



Stockton-on-Tees
BOROUGH COUNCIL

Supplementary Planning Document 1: Sustainable Design Guide

Consultation Draft

Stockton- on- Tees Borough Local
Development Framework

December 2010

Contents

1.0	Introduction	1
2.1	National Planning Policy and Guidance.....	2
2.2	Regional and Sub-Regional Policies and Guidance	5
2.3	Local Policies and Guidance	6
2.4	Other Documents	7
3.0	Site.....	9
3.1	Site Selection.....	9
3.2	Development Setting	9
4.0	Design Principles.....	11
4.1	Commercial Developments.....	11
4.2	Building For Life.....	11
4.3	Connectivity	12
4.4	Density and Housing Mix	12
4.5	Layout and Movement	12
4.6	Scale, Massing and Height	14
4.7	Character and Design.....	15
4.8	Privacy and Amenity	16
4.9	Security and Safety	17
4.10	Inclusive Design and Flexibility - Lifetime Homes.....	18
4.11	Green Infrastructure	18
	Open Space and Landscaping.....	19
	Open Space	19
	Landscaping.....	20
	Gardens and Private Amenity Space.....	23
	Ecology	23
4.12	Car Parking and Garages	24
4.13	Cycle Parking	26
4.14	Travel Planning.....	26
4.15	Home Zones	26
4.16	Waste Storage	28
4.17	Backland Developments	28
5.0	Environmental Sustainability.....	30
5.1	Energy Efficiency.....	30
	Construction and Materials	30
	Solar Gain.....	31
	Lighting	32
	Ventilation	33
5.2	Energy Generation and Renewable Technologies	33
	District Heating	33
	Combined Heat and Power.....	34
	Heat Pumps.....	34
	Ground Source Heat Pumps	34
	Air Source Heat Pumps.....	35
	Solar Water Heating	35
	Solar Photovoltaics	35
	Biomass.....	35
	Wind Turbines.....	36

5.3	Energy Statement.....	36
5.4	Green and Brown Roofs	37
5.5	Water Efficiency and Sustainable Drainage.....	38
	Sustainable Drainage Systems.....	38
	Rain Water Harvesting.....	39
	Greywater Collection	40
	Small-Scale Measures.....	40
	APPENDIX 1 – WASTE STORAGE AND COLLECTION GUIDANCE FOR DEVELOPERS.....	41
	APPENDIX 2 - SUDS TECHNIQUES	51
	APPENDIX 3 – FEED IN TARIFFS.....	53

1.0 Introduction

- 1.0.1 The Sustainable Design Guide Supplementary Planning Document is part of the Borough's Local Development Framework (LDF) and aims to provide additional guidance on policies within the LDF and those policies that have been saved from the Stockton on Tees Local Plan (1997) during the transition to the LDF system. Upon adoption, the SPD will be a material consideration when assessing planning applications for development within the Borough.
- 1.0.2 The aim of this Supplementary Planning Document (SPD) is to encourage the delivery of well-designed and sustainable developments within the Borough. It is intended to provide advice to developers to improve the design standards of new residential developments and to reduce the environmental impacts of both residential and commercial developments. Its principles can be applied to any new development, regardless of its scale.

2.0 Policy Background and Relevant Guidance

2.0.3 This Supplementary Planning Document (SPD) was prepared in the context of national, regional and local policy and also needs to be considered in relation to other best practice and design guides. A number of these documents and policies are outlined below.

2.1 National Planning Policy and Guidance

2.1.1 Government guidance on a number of planning matters is set out within its Planning Policy Statements (PPS) and Planning Policy Guidance (PPG). Many of these documents may need to be considered, however, the most relevant for Stockton's Sustainable Design Guide are set out below.

2.1.2 **PPS1: Delivering Sustainable Development** sets out the Government policy for the delivery of sustainable development within the planning system and states "sustainable development is the core principle under pinning planning". It also acknowledges "good design ensures attractive, usable, durable and adaptable places and is a key element in achieving sustainable development".

2.1.3 Planning authorities are advised to promote high quality inclusive design that provides for vibrant, sustainable communities and also take into account climate change impacts. The supplement to PPS1, Planning and Climate Change places specific emphasis upon integrating climate change considerations into planning and ensuring that developments maximise efficiency and the use of renewable energy and minimise environmental impacts.

2.1.4 **PPS3: Housing** requires that Local Planning Authorities "encourage applicants to bring forward sustainable and environmentally friendly new housing developments" and acknowledges "good design is fundamental to the development of high quality new housing, which contributes to the creation of sustainable, mixed communities".

2.1.5 **PPS25: Development and Flood Risk** aims to ensure that flood risk is taken into account in all stages of development. It advises, "reducing flood risk to and from new development through location, layout and design, incorporating sustainable drainage systems (SUDS)". This PPS was updated with the PPS25 Practice Guide in 2009, in response to the Pitt Review. This places greater emphasis upon surface water management and its integration within the planning system.

Code for Sustainable Homes

2.1.6 The Code for Sustainable Homes is a national standard for the sustainable design and construction of new homes that was introduced in 2006. This provides a 1 to 6 level rating system based on the performance of the building against a set of 9 criteria. These criteria

SPD 1: Sustainable Design Guide

relate to energy and carbon dioxide emissions, water, materials, surface water run-off, waste, pollution, health and well being, management and ecology.

2.1.7 Nationally, achievement of Code Level 3 is mandatory for all publicly supported developments. This was introduced over the following timeframes:

- From April 2007 – all homes developed by English Partnerships or with support from the Government's housing growth programmes.
- From April 2008 – all homes developed using funding from the Housing Corporation
- From May 2008 – all new housing promoted or supported by the Welsh Assembly Government or Assembly Government Sponsored Bodies (AGSBs).

