful housing design for the general population.

The Lifetime Homes' five overarching principles are:

1 Inclusivity
2 Accessibility
3 Adaptability
4 Sustainability
5 Good Value

Lifetime Homes, furthermore, incorporate 16 design criteria (see Appendix 3) that can be universally applied to new homes at minimal cost.

A number of studies have compared the cost of meeting Building Regulations and Lifetime Home Standards:

[2] Department for Communities and Local Government, Laying the Foundations: A Housing Strategy for England (2011), pgs56 and 58. Available at https://www.gov.uk/government/publications/laying-the-foundations-a-housing-strategy-for-england--2

Study	Additional Cost of Lifetime Homes
Chartered Institute of Housing in Northern Ireland and the Joseph Rowntree Foundation[3].	From £165 to a maximum of £545 per dwelling, depending on the size, layout and specification of the property
Royal Institution of Chartered Surveyors (RICS) [4].	£545 per dwelling
Ainsley Gommon Architects[5].	£1,500 extra per family dwelling

2.3 Passive Solar Design

Passive Solar Design (PSD) responds to local climate and site conditions to maximise the occupants' comfort and health while minimising energy use. This is achieved by using free, renewable sources of energy such as sun and wind to provide heating, cooling, ventilation and lighting. It thereby removes the need for mechanical heating or cooling. It works by allowing heat into the building during winter months and blocks out the sun during summer months. This can be achieved by shading, implementing large south-facing windows and building materials that absorb and slowly release the sun's heat.

Passive design is simple and can be incorporated into any house or non-residential building design to good effect. It can help to reduce the overall energy demand of a building. The basic principles of passive design are[6]:

- Orientation — orientate buildings within 30° of south. Buildings orientated east of south will benefit more from morning sun, while those orientated west of south will catch late afternoon sun delaying the evening heating period.
- Thermal Mass — natural convection and radiation within the masonry walls to allow the sun to be soaked up during daylight hours and then released into the building at night, thereby preventing overheating during the summer and avoiding cold conditions during the winter.
- South Facing Windows — the most frequently used rooms should be on the south side of the building (for a dwelling these would include the living room, kitchen and bedrooms).
- Less occupied rooms located north of the building — less often used rooms (for a dwelling - the hallway, bathroom and utility room) should be to the north of the building. Also they should have smaller windows to minimise heat loss.
- Heat gain coefficient windows — windows should be large enough to provide adequate heat gain and day lighting (at least 15% of a room's floor area)
- A responsive heating system — heating systems should be zoned and be able to respond automatically when and where necessary. This can be more energy efficient than leaving heating on all day, or heating an unoccupied room.

Over 25% of UK primary energy production goes towards heating buildings. By incorporating passive solar design into new buildings, annual fuel bills can be cut by

[3] Sangster K. (Walker Richardson QS) *Costing Lifetime Homes*. York: Joseph Rowntree Foundation 1997

[4] Martin J, Martin *A The Cost of the Lifetime Homes Initiative* RICS Building Cost Information Service 2006 (unpublishedstudy for ODPM). Referenced from http://www.lifetimehomes.org.uk/pages/costs.html#foot2

[5] Lifetime Homes available at http://www.lifetimehomes.org.uk/pages/costs.html#foot2

[6] University of Strathclyde, Energy Systems Research Unit, available at http://www.esru.strath.ac.uk/EandE/Web_sites/01-02/RE_info/passive_solar.htm#Introduction

a third and carbon emissions reduced. In addition, by allowing increased natural light into the building, the need for additional electric lighting is lowered[7]. Moreover, the Companion Guide to PPS22 states that lighting and heating cost can be reduced by 20%-25%[8]. Studies on houses in Milton Keynes have shown that low cost passive solar design features, draught proofing and insulating measures reduced heating bills by 40%. Cost savings are therefore paid back in two years[9].

The Government is committed to reducing carbon emissions by 80% up to 2050. PSD could help towards achieving this goal by:

- Reducing electricity demand by utilising solar energy
- Reducing the amount of fuel needed to heat or cool a property

Due to the economic and environmental benefits of implementing PSD principles planning has an important role to play in encouraging the greater application of PSD, particularly amongst volume house builders, and in the design of schools and some commercial buildings. Overall PSD reduces temperature fluctuations, improves indoor air quality and makes a home drier and more enjoyable to live in. PSD also reduces energy use and improves a building's environmental impact by reducing greenhouse gas emissions. Moreover, PSD can be achieved at a relatively small initial cost[10], or no additional cost[11] [12].

2.4 Secured By Design

Secured by Design (SBD) is a design standard to support the principles of designing out crime. It focuses on crime prevention at the design, layout and construction stages of homes and commercial premises and promotes the use of security standards for a wide range of applications and products. SBD is the official UK Police flagship initiative, endorsed by the Association of Chief Police Officers, and has the backing of the Home Office Crime Reduction Unit.

The guide makes clear that community safety is an integral part of the design agenda. It notes that local authorities (and the other bodies within each local Community Safety Partnership) have a responsibility under Section 17 of the Crime and Disorder Act 1998 to consider the crime and disorder implications of all their activities, and to do all that they can to reduce opportunities for crime and fear of crime in the exercise of their functions. Developers and their designers and advisers need to be aware of this.

A number of evaluations have been undertaken to establish the effectiveness of Secured by Design (SBD) security features. Research by the Association of British Insurers shows several areas have had significant reductions in domestic burglary,

[7] ibid, available at http://www.esru.strath.ac.uk/EandE/Web_sites/01-02/RE_info/passive_solar.htm#Introduction

[8] Department of Communities and Local Government, Planning for Renewable Energy: A Companion Guide to PPS22, Technical Annex.

[9] ibid

[10] Whole Building Design Guide, available at http://www.wbdg.org/resources/psheating.php#rcas

[11] Green Building Advisor, available at http://www.greenbuildingadvisor.com/blogs/dept/guest-blogs/cost-effective-passive-solar-design

[12] Department of Communities and Local Government, Planning for Renewable Energy: A Companion Guide to PPS22, Technical Annex.

ranging from 26% to 75%[13], as a result of incorporating SBD standards for doors and windows.

According to building surveyors Davis Langdon[14] the extra costs for SBD features represents, on average, an additional £170 per home or a 4.56% increase above typical installations, see Table 1. When considering that the average estimated cost of a burglary is £3,300[15], targeting new build housing to help reduce the effects of crime is relatively inexpensive.

Table 1: Secured By Design Accredited Extra Over Costs

	4 Bed Detached House	**3 Bed Semi-detached House**	**2 Bed Terrace**	**2 Bed Ground Floor Apartment**	**2 Bed Upper Floor Apartment**
Typical Windows and Door Installation	£6410	£4930	£4130	£2530	£2630
SBD Accredited Installation	£6610	£5100	£4300	£2770	£2700
Extra Over Costs	£200	£170	£170	£240	£70
Percentage Increase	3.1%	3.4%	4.1%	9.5%	2.7%

Source: Capital Costs of Secured By Design Accreditation, February 2010.

Secured by Design's core principles are set out below. They are intended to improve the design and management of the physical environment, and to promote community cohesion. Explanations of the principles can be found in Appendix 4:

- Integrated Approach
- Environmental quality and sense of ownership
- Natural surveillance
- Access and footpaths
- Lighting

2.4.1 Secured by Design: New Homes

In order to help reduce the fear and occurrence of crime in and around new homes, SBD (2010)[16] outlines seven key areas which can help to reduce the instances of crime and anti-social behaviour, these are shown in table 2.

[13] Association of British Insurers, *Securing The Nation: the case for safer homes* (2006).
[14] Association of Chief Police Officers Crime Prevention Initiatives Limited, *Capital Costs of Secured By Design Accreditation*, February 2010. (The costs shown are for all doors and windows at ground and first floor levels of a typical house type used on mixed estate developments of 60 units. They are not applicable for one-off house designs.)
[15] Association of British Insurers, *Securing The Nation: the case for safer homes* (2006).
[16] Document available at http://www.designforsecurity.org/uploads/files/SBD_New_Homes_2010.pdf

Table 2: Seven key areas to help reduce crime

Access and movement	places with well defined routes, spaces and entrances that provide for convenient movement without compromising security
Structure	places that are structured so that different uses do not cause conflict
Surveillance	places where all publicly accessible spaces are overlooked
Ownership	places that promote a sense of ownership, respect, territorial responsibility and community
Physical protection	places that include necessary, well-designed security features
Activity	places where the level of human activity is appropriate to the location and creates a reduced risk of crime and a sense of safety at all times
Management and maintenance	places that are designed with management and maintenance in mind, to discourage crime in the present and the future

The SBD New Homes document splits its advice into two sections, design and layout and physical security. Design and layout covers aspects such as car parking, street layout, footpath design and street lighting. Physical security covers parts of the dwellings which are crucial for security against crime, such as the front door, locks, garages, windows and issues for communal dwellings.