In Stockton Borough, Policy CS3 of the Core Strategy requires that all new residential developments achieve a minimum of Code Level 3 up to 2013 and a minimum of Code Level 4 thereafter.

2.1.8 The Government has set a target that will require all new homes to be zero carbon, the equivalent of level 6 of the Code for Sustainable Homes, from 2016. This will be reflected in revisions to Part L of the Building Regulations by 2016 and is reflected in Core Strategy Policy CS3.

Building Research Establishment Environmental Assessment Method (BREEAM)

2.1.9 BREEAM is a widely used quality assurance scheme that assesses the environmental performance of buildings in the following areas:.

- Management: overall management policy, commissioning site management and procedural issues;
- Energy use: operational energy and carbon dioxide issues;
- Health and well being: indoor and external issues affecting health and well being;
- Pollution: air and water;
- Transport: transport related carbon dioxide and location related factors;
- Land use: green and brownfield sites;
- Ecology: ecological value conservation and enhancement of the site;
- Materials: environmental implication of building materials, including life-cycle impacts;
- Water: consumption and water efficiency.

SPD 1: Sustainable Design Guide

2.1.10 Following assessment against the above criteria, the building is rated as Pass, Good, Very Good or Excellent. Policy CS3 of the Core Strategy requires that non-residential developments within Stockton Borough achieve a minimum rating of Very Good up to 2013 and Excellent thereafter.

Building a Greener Future

2.1.11 This is a policy statement that confirms the Government's intention for all new homes to be zero carbon by 2016 with a major progressive tightening of the energy efficiency building regulations – by 25 per cent in 2010 and by 44 per cent in 2013 - up to the zero carbon target in 2016 (Code for Sustainable Homes levels 3, 4 and 6 respectively).

Building Regulations 2000 (as amended)

2.1.12 Whilst the compliance of a development with Building Regulations is outside of planning, and is instead handled by Building Control, it is important to be aware of the technical requirements of the regulations. It is considered that Part L (Conservation of Fuel and Power) of the Building Regulations is a key driver behind the move towards more sustainably designed developments. Part L promotes energy efficiency and was revised in 2010 to improve the energy performance requirements.

Flood and Water Management Act 2010

2.1.13 Flood and water management received royal assent on 8th April 2010, with the creation of the Flood and Water Management Act 2010. The aim of this Act is to improve the current regime for managing the risk of flooding and coastal erosion and to improve the sustainability of our water systems.

2.1.14 The Act includes a requirement for the publication of a set of national standards for the design, construction and operation of sustainable drainage systems. Developers will be required to gain approval for any surface water drainage systems from the Local Authority, or SUDS Approving Body, and these systems will need to comply with the national standards. There will be no automatic right to make a new connection to a surface water sewer (amending section 106 of the Water Industry Act 1991).

Other relevant government and best practice guidance includes:

By Design (DETR, 2000)
By Design – Better Places to Live (DETR, 2001)
Inclusive Mobility (Dtp, 2002)
Manual for Streets (DfT, 2007)
Places, Streets and Movement (DETR, 1998)
Safer Places: The Planning System and Crime Prevention (ODPM, 2004)
Secured by Design (ACPO CPI, 2004)
UK Renewable Energy Strategy (DECC, 2009)

2.2 Regional and Sub-Regional Policies and Guidance

The Joint Tees Valley Minerals and Waste Core Strategy

2.2.1 This plan will set out strategic and detailed policies for meeting known and anticipated waste management requirements and will provide policies to ensure the efficient use of resources. Policy MWP1, requiring a waste audit for all major development proposals, will be of particular relevance.

Tees Valley Green Infrastructure Strategy 2008

2.2.2 The Strategy provides a framework for the planning, development and on-going management of green infrastructure across the Tees Valley: including green spaces, countryside, semi-natural habitats, trees, water bodies and other environmental assets. It highlights the need for green infrastructure to be planned strategically and delivered in an integrated way, demonstrating how this will help to deliver a broad range of economic, social and environmental benefits.

2.2.3 The Strategy sets out a vision for a strategic network of green infrastructure across the Tees Valley, providing an enhanced environmental setting for existing and new development. It also emphasises the importance of integrating green infrastructure into new development, contributing to its long term sustainability.

www.stockton.gov.uk/citizenservices/environment/parksandopen/programmesandprojects/greeninfrastructurestrategy/

Tees Valley Residential and Industrial Estate Design Guide and Specification

2.2.4 The guide is to be used during the preparation of schemes for new developments and sets out the basic principles which should be followed in terms of providing safe, convenient and functionally effective road, footpath and cycle routes, whilst ensuring that they contribute to the overall attractiveness of the site and its setting.

www.middlesbrough.gov.uk/ccm/navigation/transport-and-streets/roads-and-highways/developers-guidance/

Other Regional Strategies and Guidance

Building in Sustainability: A guide to sustainable development and construction in the North East. (Sustaine) www.buildinginsustainability.co.uk
Regional Micro Renewables Toolkit (NaREC) www.strategyintegrationne.co.uk/

2.3 Local Policies and Guidance

2.3.1 This SPD provides further guidance on the policies contained within the Local Development Framework, in particular Core Strategy Policy CS3. It also has regard to other plans and strategies produced by Stockton Borough Council.

Key Core Strategy Policies

CS2 – Sustainable Transport

2.3.2 This policy is also relevant to the SPD as it includes a requirement for new developments to be on sites that are adequately serviced by public transport, footpaths and cycle routes.

CS3 – Sustainable Living

2.3.3 Promotes sustainable living within the Borough by balancing growth with environmental considerations. The policy includes requirements for developments to improve their energy efficiency, provide energy from renewable sources, to make a positive contribution to the local area and to be designed with safety and adaptability in mind.

CS8 – Housing Mix and Affordable Housing Provision

2.3.4 This policy sets out the Council's requirements for housing densities, affordable housing provision and the mix of housing types that is required.

Regeneration DPD

2.3.5 This Development Plan Document will set out the Council's site allocations and will include policies relating to the identified housing sites, economic regeneration, community facilities and transport. The Regeneration DPD will also define some areas of distinctive character within the Borough and will require new development to respect this character.

Climate Change Action Plan – 2009 to 2020

2.3.6 This plan pledges to reduce greenhouse gas emissions in the Borough by 21% from 2005 levels and covers the period from 2009 to 2020. These emissions are to be cut through more efficient energy use, renewable energy, waste management, sustainable transport and green procurement.

2.3.7 The plan objectives set out below are the objectives that are most relevant to this SPD:

- Mitigation Objective 1 – Reduce carbon emissions from the domestic housing sector;
- Mitigation Objective 2 – Incorporate sustainability principles in all new housing developments by Oct 2009;
- Adaptation Objective 1 – Minimising flood risk in Stockton Borough;

SPD 1: Sustainable Design Guide

- Adaptation Objective 2 – Adapting Stockton’s built environment to improve resilience to climate change.

Supplementary Planning Documents

2.3.8 The Sustainable Design Guide SPD should also be used in conjunction with the following SPDs that have already been adopted by the Council. All of the Council’s SPDs can be found at:

www.stockton.gov.uk/citizenservices/planningdepartment/dev_plans/ldfhome/spdpage/

Open Space, Recreation and Landscaping SPD

2.3.9 This document contains standards for the quantity, quality and proximity of open space and built sports and recreation provision. The landscaping section outlines what is expected in the design of landscaping schemes in new developments.

SPD3: Parking Provision for Developments

2.3.10 This document sets out the Council’s parking standards associated with new developments.

SPD6: Planning Obligations

2.3.11 The purpose of this document is to provide developers, planning officers and the public with information and guidance concerning the Council’s approach towards securing planning obligations associated with development within the Borough.

Draft Shop Front and Advertisements SPD

2.3.12 The purpose of the SPD is to encourage and create high quality shopping environments and it aims to improve the quality of the street scene and to ensure that shop front and advertisements respect the character and appearance of the building and surrounding area.

2.4 Other Documents

2.4.1 Stockton-on-Tees Green Infrastructure Strategy – The Strategy will provide a framework for the future development and management of the Borough’s green infrastructure. It aims to enhance the Borough’s green infrastructure and to maximise the contribution it makes to the environment, local economy and people’s quality of life. Together with the Tees Valley Green Infrastructure Strategy it sets out a vision for an integrated green infrastructure network across the Borough.

2.4.2 Stockton Borough Landscape Character Assessment - The study provides an analysis of the varied landscape that exists within the borough, assessing its character and qualities, and where appropriate indicating how it has been influenced in the past to create the diverse landscape we see today. The study also provides guidelines for the

SPD 1: Sustainable Design Guide

future management of the landscape and potential landscape conservation measures.

- 2.4.3 Historic Landscape Characterisation Study – Undertaken by Tees Archaeology in conjunction with North Yorkshire County Council and English Heritage, the study seeks to identify and interpret the historic development of today's landscape. It places emphasis on the contribution that past historic processes make to the character of the landscape as a whole, not just selected 'special sites' and can contribute to a wider landscape assessment. This will help to guide decisions on its future change and management. It is important to ensure that the landscape evolves in a way that leaves it as rich and diverse in the future.
- 2.4.2 Stockton Town Centre Urban Design Guide – The design guide provides a framework for the future regeneration of the town centre. It creates a sound basis of understanding of the built form and how this can be preserved and enhanced by providing design guidance for areas undergoing change and identifying areas where growth or change needs to be promoted within the centre.
- 2.4.3 The design guides listed below have been produced by Stockton Borough Council to provide additional guidance to the design of open space in new development and are referred to within this document. They should be requested from the Countryside and Greenspace Team at countrysideandgreenspace@stockton.gov.uk.
- Design Guidance Notes for Installation of New Play Areas
 - Detailed Guidance Notes for Open Space to be Transferred to the Council for Future Maintenance.

3.0 Site

3.1 Site Selection

3.1.1 The Council will encourage developers to locate schemes on sites that are well served by public transport links, cycle ways and footpaths and that allow easy access to local facilities and services, in order to reduce the reliance on private vehicles. Priority should be given to the location of housing upon previously developed land in order to assist the Council in achieving a target of 75% of dwelling completions on previously developed land.

3.2 Development Setting

3.2.1 It is important that a development responds to its setting and fully integrates with its surroundings. In order to understand the context of the site, a full site appraisal should be carried out prior to designing the development. This can be included within the Design and Access Statement, which must be submitted with planning applications for residential and commercial development.

Guidance on the production of a design and access statement can be obtained from the Commission for Architecture and the Built Environment (CABE).
www.cabe.org.uk.

3.2.2 The site appraisal should aim to devise a sympathetic design that takes into account the context of the development. It should analyse and provide consideration of the following:

- Physical constraints, such as watercourses, steep slopes, orientation etc;
- Any area of potential contamination;
- Existing buildings and structures on and adjacent to the site;
- Any other manmade features and statutory undertaker apparatus;
- Existing highway infrastructure;
- Relationship to adjoining areas;
- Ecological and landscape features and existing trees and hedgerows on and adjacent to the site;
- Movement patterns and desire lines across and around the site;
- Views into and out of the site and landmarks in the surrounding area;
- Character and density of the surrounding area and any historical features;
- Wet areas and areas of potential flood risk;
- Wildlife habitats and any environmental designations on the site or in the surrounding area.

SPD 1: Sustainable Design Guide

3.2.3 The extent to which these, and any other matter, needs to be considered would depend upon the individual site, its scale and location and the sensitivity of its surroundings. All of these details, and more, may be used to devise a basic sympathetic layout before the highway infrastructure is considered.