There are a number of other SBD design guidelines which focus on specific types of developments such as sheltered accommodation, multi-storey dwellings, schools and refurbished properties. The guidelines for the different types of development should be used by architects and developers to help reduce the occurrence of crime across the Borough, whether it is a commercial or residential development[17].

3 NON-RESIDENTIAL DESIGN STANDARD

3.1 Building Research Establishment's Environmental Assessment Method (BREEAM)

BREEAM is one of the most comprehensive and widely recognised measures of a building's environmental performance. BREEAM enables developers, designers and building managers to demonstrate the environmental credentials of their buildings to clients, planners and other initial parties.

BREEAM is a credit based assessment system covering the following aspects of a building and the construction process[18]:

- Management
- Health & Well-being
- Energy

[17] Guidelines available at http://www.securedbydesign.com/professionals/guides.aspx
[18] BREEAM *BREEAM New Construction Non-Domestic Buildings: Technical Manual, 2011*.

- Transport
- Water
- Materials
- Waste
- Land use and ecology
- Pollution
- Innovation

Table 3: BREEAM benchmarks

Outstanding	Achieves a rating of 85%	This rating requires innovative design. Accordingly, less than 1% of UK new non-domestic buildings meet this level.
Excellent	Achieves a rating of 70%	This rating meets best practice standards. This level places non-domestic buildings in the top 10% best designed in the UK.
Very Good	Achieves a rating of 55%	This rating is considered advanced best practice and places non-domestic buildings in the top 25% best designed in the UK.
Good	Achieves a rating of 45%	This rating places non-domestic buildings in the top 50% best designed in the UK.
Pass	Achieves a rating of 30%	Achieving this rating places non-domestic buildings in the top 75% best designed in the UK.

Target Zero is a programme of work, funded by Tata Steel and the British Constructional Steelwork Association (BCSA), to provide guidance on the design and construction of sustainable, low and zero carbon buildings in the UK[19] [20] [21] [22] [23]. (For a detailed account of the case studies please view Appendix 8.)

The objective of the studies was to determine the most cost-effective routes to achieving a 'Very Good', 'Excellent' and 'Outstanding' BREEAM rating for the base case building of five schemes. The studies found that the percentage estimated capital cost uplift to achieve the following ratings was:

Table 4: Over capital cost to achieve BREEAM benchmarks

Scheme Type	Very Good	Excellent	Outstanding
Mixed Use	0.14%	1.58%	4.96%
Offices	0.17%	0.77%	9.83%
Schools	0.2%	0.7%	5.8%

[19] Targetzero Guidance On The Design And Construction Of Sustainable, Mixed-Use Buildings, Jan 2012
[20] Targetzero Guidance On The Design And Construction Of Sustainable, Low Carbon Office Buildings, Jan 2012
[21] Targetzero Guidance On The Design And Construction Of Sustainable, Low Carbon School Buildings, Feb 2010
[22] Targetzero Guidance On The Design And Construction Of Sustainable, Low Carbon Supermarket Buildings, Jun 2011
[23] Targetzero Guidance On The Design And Construction Of Sustainable, Low Carbon Warehouse Buildings, Jun 2011

Supermarkets	0.24%	1.76%	10.1%
Warehouses	0.4%	0.4%	4.8%

The Study highlights that there is little added cost over the base case costs to achieve a BREEAM Excellent rating. Meeting the Outstanding rating, however, is more challenging, particularly for offices and supermarkets, which is not too surprising when considering that less than 1% of non-domestic buildings meet this exemplary standard, compared with 10% and 25% for Excellent and Very Good, respectively.

4 NATIONAL AND LOCAL POLICY

4.1 National Planning Policy Framework

Relevant NPPF requirement	NPPF sub requirement	Relationship with policy
Core Principle - always seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings;		The Sustainable Design and Construction policy promotes good design.
56. The Government attaches great importance to the design of the built environment. Good design is a key aspect of sustainable development, is indivisible from good planning, and should contribute positively to making places better for people.		The Sustainable Design and Construction policy promotes good design.
57. It is important to plan positively for the achievement of high quality and inclusive design for all development, including individual buildings, public and private spaces and wider area development schemes.		The Sustainable Design and Construction policy promotes good design.
58. Local and neighbourhood plans should develop robust and comprehensive policies that set out the quality of development that will be expected for the area. Such policies should be based on stated objectives for the future of the area and an understanding and evaluation of its defining characteristics.		The Sustainable Design and Construction policy promotes the urban characterisation approach.
Planning policies and decisions should aim to ensure that developments:	●● will function well and add to the overall quality of the area, not just for the short term	The Borough Council relies on the NPPF.

	but over the lifetime of the development;	
	●● establish a strong sense of place, using streetscapes and buildings to create attractive and comfortable places to live, work and visit;	The Sustainable Design and Construction policy promotes the urban characterisation approach to take account of local distinctiveness in a similar way that the Landscape Character policy uses landscape character.
	●● optimise the potential of the site to accommodate development, create and sustain an appropriate mix of uses (including incorporation of green and other public space as part of developments) and support local facilities and transport networks;	The Borough Council relies on the NPPF.
	●● respond to local character and history, and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation;	The Sustainable Design and Construction policy promotes the urban characterisation approach to take account of local distinctiveness in a similar way that the Landscape Character policy uses landscape character.
	●● create safe and accessible environments where crime and disorder, and the fear of crime, do not undermine quality of life or community cohesion;	The Sustainable Design and Construction policy promotes the use of Secure by Design to create design and layout to reduce crime and the fear of crime..
	●● are visually attractive as a result	The Borough Council relies on the NPPF.

	of good architecture and appropriate landscaping.	
59. Local planning authorities should consider using design codes where they could help deliver high quality outcomes. However, design policies should avoid unnecessary prescription or detail and should concentrate on guiding the overall scale, density, massing, height, landscape, layout, materials and access of new development in relation to neighbouring buildings and the local area more generally.		The Sustainable Design and Construction policy promotes the urban characterisation approach.
60. Planning policies and decisions should not attempt to impose architectural styles or particular tastes and they should not stifle innovation, originality or initiative through unsubstantiated requirements to conform to certain development forms or styles. It is, however, proper to seek to promote or reinforce local distinctiveness.		The Sustainable Design and Construction policy promotes the urban characterisation approach.
61. Although visual appearance and the architecture of individual buildings are very important factors, securing high quality and inclusive design goes beyond aesthetic considerations. Therefore, planning policies and decisions should address the connections between people and places and the integration of new development into the natural, built and historic environment.		The Borough Council relies on the NPPF.
62. Local planning authorities should have local design review arrangements in place to provide assessment and support to ensure high standards of design. They should also when appropriate refer major projects for a national design review. In general, early engagement on design produces the greatest benefits. In assessing applications, local planning authorities should have regard to the recommendations from the		

design review panel.		

4.2 Housing Standards Review

On 27 March 2015 the Government announced a new approach to the setting of technical housing standards in England. This was accompanied by the publication of a new set of streamlined national technical standards. The new Building Regulations will come into effect from 1st October 2015.

It published a planning written ministerial statement which outlined the policy on the application of these technical standards for plan making and decision-taking. Further details are set out in National Planning Policy Guidance on Housing Technical Standards.

The main elements of the review include:

- Optional building regulations requirements for access which provide a higher standard than the minimum national building regulations (Part M).
- Optional building regulations for water efficiency which provide a higher standard than the minimum national building regulations.
- Optional nationally described space standard to be implemented through the planning system.
- A new security standard has now been included in the building regulations (Part Q).
- Clarity on statutory building regulation guidance on waste storage to ensure it is properly considered in new housing development.
- The abolition of the Code for Sustainable Homes.

Access standards

The Government has introduced two new higher optional standards for access in the Building Regulations:

- M4(2) Accessible and adaptable dwellings
- M4(3) Wheelchair dwellings

LPAs can identify a proportion of dwellings in planning policy to meet these optional standards as long as they can demonstrate a need for setting higher standards and show that it is viable. Where and LPA adopts a policy to provide enhanced accessibility, it should only do so by making reference to M4(2) or M4(3) and state in the local plan what proportion of dwellings it applies to. The policy should also take account of site specific factors such as vulnerability to flooding.

National Planning Policy Guidance sets out details of a range of official statistics to be used for this purpose. The list includes:

- Census – people with long term limiting illnesses;
- Dept of Work and Pensions – Numbers of people receiving Disability Living Allowance / Attendance Allowance;
- Applications for Disabled Facilities Grant;
- Engaging with partners to better understand housing requirements.

The following factors should be considered for this purpose:

- The likely need for housing for older and disabled people, including wheelchair dwellings
- Size, location, type and quality of dwellings needed to meet evidenced needs eg. retirement, sheltered or care homes;
- Accessibility and adaptability of existing stock;
- How the needs vary across tenures;
- Overall impact on viability.

Water Efficiency

As part of the Housing Standards Review, the Government has introduced a higher optional standard for water efficiency in the Building Regulations. The mandatory standard is 125 litres/person/day. Where there is a clear local need LPAs can set out local plan policies requiring new dwellings to meet the higher optional Building Regulations requirement of 110 litres/person/day.

National Planning Policy Guidance indicates that clear local need should be based on:

- Existing sources of evidence including Environment Agency Water Stressed Areas, Water Resource Management Plans, River Basin Management Plans and local Water Cycle Studies;
- Consultations with local water and sewerage companies, the Environment Agency and catchment partnerships;
- Consideration of the impact on viability and housing supply of such a requirement.

Internal Space Standards

A national space standard has been introduced. It is optional to use the standard. The standard will be implemented through the planning system as opposed to Building Regulations.

There are a number of things to consider in terms of whether to apply the national space standard:

- Identify a need – provide evidence on the size and type of dwellings currently being built in Nuneaton and Bedworth to ensure that the impacts of adopting space standards can be properly assessed eg. to meet the demand for starter homes.
- Viability – consider as part of a plan's viability assessment with account taken of the potential impact on larger dwellings in the land supply. LPAs will also need to take account of the impact on affordability.
- Timing – arrangements will need to be made to allow transition to the new standards.

Security and Secure by Design

The Government has introduced a new security standard in the building regulations (Part Q). This relates to locks.

However, the Government's statement indicates that policies relating to the external design and layout of new development, which aim to reduce crime and disorder are unaffected.

4.3 Nuneaton and Bedworth Borough Council Corporate Plan 2007 - 2021

The Corporate Plan (CP) sets out how the Council's services and activities will support the Council's Sustainable Community Plan. The CP includes a vision, four aims, each supported by several priorities, and key targets.

In relation to sustainable design, the most relevant theme is aim 3: "To provide a pleasant environment for those living, working and visiting the Borough". The priorities are:

- to create a greener and cleaner environment
- to lead in environmental issues addressing climate change and protection of the environment.

4.4 Nuneaton and Bedworth Sustainable Community Plan: Shaping Our Future 2007 - 2021

The Sustainable Community Plan is a blueprint of Nuneaton and Bedworth's aspirations for the local community between 2007 - 2021. The Sustainable Community Plan sets out a vision and a plan to achieve the vision through working together with public sector agencies, communities, voluntary organisations and businesses to tackle major issues such as transport, health, education, employment, housing and community safety.

The Sustainable Community Plan is broken down into four themes:

1) Stronger Borough
2) Safer Borough
3) Healthier Borough
4) Sustainable Borough

Theme four is the most pertinent to sustainable design. It aims to "Have a high quality environment with increased biodiversity and a sustainable approach to waste and energy".

4.5 Nuneaton and Bedworth Borough Plan Vision and Spatial Objectives

The Borough Plan (BP) aims to promote development that positively contributes to making the Borough a better place. Policies within the BP will ensure the highest possible sustainable design standards are achieved in order to maintain and improve the Borough's built environment. Policies will also focus on improving the appearance of buildings, their impact on the environment, their long-term future adaptability and resilience to the effects of climate change.

Relevant to this Background Paper the Nuneaton and Bedworth BP vision states that by 2028 communities will:

- New development of high quality design, well connected, locally distinctive, energy efficient and maximises the use of renewables to mitigate and adapt to climate change. Large scale developments use renewable or low carbon energy from decentralised schemes.

The relevant strategic objectives from the BP are to:

- To ensure that new development enhances and improves the quality and appearance of the existing urban area. In particular:
- High quality sustainable design and construction in line with design standards.

4.6 Issues and Options Consultation Responses

In relation to design, there were nine responses and all stated that poor design is an issue.

4.6 Preferred Options Consultation

The Preferred Options consultation raised several issues in relation to Sustainable Design and Construction. Responses stated that:

- Raising building standards above Building Regulations will affect build costs and so viability and site delivery.
- Higher standards are needed and that development on greenfield sites should include higher standards than brownfield sites.
- Homes need to be built in the right places where people want to live and have noise insulation and greater space.
- Robust evidence is required for justify local standards. The Government is winding down the code for sustainable homes and restricting local authorities from seeking extra energy and carbon efficiency measures over and above those in the Building Regulations.
- Local organisations, such as the Bedworth Society, should be included in the planning process to help define urban character areas.

4.6.1 Policy Changes as a Result of the Preferred Options Consultation

Council Officers have taken on board many of the comments from the consultation, resulting in several changes. These include:

- Merging the policy with the Urban Character and Design Quality policy to recognise overlapping issues on design.
- Recognising the need to take account of viability and site deliverability.
- Deleting the Code for Sustainable Homes requirement in recognition that it will become obsolete as a result of the Housing Standards Review.

7 EVIDENCE BASE

5.1 Urban Characterisation Study Pilot

An Urban Character Area Study Pilot is currently underway for the Borough. This study will identify Specific Urban Character Areas (SUCAs) and Generic Character Types (GCTs). SUCAs will have a stronger strength of character and be more sensitive to adverse change, and are likely to require specific policy prescription. GCTs, however, will tend to lack character and will be less susceptible to new development.

This approach is adopted to recognise that different geographical areas of the Borough often have different characters. These characters are influenced by when that area was established, the area's predominant use, ownership/tenure, layout of streets, patterns of development, plot size and arrangement and built form, amongst other characteristics.

Urban Characterisation will provide a comprehensive understanding of each area's physical characteristics, spatial profile, distinctiveness, character and history. It will act as a guide for developers to ensure new developments will have a strong strength of character and avoid developing large estates with little or no character and do little to create a sense of place or distinctiveness. This will assist in the decision making process in Development Control.

Figure 2 provides an example of what the study will demonstrate visually. From the extract it can be seen that there is a clear distinction between the layouts of the developments. It can, therefore, be inferred that the character of the areas is also different and new development should be mindful of this. Each colour will represent a different character across the Borough.

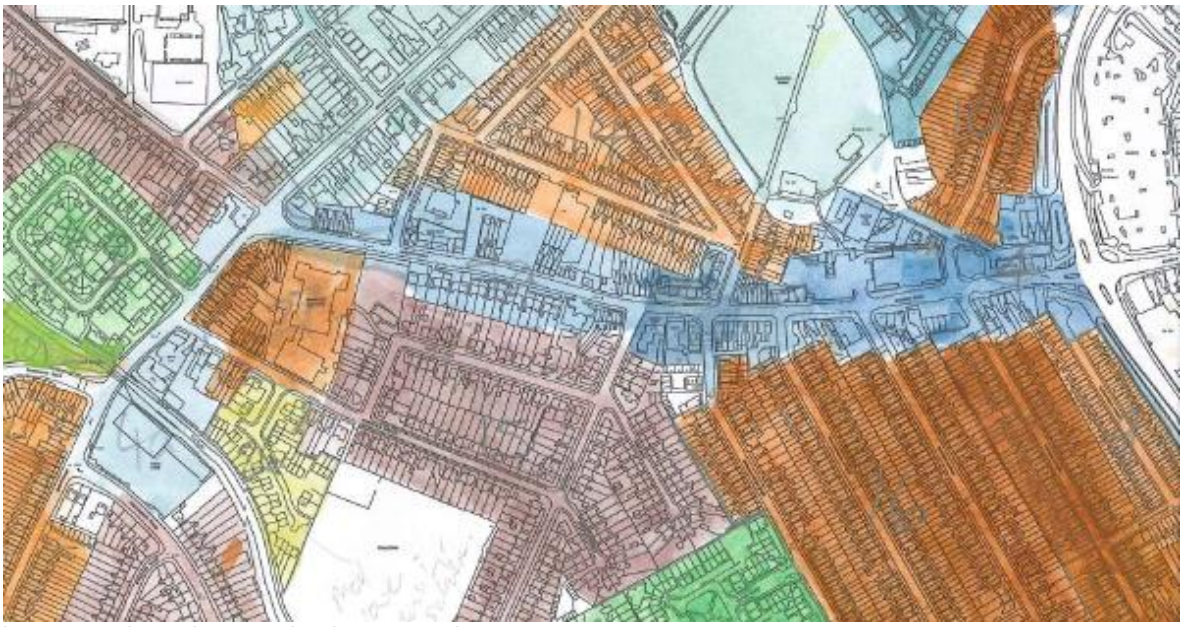

Figure 1: Urban characterisation example

At this stage, the Study has identified 18 different generic character types, listed below.