Further detail on site appraisal is outlined in the Open Spaces, Recreation and Landscaping SPD.

4.0 Design Principles

4.1 Commercial Developments

4.1.1 Due to the large variety in commercial developments and their multitude of uses, the chapter on Design Principles is aimed primarily at residential developments, unless otherwise stated. However, there are a number of fundamental design considerations that apply to all developments.

4.1.2 Developers of commercial developments should consider the design guidance given within this document and should have regard to the following issues when designing their scheme:

- The connectivity and accessibility of the development;
- Quality and longevity;
- The scale and massing of proposed buildings;
- The character and design of the proposal and the surrounding area;
- The amenity of the occupiers of neighbouring properties;
- Safety and security;
- Green infrastructure and the provision of high quality landscaping and open space;
- Highway layout and parking provision;
- Waste storage and collection.

4.2 Building For Life

4.2.1 Building for Life (BFL) is a national standard for well-designed homes and neighbourhoods that has been developed by the Commission for Architecture and the Built Environment (CABE) and the Home Builders Federation (HBF). It uses a series of 20 criteria to assess the quality of new housing developments, these include questions relating to environment and needs of the local community, the character of the development, streets, parking and pedestrianisation and design and construction.

4.2.2 The Council expects that developers of residential or mixed-use developments will take into account the Building for Life criteria when designing their scheme and this should be demonstrated within the Design and Access Statement. However, developers are not advised to provide their own scores for developments.

Further advice on the requirements of BFL can be found at www.buildingforlife.org.

4.2.3 Developers of schemes of 10 dwellings or more are recommended to submit details to the Council for a pre-application Building for Life assessment. The Council's accredited assessors will also carry out formal assessments of major developments, which will be registered with CABE.

Developers should aim to achieve a minimum rating of 14/20 (good) and developments achieving 10/20 or less (average/poor) would not normally be considered acceptable.

4.3 Connectivity

- 4.3.1 Any development should be integrated with the surrounding network of carriageways, bridleways, footways and cycleways. Consideration should also be given to potential use of river taxis for riverside developments.
- 4.3.2 The design of the development should ensure maximum connectivity with the surrounding areas and consideration should be given to how residents will move through a site to gain access to neighbouring facilities. Desire lines should be established and used to assist in the formation of a network of highways and access points, which should offer a choice of routes to all destinations.

4.4 Density and Housing Mix

- 4.4.1 Residential developments are expected to be at densities that are appropriate to their surroundings and respect the character of the area. Average densities of 30-50 dwellings per hectare should be achieved in the Core Area and in locations that have good public transport links. Higher densities may be appropriate in the centre of urban areas and where there is a high level of public transport accessibility, subject to considerations of sustainability and character. Densities of lower than 30 dwellings per hectare may be appropriate in areas that are characterised by dwellings with large gardens.
- 4.4.2 A design led approach should be used to maximise the potential of the land and innovative layout design can be used to ensure that high density developments do not compromise the character of an area.
- 4.4.3 Developments should also seek to provide a balanced mix of housing types that are appropriate to the local context. Any affordable housing provided within the development should be fully integrated and any differentiation between individual dwellings and parts of the scheme, based on tenure, should be avoided.

4.5 Layout and Movement

- 4.5.1 The layout should be initially suggested by the topography and natural desire lines of the site, unless remediation is required, and should not be based solely upon the technical demands of traffic movement. Where applicable, new developments should respond to any distinctive street patterns within the local area and the layout out should be based on a strong arrangement of buildings and spaces. Sites adjacent to areas of strong identity must have regard for their setting and building

pattern, and seek to integrate with the surrounding layout, and any existing buildings on site, through sympathetic orientation.

4.5.2 The layout and orientation of the site should also take into account any mature trees and woodlands on or adjacent to the site. This is to ensure that development is located at an acceptable distance from trees, to allow for future growth and to prevent damage to and from canopy spread. This will also prevent excessive shading of properties and nuisance for future occupiers.

4.5.3 A common method of road layout for residential developments is to have multiple cul-de-sacs emanating from a network of spine roads. This approach shall be discouraged, as it does not promote sustainable travel. However, it is not sufficient to simply replace cul-de-sacs with loop roads, as the end result is the same: limited permeability. Instead, the use of perimeter blocks is encouraged as these provide a legible development with clearly defined spaces, strong frontages and maximum natural surveillance.

The Tees Valley Residential and Industrial Estates Design Guide and Specification should be used when designing road, footpath and cycleway layouts.
www.middlesbrough.gov.uk/cm/navigation/transport-and-streets/roads-and-highways/developers-guidance/

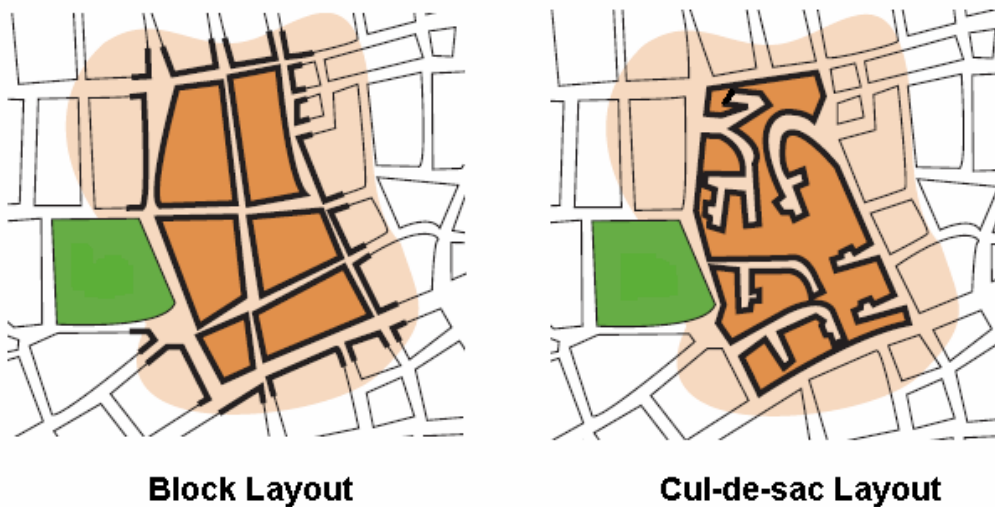


Figure 1: Comparison of Street Layouts.