Table 5: Urban Character Types

Generic Character Type	Description
1	Urban Centre
2	Urban Fringe/Corridor
3	Small Historic Settlement Core
4	Commercial Ribbon Development
5a	Late 19th/Early 20th c Urban Terraced Worker Housing
5b	Early 20th c Urban Terraced and Semi-Detached Housing
6	Late 19th/Early 20th c Middle Class Suburban Housing
7	Mixed-Period Private Residential Ribbon Development
8	Inter-war Speculative Residential Ribbon & Estate Development

9	Inter-war Executive Residential Ribbon Development
10	Inter-war Public Residential Estate
11	Post-war Executive Residential Ribbon Development
12	Post-war Private Residential Estate
13	Post-war Public Residential Estate & Ribbon
14	Post-war Public Residential Estate High Density
15	Later 20th /Early 21st Private Suburban Estate
16	Later 20th /Early 21st Private Residential Estate Medium - High Density
17	Park & Recreational
18	Modern Industrial/Commercial

5.2 Accessibility and Adaptability of Dwellings

There is no one single data set to inform whether or not the higher optional standards for accessibility and adaptability for Building Regulations should be used. National Planning Policy Guidance sets out details of a range of official statistics to be used for this purpose:

- The data shows that around 11% of new tenants for Local Authority stock have disability related design or adaptation requirements. However, Local Authority housing accounts for only 11% of the total housing stock.
- The Census indicates that 35.4% of households in the Borough have one or more persons with a long term health problem or disability. The Census also shows that 18% of the population identify themselves as having a disability that limits their day-to-day activities either a little or a lot.
- Population projections show that there is expected to be a 36.1% increase on population aged over 55 years between 2011 and 2031. The highest increases are for 75-84 years (68.8%) and 85+ years (145.8%).

Lifetime Homes indicate that Lifetime Homes standard is equivalent to M4(2) accessible and adaptable dwellings and that Habinteg Wheelchair Homes are equivalent to M4(3) Wheelchair dwellings.

It is proposed that the policy requires new residential development to provide 35% of dwellings at the M4(2) accessible and adaptable dwellings. This recognises the current level of need and the potential for this to increase with the ageing population.

5.3 The Impact of Housing Growth on Public Water Supplies (Environment Agency, 2007).

This paper was produced to assess how Government housing and employment projections from 2006 would impact water resource availability in the West Midlands.

Nuneaton and Bedworth Borough is located in the Severn Water Resource Zone (WRZ), which also includes Coventry, Rugby, Warwick, virtually the whole of Stratford and approximately two thirds of North Warwickshire. The Severn WRZ is categorised as a high risk zone. The Study states that in 2006 the Severn WRZ was already in a significant headroom deficit, requiring new water resource developments to keep the zone in surplus.

The Study states that to reduce the implications of housing growth, on Water Company Water Resources Plans, a range of measures will be needed to meet this increased demand. These will include the investment and development of new water resources, new treatment and distribution systems, leakage management and demand management. If all these measures are put in place water companies should be able to plan to meet future growth in demand.

Critical to the success of Water Resource Plans is water efficiency. Water efficiency saving in all WRZs would reduce the pressures on supplies, cutting deficits and delay the urgency for new water resource developments. Current Building Regulations set a standard of 125 litres per head per day (l/h/d) for new domestic buildings.

The study considers the impacts of climate change. It estimates that domestic demands are likely to increase, particularly for garden watering and personal washing. Commercial demands, however, are not so straight forward to predict, but it is likely that demand will fluctuate. Nonetheless, it is not just housing and economic growth that will have serious implications for water supply. The Study states that climate change will also impact on water supply and demand, as well as on future flooding risks, water quality and the environment.

The overall effect on resources is unclear, but hotter drier summers will make direct summer supplies less reliable. Predictions of the impact of climate change vary. Some scenarios suggest that resources for public supply may decrease whilst other scenarios suggest that resources may remain broadly similar or even increase. Winter rainfall is predicted to increase, but the balance after allowing for increased evaporation in warmer winters is less certain. Studies continue, and in the meantime actions to improve resilience and retain flexibility against future uncertainty are needed. These include actions such as winter storage for both agriculture and public supply, and water efficiency across all water users.

5.2.1 Recommendations

- Water efficiency policies for new homes should meet the equivalent of Code for Sustainable Homes level 3 requirement for water efficiency, particularly in WRZs with high risk, such as the Severn WRZ.
- Early planning needs to be carried out by the Local Authorities, Water Companies, Environment Agency and others to ensure water is available, particularly in the Severn, Birmingham and South Staffordshire Zones.

5.4 Warwickshire Water Cycle Study (Halcrow, 2010)

The Water Cycle Study (WCS) provides the Warwickshire districts with strategic evidence to determine if future growth and associated development will or will not have a detrimental impact on the environment and whether or not the necessary water infrastructure can be provided in a timely manner to support the required growth.

5.3.1 Statutory Water Resources

The majority of public water supply to Warwickshire is provided by Severn Trent Water (STW). Supply areas are divided into six Water Resource Zones (WRZs), with

Warwickshire lying predominantly within the Severn Resource Zone (WRZ3) which serves 95% of the study area population.

The majority of Warwickshire falls within the Warwickshire Avon water abstraction catchment. The River Avon and its tributaries are located throughout this catchment and make up 15 surface water resources. There are also 7 groundwater sources in the catchment which support large abstractions for water supply in the area. There are approximately 1,500 licences in the catchment with 81% of the total licensed quantity used for public water supply.

At the time of the preparing the Water Cycle Study (WCS), consultants stated that the Severn Water Resource Zone had a significant supply-demand deficit. This prompted the consultants to undertake several scenarios to determine the most effective sustainable water efficiency management strategies to reduce the future impact on the potable water supply (the water that is safe to drink and is free from pollution, harmful organisms and impurities).

The analysis within the draft WRMP underwent a rigorous testing and review process with Defra, Ofwat and the Environment Agency, as well as public consultation. The scenario testing and analysis concluded that:

- without demand management scenarios in place (business as usual) new development would cause an additional 13-18.5% demand compared to current demand, and given the current shortfall in available water resources this is not considered a sustainable approach;
- adopting equivalent CSH in new developments does reduce the increase in water demand due to new development;
- reducing demand in the existing housing stock is critical to ensuring water demand does not increase due to new development, and;
- water neutrality can be achieved up to 2026 by adopting equivalent CSH level 5 in new developments and reducing existing per capita consumption by 2 litres/head/day per year. It should be noted, however, that it is highly uncertain whether a reduction of 2 l/h/d per year can be achieved in the existing housing stock, and at some point the limit of technology will be reached and/or costs will be unsustainable.

5.3.2 Rain Water Recycling

Rain water harvesting systems potentially offer the combined benefits of reduced water consumption from the public water supply system and reduced surface water runoff discharged to the public sewerage system. Available systems vary from installation of a simple water butt for garden watering to propriety units providing treatment, storage and delivery. Depending on the level of treatment provided harvested water can be used for all purposes except drinking and food preparation.

At its simplest rainwater can be collected in above ground butt for outdoor use such as garden watering and car washing.

5.3.3 Water Cycle Study Recommendations

- Local planning authorities implement policies that require all new development to be built to CSH level 3/4 (105 l/h/d) for water as a minimum. (This recommendation concurs with the Environment Agency)

- Achieving CSH level 5/6 should be considered as an aspiration.
- Water demand must be reduced in the existing housing stock. This could be achieved with local authorities in partnership with the Environment Agency and STW to continue to encourage the uptake of metering and encourage the sustainable use of water through education programmes.

5.4 Severn Trent Water Resource Management Plans

Water companies are required by the Government to produce Water Resources Management Plans to show how they will maintain a secure supply of water to customers over a 25 year period. WRMPs are developed in line with guidance from the Environment Agency and are reviewed and revised every 5 years.

For Nuneaton and Bedworth the Water Resource Management Plan is prepared by Severn Trent Water. Until recently, Nuneaton and Bedworth was within the Severn Water Resource Zone. However, for the purpose of water resource planning, the Severn Trent Water Resource Management Plan (WRMP) 2014 divides the water resources into 15 zones. Nuneaton and Bedworth is now within the Strategic Grid Zone.

The short to medium term strategy of the WRMP is driven by the need to address environmentally unsustainable levels of water abstraction by providing local environmental improvements and by providing alternative sources of water supply where necessary.

In the longer term, the strategy will need to address the significant uncertainties around the potential impacts of climate change on water resources, as well as increase the flexibility and capacity of the Strategic Water Grid to cope with future growth.

As with the 2010 WRMP[24], the new plan also states that there is a supply-demand deficit for the Strategic Grid Water Resource Zone. Appendix C of the WRMP deals with uncertainties of supplying and meeting water demand. It uses the water industry's best practice modelling to develop more precise analysis and forecasting. However:

> *"The results of [the] baseline supply demand balance assessment for each of [the] 15 water resource zones show that for the Strategic Grid Zone . . ., there is a high probability that without new investment [the zone] will not have sufficient supplies available to meet expected water demand"*[25]*.*

5.5 Warwickshire Observatory

5.5.1 Warwickshire Indices of Multiple Deprivation 2010

Using the latest Home Office estimates on the costs of crime it is possible to calculate the cost of crime across various scales. At an individual level, it is estimated that crime costs £217 per person in Nuneaton and Bedworth compared to the average cost per person across the County of £157.

[24] Severn Trent Water, Water Resources Management Plan, Final Version, 2010, pgs 116 -117.
[25] Severn Trent Water, Water Resource Management Plan 2014, Appendix C: Dealing With Uncertainty, pgs 26 and 32.

The Warwickshire Indices of Multiple Deprivation is the official measure of deprivation in the County and, as one component of multiple deprivation, measures the rate of recorded crime for burglary, theft, criminal damage and violence. The 2010 Report states the number of Nuneaton and Bedworth's Super Output Areas (SOAs) in the top 30% most criminally deprived SOAs fell from 39 in 2007 to 34, still a significant level of criminal deprivation. However, the number of SOAs within the top 10% increased from nine SOAs in 2007 to 15 SOAs in 2010[26]. Such stark criminal statistics are further confirmed in Table 6, which shows that of all recorded crime in Warwickshire, Nuneaton and Bedworth has the highest levels of crime, accounting for 30% of total crime in the County, compared with the next highest of 25.66% for Warwick[27].

Table 6: Overall level of Crime in Warwickshire 2012

	North Warwickshire	Nuneaton and Bedworth	Rugby	Stratford-on-Avon	Warwick
Overall recorded crime, notifiable offences recorded by police	2073	5299	3177	2644	4554
Percentage of overall crime in County	11.68	29.86	17.90	14.90	25.66

5.5.2 Fear of Crime and Perceptions of Anti Social Behaviour 2009/10

This Report contains key findings from the 2009/10 Partnership Place Survey for Warwickshire. A total of 18,000 questionnaires were equally distributed to households across Warwickshire. The survey achieved a response rate of 17%.

The results show that since 2000/2001 the fear of crime has reduced in Nuneaton and Bedworth. Nonetheless, residents in the Borough still have an overall greater fear or crime than any other borough/district in the County, significantly reducing their quality of life.

Table 7: Percentage of residents worried about domestic burglary, car theft and being physically attacked

District and County	**Domestic Burglary**		**Car Theft**		**Attacked by Strangers**	
	00/01	09/10	00/01	09/10	00/01	09/10
Nuneaton & Bedworth	**76**	**59.3**	**65.7**	**51.5**	**59.1**	**49.5**
Warwickshire Average	68.2	50.8	59.9	39.9	47.9	38.1

The survey also asked residents to comment on a range of anti-social behaviour (ASB) issues. Overall, the results show Nuneaton and Bedworth residents feel the ASB indicators are either a' very big' or 'fairly big' problem in their area.

[26] Warwickshire Observatory, Indices of Multiple Deprivation 2010
[27] Warwickshire Observatory, available at http://maps.warwickshire.gov.uk/IAS/metadata/view/indicatorinstance?pid=5357&id=437932&norefer=true

5.5.3 Warwickshire Domestic Burglary Analysis (2014)

This Report provides a detailed analysis of recorded domestic burglary trends for Warwickshire, with an overview of the current levels for England and Wales. On a positive note the Report highlights that overall levels of domestic burglary are reducing in both Warwickshire and nationally.

Despite reduced levels, domestic burglary clearly remains a significant issue, particularly in Nuneaton and Bedworth. Table? shows that at rate of 11.06 offences per 1000 households, domestic burglary in Nuneaton and Bedworth is the highest in Warwickshire. This is significantly above the County average of 7.77 and higher than the rate for England & Wales.

Table 8: Recorded rates of domestic burglary

	Number of Households	Number of Offences	Rate per 1000 Households
North Warwickshire	25,812	221	8.56
Nuneaton & Bedworth	52,711	583	11.06
Rugby	41,875	312	7.45
Stratford-on-Avon	51,928	277	5.33
Warwick	58,679	402	6.85
Warwickshire	231,005	1,795	7.77
England & Wales	--	--	9.73

Source: Crime Information System, Warwickshire Police.

Statistics from 2012 also record Nuneaton and Bedworth as having the highest levels of domestic burglary in Warwickshire, accounting for over 30%. In comparison Rugby has the next highest level at just under 20%[28].

5.5.4 Warwickshire Violent Crime Analysis (2014)

The Office of National Statistics indicates that violent crimes have been reducing since 2002. However, the levels of violent crime across Nuneaton and Bedworth remain a significant concern for residents, as borne out by the Fear of Crime and Perceptions of Anti Social Behaviour Survey.

The Warwickshire Violent Crime Analysis provides a detailed analysis of recorded violent crimes for Warwickshire. Occurrences of violent crime are significant in Nuneaton and Bedworth, accounting for over one third of all violent offences in Warwickshire. Warwick District has the next highest, with 26%, and North Warwickshire has the least levels of violent crime, accounting for only 9%.

5.5.5 Warwickshire Business Crime Analysis (2014)

The Warwickshire Business Crime Analysis provides a detailed analysis of recorded business crime shoplifting and in Warwickshire. The Report states that business crime and shoplifting offences are on the increase.

[28] Warwickshire Observatory, available at http://maps.warwickshire.gov.uk/IAS/metadata/view/indicatorinstance?pid=94&id=456253&norefer=true

Warwickshire and West Mercia Police define business crime as “Any criminal offence that is committed against a person or property that is motivated by the connection of that person or property to a business.”

Business crime offences are particularly high in Nuneaton and Bedworth, reaching 28% of recorded offences in Warwickshire. Nuneaton and Bedworth also has the highest increase of instances of shoplifting

Table 9: Percentage of business crime across Warwickshire and the increase/decrease in shoplifting

	Business Crime	Shoplifting
North Warwickshire	12%	-6%
Nuneaton and Bedworth	28%	+40%
Rugby	17%	+27%
Stratford-on-Avon	21%	+3%
Warwick	23%	+3%
Total	100%	--

6 POLICY JUSTIFICATION

6.1 Background Paper Summary

The Government promotes the use of design standards. Correspondingly, this section states the justification for the Sustainable Design policy and considers the design standards that are most suitable, given the evidence for Nuneaton and Bedworth. The Issues and Options consultation highlighted that poor design is an issue in the Borough.

Over recent years many new developments have failed to create a sense of place. The Urban Characterisation Study will guide developers in building distinctive communities with buildings that have a strong strength of character.