4.5.4 While perimeter blocks should be the preferred option, it is acknowledged that this type of layout would not always be appropriate. In circumstances where cul-de-sacs and loop roads are used, adequate pedestrian and cycle permeability should be maintained and these links should be adequately overlooked from neighbouring dwellings. In all cases, streets should be designed to encourage pedestrian penetration and cycle movement. Wider, well-lit footpaths and cycle ways are required within and around the development. These should be direct, convenient and, where possible, should be accommodated within the street rather than segregated.

SPD 1: Sustainable Design Guide

- 4.5.5 The development should be laid out to avoid the rear elevations of properties and private enclosed gardens facing on to highways. Active frontages should line the streets and the principle of 'public front, private back' should be adopted. This will enhance the sense of place and the relationship of the development with its surroundings as well as increasing security.
- 4.5.6 Where this is not possible, careful consideration should be given to landscaping, boundary treatments and lighting to ensure that the street remains attractive to pedestrians and contributes to the character of the area. It will not be acceptable to provide long stretches of timber fencing adjacent to public areas and highways.



Facing private gardens onto highways reduces the sense of security and place.

4.6 Scale, Massing and Height

- 4.6.1 The scale, massing and height of the any proposed development should be considered in context with its surroundings. The general pattern of heights in an area should be followed but this does not require uniformity of design. Higher buildings can be used as landmarks within a development in order to improve navigation and variations in the building line can create visual interest on the street.
- 4.6.2 However, the height of buildings should relate to the width of the street on which they stand and should also have regard to the potential for overlooking and overshadowing of neighbouring buildings. It is generally considered that a successful balance between height and width on a residential street is a ratio of 1:1 for a mews, 1:3 for a general street and 1:4 for a square.

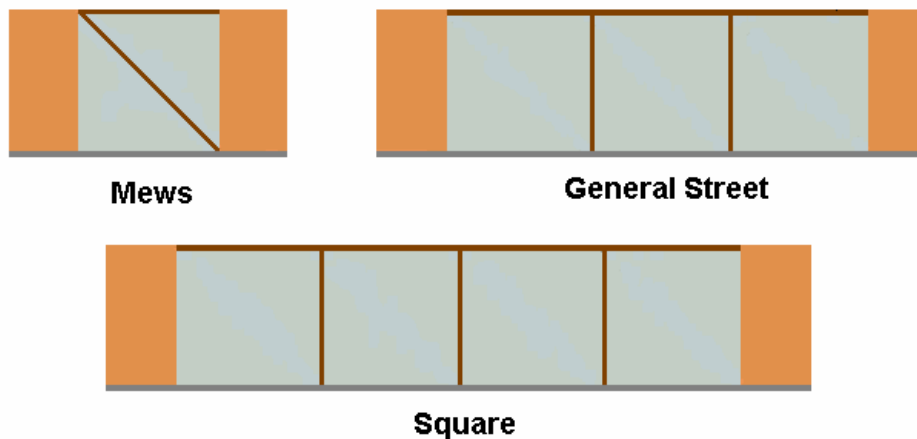


Figure 2: Height to Width Ratios of Three Residential Streets.

4.7 Character and Design

- 4.7.1 The use of stock housing types within new residential developments shall be discouraged, as they do not respect local architectural styles, materials or character. However, unlike many places, there is no single 'Stockton style' to adopt. Therefore new development should respect the character of the sub-location within the Borough.
- 4.7.2 Developers are not required to recreate historic buildings or to copy the style of surrounding architecture. Instead, the design should respond to the scale and materials of the surrounding buildings and should interpret the dominant features of the area. Contemporary buildings that complement or enhance the area are encouraged.
- 4.7.3 In the interests of economy, developers need not produce individual designs for every house, however developments should incorporate a variety of dwelling designs that respect the key design themes of the surrounding area. Variations in facing materials, building footprints and architectural details should be used in combination with key landmark features and buildings to ensure that no two streets are the same.
- 4.7.4 New dwellings should be designed with significant attention given to proportions, materials and detailing, in order to provide architectural quality and to respect existing character. Porches, recessed garages, dormer roofs, bay windows and other simple details can add a third dimension to otherwise flat-fronted dwellings, and therefore more architectural interest. However, form should follow function and such details should not be used where they will serve little or no purpose other than aesthetic.
- 4.7.5 The same attention should be given to affordable housing. Where a development is to include a proportion of affordable housing on site, differentiation between individual dwellings of different tenure types

SPD 1: Sustainable Design Guide

should be avoided. Any affordable housing should be fully integrated with market value housing.

- 4.7.6 Particular consideration should be paid to the design of buildings in corner locations. These properties will be prominent within the development and can aid navigation through the site. They can also provide greater security by having windows that face in different directions and by preventing gable walls from facing the street.



A building that is specially designed for a corner location can become a landmark and improve the feeling of security by providing good surveillance of the street.