For residential development the BfL12 standard has a wider benefits than any of the other standards. BfL12 is endorsed by Government as a useful tool for well-designed homes and neighbourhoods and is based on the new National Planning Policy Framework.

In terms of accessible and adaptable dwellings, there is no one single data set to inform whether or not the higher optional standards for accessibility and adaptability for Building Regulations should be used. It is proposed that the policy requires new residential development to provide 35% of dwellings at the M4(2) accessible and adaptable dwellings. This recognises the current level of need and the potential for this to increase with the ageing population.

Compared to BfL12, Passive Solar Design (PSD) and Secured By Design (SBD) have a narrower range of benefits and are concerned with regulating temperature efficiently and ensuring there is appropriate security measures in and around the building. Taken together, they will provide a comprehensive sustainable design

policy that contributes to improving the environment, social conditions and the economy without adding a significant financial burden on to the developer.

With regards to water resources Nuneaton and Bedworth Borough is located in the Strategic Grid Water Resource Zone (WRZ). The Strategic Grid WRZ is categorised as a high risk zone which currently has a significant supply-demand balance deficit. Climate change will also impact on water supply and demand. Consequently, water efficiency policies for new homes in the Strategic Grid WRZ should meet the equivalent Code for Sustainable Homes level 3 / 4 or 105l/p/d. At this level water efficiency costs is not considered to be significant. However, beyond 105l/p/d water efficiency comes at a significant cost and is likely to make the development less viable. Given the conclusions of the Severn Trent Water Management Plan and the Water Cycle Study it is proposed to require the higher optional Building Regulations requirement of 110 litres/person/day.

Table 10: Strategic greenfield: extra-over costs by CSH category for a three-bed semi-detached against Part L 2006 baseline costs[29]

	Equivalent Code Level 4 or 105l/p/d	Equivalent Code Level 5 or 80l/p/d	Equivalent Code Level 6 or 80l/p/d
Water Cost (£)	250	4,750	4,750

Source: Cost of Building to the Code for Sustainable Homes: Updated Cost Review (2011)

Installing rain water harvesting systems in to new properties will also provide water efficiency measures to reduce water consumption from the public water supply as well as help to reduce surface water runoff in to the public sewerage system. Such systems, depending on the level of treatment, can be used for all purposes except drinking and food preparation.

In terms of non-residential buildings, BREEAM sets the standard for best practice in sustainable building design and construction. It is one of the most comprehensive and widely recognised measures of a building's environmental performance. In achieving BREEAM's Very Good rating there is little added to the extra over-costs, which range between 0.14% and 0.4%.

Crime statistics show that for most areas of criminal activity, Nuneaton and Bedworth has the highest levels of recorded crime in the Warwickshire, as well as the highest levels of perception and fear of crime. Incorporating Secured By Design (SBD) features in to new developments will be a significant deterrent in reducing domestic, business and violent crimes in the Borough. Indeed research shows that SBD features have reduced domestic burglary between 26% to 75%[30]. As well as helping to reduce crime SBD improving the design and management of the physical environment and promotes community cohesion.

[29] Communities and Local Government, Cost of Building to the Code for Sustainable Homes: Updated Cost Review (2011), available at https://www.gov.uk/government/publications/cost-of-building-housing-to-the-code-for-sustainable-homes-standard-updated-cost-review

[30] Association of British Insurers, *Securing The Nation: the case for safer homes* (2006).

The added extra-over cost of incorporating SBD features is relatively small, adding as little as £170 per home or a 4.56% increase above typical installations, compared to the estimated costs of domestic burglary costing thousands.

6.2 Sustainable Design and Construction Policy

General Principles
Development proposals will be:

- designed to a high standard;
- able to accommodate the changing needs of occupants;
- adaptable to, and minimise the impact of climate change;

Urban Character
All development proposals will contribute to local distinctiveness and character by reflecting the positive attributes of the neighbouring area, respecting the sensitivity to change of the generic character types within each urban character area. Key characteristics to consider include:

- current use of buildings;
- ownership/ tenure;
- street layout;
- patterns of development;
- plot size and arrangement, and;
- built form.

Housing
Major development proposals must provide a statement with their application showing how their proposal will:

- Meet all the questions set out in the Buildings for Life 12 standard. Where it is not possible to positively meet all 12 questions a statement of justification must be provided to explain why it is not possible and what mitigation measures will take place to offset this;
- Meet the optional Building Regulations Standard Part M4(2) for accessible and adaptable dwellings for 35% of the development proposal;
- Integrate the principles of Passive Solar Design;
- Meet the optional Building Regulations Standard for water efficiency of 110 litres/per person/per day and install rain water harvesting systems in the curtilage of all new buildings.

Commercial
Major non-domestic development proposals will meet the BREEAM very good standard for new construction projects using the most up to date New Construction version of BREEAM.

Crime and Fear of Crime
All development proposals must contribute to reducing crime and the fear of crime by meeting the principles of Secured By Design.

Supplementary Planning Documents
Detailed information to help developers comply with this policy will be set out in the Sustainable Design and Construction SPD.

7 DELIVERING AND IMPLEMENTING POLICIES

7.1 Policy Delivery Mechanisms

The following delivery mechanisms are relevant:

- Prepare a SPD on Design Quality and Sustainable Design to provide greater detail for developers and decision makers.
- Training for officers to assess Building for Life standards.
- Promote the use of the Energy Toolkit to identify opportunities for carbon reduction in new development.
- Deliver the actions of the Environmental Sustainability Strategy.
- Delivery of NBBC Home Energy Conservation Act: Further Report (2013).

7.2 Monitoring

Monitoring Ref	Indicator	Target
M1	New homes incorporating Building for Life 12 (12 greens).	495 dwellings (100%) per annum
M2	New homes meeting optional Building Regulations Standard Part M4(2) for accessible and adaptable dwellings	322 dwellings (35%) per annum
M3	New homes meeting optional Building Regulations Standard for water efficiency of 110 litres/per person/per day and water butts.	495 (100%) per annum
M4	New residential and commercial developments integrating Secure By Design principles.	100%
M5	Commercial applications integrate BREEAM very good standard.	100%

The Council will assess developments against the BfL and Lifetime Homes standard and record the number of applications that meet its water efficiency and carbon reduction policies. These will be set out in the Council's Annual Monitoring Report (AMR). Where developments are not meeting these standards the Council will take action to enforce those standards to ensure they are implemented.

APPENDICES

Appendix 1: Building for Life 12

BfL12 is comprised of three themes, with four questions in each theme. Each question is complemented by a series of additional questions to consider at the start of the design process.

Theme 1: Integrating into the neighbourhood

1 Connections

Does the scheme integrate into its surroundings by reinforcing existing connections and creating new ones; whilst also respecting existing buildings and land uses along the boundaries of the development site?

1a Where should vehicles come in and out of the development?
1b Should there be pedestrian and cycle only routes into and through the development? If so where should they go?
1c Where should new streets be placed and could they be used to cross the development site and help create linkages across the scheme and into the existing neighbourhood?
1d How should the new development relate to existing development? What should happen at the edges of the development site?

2 Facilities and services

Does the development provide (or is it close to) community facilities, such as shops, schools, workplaces, parks, play areas, pubs or cafes?

2a Are there enough facilities and services in the local area to support the development? If not, what is needed?

Where new facilities are proposed:
2b Are these facilities what the area needs?
2c Are these new facilities located in the right place? If not, where should they go?

3 Public transport

Does the scheme have good access to public transport to help reduce car dependency?

3a What can the development do to encourage more people (both existing and new residents) to use public transport more often?
3b Where should new public transport stops be located?

4 Meeting local housing requirements

Does the development have a mix of housing types and tenures that suit local requirements?
4a What types of homes, tenure and price range are needed in the area (for example, starter homes, family homes or homes for those downsizing)?
4b Is there a need for different types of home ownership (such as part buy and part rent) or rented properties to help people on lower incomes?

Theme 2: Creating a place

5 Character

Does the scheme create a place with a locally inspired or otherwise distinctive character?

5a How can the development be designed to have a local or distinctive identity?
5b Are there any distinctive characteristics within the area, such as building shapes, styles, colours and materials or the character of streets and spaces that the development should draw inspiration from?

6 Working with the site and its context

Does the scheme take advantage of existing topography, landscape features (including water courses), wildlife habitats, existing buildings, site orientation and microclimates?

6a Are there any views into or from the site that need to be carefully considered?
6b Are there any existing trees, hedgerows or other features, such as streams that need to be carefully designed into the development?
6c Should the development keep any existing building(s) on the site? If so, how could they be used?

7 Creating well defined streets and spaces

Are buildings designed and positioned with landscaping to define and enhance streets and spaces and are buildings designed to turn street corners well?

7a Good streets and spaces are created by enclosing them with buildings and a strong landscaping scheme. Are buildings used to create enclosed streets and spaces?
7b Good buildings 'turn' corners. Do buildings turn corners well?
7c Do all fronts of buildings, including front doors, face the street?

8 Easy to find your way around

Is the scheme designed to make it easy to find your way around?

8a Will the development be easy to find your way around? If not, what could be done to make it easier to find your way around?

Theme 3: Street & Home

9 Streets for all

Are streets designed in a way that encourage low vehicle speeds and allow them to function as social spaces?

9a Are streets pedestrian friendly and are they designed to encourage cars to drive slower and more carefully?
9b Are streets designed in a way that they can be used as social spaces, such as places for children to play safely?

10 Car parking

Is resident and visitor parking sufficient and well integrated so that it does not dominate the street?

10a Is there enough parking for residents and visitors?
10b Is parking positioned close to people's homes?
10c Are any parking courtyards small in size (generally no more than five properties should use a parking courtyard) and are they well overlooked by neighbouring properties?
10d Are garages well positioned so that they do not dominate the street scene?

11 Public and private spaces

Will public and private spaces be clearly defined and designed to be attractive, well managed and safe?

11a What types of open space should be provided within this development?
11b Is there a need for play facilities for children and teenagers? If so, is this the right place or should the developer contribute towards an existing facility in the area that could be made better?

12 External storage and amenity space

Is there adequate external storage space for bins and recycling as well as vehicles and cycles?

12a Is there enough storage space for bins and recycling, as well as vehicles and cycles?

Appendix 2: Statistical Justification for Building for Life 12

The Borough also has the lowest level of car ownership in the County with over 24% of households having no access to a car or a van. This figure rises to 40% for Wem Brook ward (N & B District Profile 2009 http://www.warwickshireobservatory.org/observatory/observatorywcc.nsf/RefDocs/KMGY-7ZPDG7?OpenDocument) *Buildings for Life can address the need for a car by ensuring the development provides or is in close proximity to community facilities and within easy access to bus services*.

The people of Nuneaton and Bedworth generally have poorer health than the average for England, with adult obesity reaching 29.8%, 5.6% above the national average. There is also a significant number of children considered to be obese (N & B Health Profile 2012 http://www.warwickshireobservatory.org/observatory/observatorywcc.nsf/RefDocs/EBSH-72SF78?OpenDocument). Additionally, life expectancy is lower for both men and women than the Warwickshire average. *Buildings for life can address this by ensuring that public spaces are well designed, popular and well used. This will help to increase people's sense of well-being and physical activity.*

The Borough has the highest rate of crime and perception of crime in the County (Warwickshire Observatory District Profile 2009). *Buildings for Life can address this by ensuring that public spaces, roads and footpaths are well overlooked by buildings, lighting is well thought out and blank gable walls are avoided.*

The Borough has the lowest percentage of residents in the County who feel they belong to their neighbourhood (56.5%); the lowest who believe people from different backgrounds get on well together (74.1%), as well as the lowest percentage of residents who are satisfied with their neighbourhood (74.7%) (Warwickshire Observatory District Profile 2009). *Buildings for Life can address this by ensuring the development reflects the various socio-economic groups in the borough, creating more integrated and cohesive communities, with a good mix of housing types and tenures.*

35% Nuneaton and Bedworth's population has a long-term limiting illness, indicating a need for housing adaptability (2011 Census). *Buildings for Life and Lifetime Homes can address this by ensuring that new housing can accommodate a downstairs toilet, wider doorways, level entrances and allow for a lift or stair lift to be fitted in the future, as well as ensuring there is potential to extend back or upwards, allow for open-plan living, garden space and for a conservatory to be added (although the Lifetime Homes standard would be able to configure a dwelling more comprehensively).*

11.9% of Nuneaton and Bedworth residents are in fuel poverty, with some wards with fuel poverty levels as high as 18%[31].

[31] Department of Energy and Climate Change, available at http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/regional/regional.aspx

Buildings for Life and Passive Solar Design can address this by ensuring they out perform Building Regulations, which will also contribute to reducing their environmental impact and incorporate advanced construction methods.

Responses from the Issues and Options consultation stated that they felt new development was poorly designed. *Buildings for Life can address this by ensuring the design has a distinct character and exhibits architectural quality and sits well within its surroundings.*

Appendix 3: Lifetime Homes Criteria[32]

a planning policy would contribute to enforcing these criteria, as together they do not duplicate Building Regulations.

(1) Parking (width or widening capability)

Principle: Provide, or enable by cost effective adaptation, parking that makes getting into and out of the vehicle as convenient as possible for the widest range of people (including those with reduced mobility and/or those with children).

(2) Approach to dwelling from parking.

Principle: Enable convenient movement between the vehicle and dwelling for the widest range of people, including those with reduced mobility and/or those carrying children or shopping.

(3) Approach to all entrances

Principle: Enable, as far as practicable, convenient movement along other approach routes to dwellings (in addition to the principal approach from a vehicle required by Criterion 2) for the widest range of people.

(4) Entrances

Principle: Enable ease of use of all entrances for the widest range of people.

All entrances should:
a) Be illuminated
b) Have level access over the threshold; and
c) Have effective clear opening widths and nibs as specified below.
In addition, main entrances should also:
d) Have adequate weather protection
e) Have a level external landing.

(5) Communal stairs and lifts

Principle: Enable access to dwellings above the entrance level to as many people as possible.

6) Internal doorways and hallways

Principle: Enable convenient movement in hallways and through doorways.

(7) Circulation Space

Principle: Enable convenient movement in rooms for as many people as possible.

[32] Details of the specifications for the criteria can be found at: http://www.lifetimehomes.org.uk/pages/revised-design-criteria-4-entrances-322.html

(8) Entrance level living space
Principle: Provide accessible socialising space for visitors less able to use stairs.

(9) Potential for entrance level bed-space
Principle: Provide space for a member of the household to sleep on the entrance level if they are temporarily unable to use stairs (e.g. after a hip operation).

(10) Entrance level WC and shower drainage
Principle: Provide an accessible WC and potential showering facilities for:

> *i) any member of the household using the temporary entrance level bed space of Criterion 9, and:*
> *ii) visitors unable to use stairs.*

(11) WC and bathroom walls
Principle: Ensure future provision of grab rails is possible, to assist with independent use of WC and bathroom facilities.

(12) Stairs and potential through-floor lift in dwelling
Principle: Enable access to storeys above the entrance level for the widest range of households.

(13) Potential for fitting of hoists and bedroom / bathroom
Principle: Assist with independent living by enabling convenient movement between bedroom and bathroom facilities for a wide range of people.

(14) Bathrooms
Principle: Provide an accessible bathroom that has ease of access to its facilities from the outset and potential for simple adaptation to provide for different needs in the future.

(15) Glazing and window handle heights
Principle: Enable people to have a reasonable line of sight from a seated position in the living room and to use at least one window for ventilation in each room.

(16) Location of service controls
Principle: Locate regularly used service controls, or those needed in an emergency, so that they are usable by a wide range of household members - including those with restricted movement and limited reach.

Appendix 4: Lifetime Homes Overarching Principles

Principle One: Inclusivity
An inclusive environment aims to assist use by everyone, regardless of age, gender or disability. The flexibility and adaptability within the design and structure enables a Lifetime Home to meet a diverse range of needs over time and offers greater 'visitability', so that an individual is not prevented from visiting a household due to the design of the home.

Principle Two: Accessibility (check if this is covered by Building Regs)
A Lifetime Homes will be designed with particular attention to circulation within the home and external routes to transport infrastructure. Pathways, hallways, stairways and access to floors above, doorways and spaces to approach and reach essential facilities and controls in the home will be taken into consideration.

Principle Three: Adaptability
Adaptability means that a building or product can be simply adapted to meet people's changing needs over time or to suit the needs of different users. A member of the household, or a visitor, will be able to live, sleep and bath solely on the entrance level for a short period, or can benefit from step-free access to upper floor facilities.