4.8 Privacy and Amenity

- 4.8.1 Providing a balance between the natural surveillance of public areas and excessive overlooking of private areas can be difficult to achieve but is important. Private garden areas should not be subject to an inordinate level of overlooking from public spaces or neighbouring properties.
- 4.8.2 The Council will normally expect a minimum of 21 metres separation to be provided between the main habitable room windows on facing residential properties. Where main habitable room windows will face windows of secondary rooms, such as bathrooms and hallways, or a blank gable, there should normally be a gap of at least 11 metres between the two properties. However, it is advisable to seek pre application advice, should a development involve this relationship, as the required separation distance will depend upon individual circumstances and may need to be increased.
- 4.8.3 A significant variation in ground levels between properties or differences in the number of stories between dwellings may require an increase in the separation distance, in order to prevent an unacceptable overbearing impact. Where a building is above two-stories in height, an additional 4m distance should be provided for each additional storey. Where there are differences in ground levels the separation distance should be increased by 2m for every 1m rise.

4.8.4 The above residential standards may be applied flexibly, where the context of the site demands. Innovative design solutions, creativity in external and internal layouts and the careful use of landscaping and boundary treatments could all be employed to achieve satisfactory levels of privacy and may allow a reduction in the separation distance.

4.9 Security and Safety

4.9.1 Developers will need to consider crime prevention and public safety when considering the design of any development. Secure by Design principles should be followed.

4.9.2 In order to provide a level of natural surveillance, which helps to provide the feeling of a safe and secure environment, buildings should front onto the street and open space areas. Where possible housing developments should be laid out so that streets, pathways and parking and amenity areas are overlooked by habitable room windows.

4.9.3 Primary access to properties should be from the street and should be clearly visible. Blank gable walls, adjacent to access ways, should be avoided.

4.9.4 Where parking and service areas are provided in courtyards, care should be taken to ensure that these areas are well lit and there is a good level of surveillance. Accesses to parking areas from the highway should be designed so that they appear private.

4.9.5 The use of lighting is encouraged to improve security and reduce crime, especially in parking and public areas. However, the design of lighting needs to be carefully considered to keep light pollution to a minimum, as this can result in problems for neighbouring residents. Inappropriate lighting can also have a harmful effect on ecology, especially along watercourses.

4.9.6 Secured by Design principles should also be considered when designing soft landscaping, particularly as regards boundary planting and screening. Care should be taken to ensure that the proposed landscaping does not provide hiding places or access to the upper floors of buildings, and thus create opportunities for crime.

4.9.7 There should be a clear distinction between public and private spaces and adequate spacing should be provided. Where dwellings are positioned in close proximity to highways and public areas, a physical barrier should be provided to give privacy to ground floor windows and extra security for the residents. This may be in the form of a buffer strip with planting, railings or low walls. Where dwellings are built adjacent to multi use open space or active recreation amenity space, suitable fencing or railings should be incorporated at the front of the property.



Railings can be used to separate public and private realm and to give privacy to dwellings immediately adjacent to highways.

4.10 Inclusive Design and Flexibility - Lifetime Homes

- 4.10.1 A sustainable development should provide homes that can adapt to changing lifestyles. A dwelling that is designed with a flexible internal space can provide accommodation that will change with the needs of its inhabitants.
- 4.10.2 The potential for a later extension or loft conversion is an important consideration. The living space should also be adaptable. The use of partition doors between habitable rooms provides a choice between open plan or separate rooms and ensuring that the outside walls carry the structural loads allows for internal partitions to be moved to suit the needs of the occupant.
- 4.10.3 The Council requires that all new homes are built to Lifetime Homes Standards by 2013 and the standards have also been incorporated into the Code for Sustainable Homes. The Lifetime Homes Standards are a series of 16 design criteria that aim to improve the accessibility and adaptability of new dwellings. The criteria includes the provision of a cover for main entrances, level access, turning space for wheelchairs and available space for a through-the floor lift to be fitted at a later stage.

Further information on the remaining criteria and requirements of the standards can be found at www.lifetimehomes.org.uk.

4.11 Green Infrastructure

- 4.11.1 Green infrastructure comprises of all types of open spaces, landscaped areas, water bodies, natural and semi-natural habitats and other environmental assets, such as trees and cycle ways. Through effective planning and management these spaces and assets can:
- Perform many functions, such as formal and informal recreation, nature conservation, food protection, enhanced settings for existing

SPD 1: Sustainable Design Guide

and new development, routes for walkways and cycle ways, areas for flood risk management and act as an educational resources.

- Deliver a wide range of health, social, economic and environmental benefits, contributing to long-term sustainability.

4.11.2 Green infrastructure planning should be a key consideration in the design of new developments; helping to maintain and enhance existing assets and creating new multifunctional green infrastructure to deliver multiple benefits. Importantly green infrastructure should be planned as a network of spaces and assets, with new developments helping to maintain or enhance connectivity and enhancing the functionality of the wider network.

Open Space and Landscaping

4.11.3 The provision of high quality open space and landscaping is a key part of any successful development as the space around properties, roads and footpaths is equally important to the design of a development as the buildings themselves. The Council will expect developments to include open space and landscaping that is designed to a high standard, is integral to the overall scheme and, wherever possible, integrated with the wider green infrastructure network.

Open Space

4.11.4 Developers will be expected to provide, or contribute to, a level of open space that is in line with the guidance given within the Open Space, Recreation and Landscaping SPD. Where open space is to be provided on site, the following design principles should be followed.

4.11.5 Open space should be considered as being integral to the overall design of the development and should be located to contribute to the character of the development and to connect to existing green infrastructure. The open space should be of a useable size and shape and should be fit for purpose and it would not be acceptable to locate open space on land that is merely left over space from the development or has an alternative primary function (eg: service corridor/ sound attenuation buffer etc), as these areas are unlikely to provide the required level of amenity, would contribute little to the overall design and can become a source of anti-social behaviour and nuisance for neighbouring residents

4.11.6 The development should be laid out so that the active frontages of dwellings face onto the areas of open space. This creates a pleasant, open outlook from neighbouring dwellings and provides natural surveillance for the open space. Developers should avoid locating open space to the rear of properties, as this can result in open space being under used and can create areas for anti-social behaviour. Carefully considered landscaping should be used to provide a buffer between

SPD 1: Sustainable Design Guide

the dwellings and the open space, while still maintaining the open aspect.