Principle Four: Sustainability
Sustainability, in this context, refers to sustainable communities underpinned by essential accessible elements aimed at meeting current and future needs, including homes, facilities, goods and services – the design of which will contribute to the long term viability of the community, and can therefore contribute to the creation of stable and popular neighbourhoods and communities.

Principle Five: Good Value
Lifetime Homes are not intended to be complicated or expensive for house-builders or for the people who live in them. The design criteria have been carefully considered so that they can be incorporated into a dwelling's design and construction from the outset with only a marginal cost effect. Once occupied, the adaptability of the dwelling should actually save a household money if needs change and the dwelling is quickly and simply adapted to suit the new set of circumstances.

Appendix 5: Extra Over-Cost of Achieving BREEAM Very Good, Excellent and Outstanding Ratings

Mixed-Use

In our overcrowded city centres, available land for building commercial, retail and housing space is at a premium. Often driven by political and social policy, mixed-use development is aimed at revitalising city centres, optimising land use and securing broader community benefits such as contributions to transport, infrastructure and affordable housing.

The term mixed-use development covers a diverse scale and range of different use classes. Depending on its size, a mixed-use building might incorporate offices, apartments, retail, restaurants, cinemas, health clubs, plazas, galleries, hotel accommodation and gardens. In the UK, mixed-use development has predominantly taken the form of large-scale, scheme-based development in which the mix of uses has been separated out horizontally across a number of independent structures, rather than vertically within a single building. Many schemes are retail-led and, responding to demand for affordable housing, particularly in city centre locations, many schemes include an element of residential accommodation.

Key design issues in mixed-use schemes include:

- Transfer structures to accommodate vertical changes of use, for example going from the rigid grid of an underground car park to column-free retail space, then to residential room layout.
- Privacy; including noise, waste management and security.
- Services distribution particularly ventilation from commercial uses and its impact on residential space planning.
- Heating systems in residential-led schemes – Part L pressure requires a change from (dry) electric heating systems to more efficient but complex wet systems.
- Car parking and delivery access.

The building on which the mixed-use research is based is the Holiday Inn tower located in MediaCityUK, Manchester. MediaCityUK is a new media district in Salford Quays, Manchester; inspired by the success of other media clusters in cities such as Dubai and Singapore. The building stands 67m high (17-storeys)and accommodates 7,153m² of open-plan office space and 9,265m² of hotel space. The gross internal floor area of the building is 18,625m².

The estimated capital cost uplift of the case study mixed-use building was:

- 0.14% to achieve BREEAM Very Good
- 1.58% to achieve BREEAM Excellent
- 4.96% to achieve BREEAM Outstanding.

Offices

Office buildings come in many forms and sizes; from low-rise, out-of-town business park offices to high-rise, inner city, prestige office buildings. The case study focuses on the larger end of this spectrum, i.e. medium to high rise office buildings which are most commonly constructed in city centres. In common with all new buildings, commercial office buildings are increasingly required to be more sustainable.

Although subject to the same regulations as other types of non-domestic buildings, e.g. Part L2 of the Building Regulations, the commercial office buildings sector has arguably lagged behind some other sectors such as schools, universities and hospitals. This is changing because tenants are demanding sustainable office buildings that align with their brand and Corporate Social Responsibility (CSR) values. Hence, large speculative office developers are now constructing sustainable office buildings that go far beyond regulatory compliance.

The building on which the office research is based is One Kingdom Street, located in the Waterside regeneration area near Paddington railway station in Central London. This Grade A office building was completed in 2008. The building accommodates 24,490 m² of open-plan office space on ten floors and, on the eastern half of the building, two basement levels providing car parking and storage. The gross internal floor area is 33,018 m². The 40m high building is rectilinear with approximate dimensions of 81m x 45m. The front façade faces north and comprises a reverse ellipse along the length of the building plan on the podium and first floor levels.

The estimated capital cost uplift of the case study office building was:

- 0.17% to achieve BREEAM Very Good
- 0.77% to achieve BREEAM Excellent
- 9.83% to achieve BREEAM Outstanding.

Schools

The Government has announced its aspiration for new schools to be zero carbon by 2016 and is currently consulting on the definition of 'zero carbon' for non-domestic buildings. It is against this background that the UK steel construction sector is supporting Government and the construction industry by funding research and providing guidance in this important and challenging area through the Target Zero project.

The building on which the schools research was based, is the Christ the King Centre for Learning secondary school in Knowsley, Merseyside. This BSF building was completed in December 2008 and is occupied by 900 pupils and 50 staff. The gross internal floor area of the school is 9,637m².

The estimated capital cost uplift of the case study school building was:

- 0.2% to achieve BREEAM Very Good
- 0.7% to achieve BREEAM Excellent
- 5.8% to achieve BREEAM Outstanding.

Supermarkets

In the competitive world of food retailing, sustainability is high on the agenda and supermarket chains face many emerging issues including carbon and climate change, car dependency, consumer labelling, fair trade and localism. These issues are recognised by responsible retailers as elements of a complex jigsaw that require a comprehensive sustainable development strategy.

Sustainable supermarket buildings must form part of any such strategy and leading UK supermarket chains are designing and building new stores which address many aspects of sustainable construction including:

- improved operational energy efficiency
- use of sustainable construction materials
- introduction of new technologies such as LZC technologies and efficient refrigeration systems
- BREEAM assessment of new supermarket stores
- metering of energy and water consumption
- rainwater harvesting and sustainable urban drainage.

The building on which the supermarket research was based, is the Asda food store in Stockton-on-Tees, Cleveland. This supermarket, built adjacent to the site of a former Asda store, was completed in May 2008. The building has a total floor area of 9,393m² arranged over two levels. The retail floor area, which includes a 1,910m² mezzanine level, is 5,731m². The remaining (back-of-house) accommodation includes offices, warehousing, cold storage, a bakery and a staff cafeteria.

The estimated capital cost uplift of the case study supermarket building was:

- 0.24% to achieve BREEAM Very Good
- 1.76% to achieve BREEAM Excellent
- 10.1% to achieve BREEAM Outstanding.

Warehouses

Changes in retail and distribution business models over recent years have led to the construction of many, large single-storey distribution warehouses throughout the UK. Virtually all of these buildings are steel framed and are clad in steel-based envelope systems. The so-called 'shed' sector is now one of the most efficient and successful in UK construction.

Recently there have been significant moves to design and construct more sustainable warehouse buildings. Initiatives have mainly focussed on improving operational energy efficiency and achieving high BREEAM ratings, although embodied carbon foot printing, coupled with carbon offsetting, to achieve 'zero embodied carbon' warehouses has also received attention. Significant interest is also being shown in the integration of low and zero carbon technologies into warehouse buildings, particularly technologies that exploit their large envelope areas, such as photovoltaics and transpired solar
collector technologies (TSCs).

SolarWall is a proven TSC technology that is ideally suited for integration into large metal-clad industrial buildings. An independent UK study by BSRIA into the performance of SolarWall at a production facility in northern England identified a 51% annual reduction in CO2 emissions. However, when the Target Zero warehouse study was undertaken, it was not possible to model SolarWall under the National Calculation Methodology (NCM) and therefore TSCs have not been modelled as part of this study.

The building on which the warehouse research was based, is the DC3 distribution warehouse on ProLogis Park, Stoke-on-Trent. The distribution warehouse was completed in December 2007 and is currently leased to a large UK retailer. The net internal floor area of the warehouse is 34,000m². Attached to the warehouse is a two storey office wing providing 1,400m² of floorspace.

The warehouse and office buildings are clad in steel built-up systems and the warehouse roof has 15% roof-lights. The building is supported on concrete pad foundations. The warehouse is heated with direct gas-fired radiant heaters whilst the office is heated with radiators supplied by a gas boiler. The warehouse is naturally ventilated. The offices are mechanically ventilated with local supply and extract provided to WC's. Hot water is provided by a separate gas-fired water heater. All-in-all, the warehouse building has excellent sustainability credentials

The estimated capital cost uplift of the case study school building was:

- 0.4% to achieve BREEAM Very Good
- 0.4% to achieve BREEAM Excellent
- 4.8% to achieve BREEAM Outstanding.

From the above case studies it is clear that to meet the BREEAM Excellent rating there is little added cost over the base case costs. Meeting the Outstanding rating, however, is more challenging, particularly for offices and supermarkets, which is not too surprising when considering that less than 1% of non-domestic buildings meet this exemplary standard, compared with 10% and 25% for Excellent and Very Good, respectively.