- 4.11.7 Areas of open space should, wherever possible, be multi-functional and can provide a significant contribution towards the mitigation of flood risk. Green spaces can be designed to incorporate sustainable drainage schemes that contribute to the amenity of an area of open space whilst providing for the drainage of surface water, and other adaptations that can help to mitigate against climate change.
- 4.11.8 Where development is to take place on a site that is at risk, or partial risk of flooding, open space should be located in the areas that are most at risk, in accordance with Planning Policy Statement 25: Development and Flood Risk. For development adjacent to watercourses a buffer zone of between two and 20 metres, depending on the watercourse's biodiversity value, should be established along its banks.
- 4.11.9 Areas of open space should be clearly designed for their intended purpose and should be easily accessible for local residents and for ease of maintenance. Where an area is intended to be transferred to the Council for future maintenance, the design guidance given within the document *Detailed Guidance Notes for Open Space to be Transferred to the Council for Future Maintenance* should be followed.



Developments should be designed so that dwellings overlook areas of open space. Landscaping can provide a buffer between open space and private dwellings to prevent nuisance.

Landscaping

- 4.11.10 Detailed landscaping should be provided in line with the guidance given within the Open Space, Recreation and Landscaping SPD. General landscaping points are discussed below.

SPD 1: Sustainable Design Guide

Hard Landscaping

4.11.11 This includes all hard surfaces, enclosure and street furniture to be retained or created, including both pedestrian and vehicular surfaces, steps, walls, fences, seating, cycle shelters and other street furniture and lighting, including both street/car park lighting and building lighting. The importance of aesthetic value, site context, practicability and longevity of materials needs to be considered, as well as long term maintenance when designing appropriate hard landscaping. Where hard landscaping is to be adopted by the Council under Section 38 of the Highway Act 1980, the design guidance given within the Tees Valley Highway Design Guide And Specification should be followed.

4.11.12 The street scene refers to the design quality of the street and its visual effect. It should be attractive and interactive, with a sensitive use of materials, have active frontages and be clean and safe. The choice of the materials used needs to reflect the local character whilst, at the same time, providing a fit-for purpose, maintainable streetscape treatment. In addition, as much as possible of the materials used should be locally sourced and/or recycled. Where practicable a creative and innovative design approach to street scene works should be applied to reduce street clutter. For further information on street scene materials and furniture, including Planning Obligations regarding off-site financial contributions to the street scene, please contact the Council's Urban Design team at technicalservices@stockton.gov.uk

Soft Landscaping

4.11.13 Trees and woodlands play an important role in the sustainability and greening of our towns and cities. They provide a wide range of benefits to local communities and make a substantial contribution to the attractiveness and quality of the built environment. They are a major element of green infrastructure and therefore represent an important environmental asset that needs to be integrated into all aspects of new development and urban regeneration.

4.11.14 Developers should recognise the value of trees in the landscape and carefully consider the integration of both existing trees and new trees at the early stages in the planning and design of a new development project and before the drafting of building layout proposals.

4.11.15 Larger mature trees often provide the greatest benefits to a development and favouring the inclusion of any high value existing trees within the layout design will usually improve the quality and sustainability of new development. However, this also requires careful consideration of the location, dimensions and orientation of buildings and associated structures to ensure good compatibility and overall satisfactory design.

SPD 1: Sustainable Design Guide

4.11.16 Existing native hedges and associated features, for example ditches, should also be retained, wherever possible, and the hedge line supplemented with additional native planting especially where they are part of the character of the area. Native hedge planting should also be used to integrate development into rural areas and on urban fringe schemes. Some hedgerows may have formal protection under the Hedgerow Regulations 1997 and there is a presumption against their removal, which may require permission from the Local Planning Authority.

4.11.17 The site appraisal, on which the soft landscape proposals should be based, must include all existing vegetation within the site and within a minimum of 10m beyond the red line application boundary, whether the vegetation is to be retained or removed. This includes areas of grass, trees and woodlands and all water features, such as streams and ponds. For planting schemes, the developer should submit an appropriate landscape design, which illustrates all existing vegetation, including any to be removed, and appropriate and sustainable additional soft landscape treatment. The design should demonstrate that the existing vegetation and proposed trees and shrubs would have sufficient space to grow and that any new planting, notably trees, would not cause any future problems relating to surrounding buildings, hard surfaces, traffic sight lines, services and/or members of the public.

Further detail on site appraisal is outlined in section 8.4 to 8.6 of the Open Space, Recreation and Landscaping SPD

Points to Consider

4.11.18 It is particularly important to place the development proposal in context when presenting landscape proposals so that the existing and future impact of plant growth can be fully considered.

4.11.19 In order to avoid planning delays at a later stage the provision of adequate landscape information should be considered at the outset of a development. Often it is not appropriate to confirm the precise details of landscaping, such as paving, means of enclosure or the inter-relationship of planting at an early stage but the space to provide the necessary landscaping and tree positions and any constraints, such as private and statutory services, must be clearly illustrated on the submitted drawings.

4.11.20 Applicants are encouraged to enter into pre-planning application discussions with the planning officer prior to the formal submission of an application. The developer should ensure the landscape principles for a development, including compliance with any adopted Design Guides and/or Masterplans, are provided within the Design and Access Statement submitted as part of the planning application.

SPD 1: Sustainable Design Guide

- 4.11.21 Where trees in particular forest species e.g. Oak (*Quercus robur*) and Ash (*Fraxinus excelsior*), are located or proposed in close proximity to the proposed development then building foundations shall be constructed to facilitate retention of these species whilst conforming to the building control regulations or other guarantees, for example National House Builders Council www.nhbc.co.uk/Homeowners
- 4.11.22 Applicants should ensure that any development plans illustrating existing trees and proposed tree planting shall also be submitted as part of the Building Regulation process to ensure that building control is fully informed of the development proposals.
- 4.11.23 Applicants should ensure that their development plans for private and Statutory Utility Services do not adversely impact on existing trees indicated for retention or prevent the planting of any trees proposed as an integral part of the development.
- 4.11.24 The Borough's Landscape Character Assessment provides a useful tool to help inform landscape design and landscape conservation measures in rural and urban fringe locations.

Gardens and Private Amenity Space

- 4.11.25 Most developments will provide a combination of communal space and private gardens. Where a development includes dwellings in individual plots, the private space provided should be in proportion to the size of the dwelling. In normal circumstances, leaving a minimum of two thirds of the available plot undeveloped will provide sufficient private amenity space. However, when a development is located in an area where garden size is important to its distinctive character, the provision of private amenity space is expected to be sympathetic to the surroundings.
- 4.11.26 Private amenity space should be of a useable size and shape and should be fit for purpose. For example, it will not acceptable to provide steeply sloping or awkwardly shaped rear gardens that cannot provide for the needs of the residents. Private amenity space may also be required for flatted developments.

Ecology

- 4.11.27 Developers are encouraged to create new habitats for wildlife within their schemes. Benefits for biodiversity can be incorporated into features that have other uses within a development. For example, green/brown roofs can be part of a SUDS scheme and can also provide insulation, as well as important wildlife habitats. SUDS schemes, in the form of ponds, swales etc., should also be used to create new wildlife habitats and increase biodiversity. If such schemes are to be provided in adoptable areas then early discussions are

SPD 1: Sustainable Design Guide

recommended. The Tees Valley Design Guide and Specification outlines the current requirements for the introduction of such schemes.

4.11.28 New green spaces can be connected to the local green infrastructure through the creation of new habitats, such as ponds, and the planting of suitable native trees, shrubs and wildflowers.

4.11.29 An ecological assessment should be carried out on any development site in order to identify the flora and fauna, the existing habitats and the presence of any protected species. Developers should seek to retain and enhance existing habitats and natural features on the site. Any ecological survey should be reflected in the landscape proposals and advice on the content of wildlife surveys can be sought from the Tees Valley Wildlife Trust.

Schemes for the creation of new habitat areas should pay attention to the Tees Valley Biodiversity Action Plan. www.teesvalleybiodiversity.org.uk

4.11.30 Removal of any vegetation should comply with the Wildlife and Countryside Act 1981. Where notifiable or other invasive weeds, such as Giant Hogweed or Japanese Knotweed, are present on site, measures for their control, in line with the Wildlife and Countryside Act 1981, will also be required to be demonstrated.

Further information on the control of non-native plants can be found at www.defra.gov.uk/wildlife-pets/wildlife/management/non-native/guidance.htm

4.12 Car Parking and Garages

4.12.1 Even in sustainable locations, parking for private motor vehicles should be incorporated within the development and guidance on the number of spaces to be provided for each property can be found within SPD3: Parking Provision for Developments. However, care should be taken to avoid parking areas, drives and garages dominating the street scene and having an intrusive visual impact.



Providing parking areas at the front of dwellings allows the street scene to become dominated by vehicles.

4.12.2 All parking should be designed as an integral part of the development, should be located in close proximity to neighbouring dwellings and

SPD 1: Sustainable Design Guide

should be easily accessible from these dwellings. A variety of options for car parking can be employed and successful developments often incorporate a mix of these parking options as this approach also provides for general visitor parking. Should garages be proposed as part of a development, they should be a minimum of 6 x 3metres in order to be considered as a car parking space.

4.12.3 Communal car parking areas can be a successful way of providing parking for a development and of removing the dominance of the car from the street scene. However, parking areas should be designed to avoid excessive unbroken areas of hard surfacing. The design of a development using courtyard-parking areas also needs to address the arrangement of dwellings, parking and gardens to ensure that the size of rear gardens and the amenity of neighbouring residents are not unduly affected.

4.12.4 'Secured by Design' principles should be adopted when designing parking facilities and access routes. Parking areas should be overlooked by neighbouring dwellings and should be well lit. Landscaping should be provided to break up the layout of large parking areas, but should avoid reducing the feeling of safety by screening areas from view.



It is not sufficient to ensure that a parking area is well lit and has a high level of surveillance from neighbouring properties. In order for the parking area to be successful it is important that care is taken to ensure that large areas are broken up and that the privacy and size of rear gardens is not undermined, as in this case.

4.12.5 When in-curtilage car parking is provided, preference should be given to the provision of parking at the side or rear of dwellings. Developers should consider setting garages back from the front of the dwelling to allow car parking to be at the side so as to reduce the dominance of vehicles in the street scene.

SPD 1: Sustainable Design Guide

- 4.12.6 Consideration can also be given to the provision of on-street parking, as this can provide activity within the street and contribute to traffic calming. This approach is often popular with residents and can reduce the incidents of cars parking partly upon the pavement. However, this needs to be carefully considered to ensure that highway safety is maintained and to prevent the parking dominating the street scene. Areas of on-street parking should be interrupted at intervals and can be demarcated by paving and street trees.
- 4.12.7 Basement or undercroft parking can also be considered within a development and this is often a successful way of providing for vehicles while maintaining the street frontage. Should under ground parking be provided, access design and safety and security are important considerations.
- 4.12.8 Sustainable Drainage Systems (SUDS) will be required in car parking designs.

4.13 Cycle Parking

- 4.13.1 Secure cycle parking should be provided in all schemes and should be in line with the provisions of SPD3. This parking should be provided in a location that is convenient for both residents and visitors and has a good level of natural surveillance.
- 4.13.2 Cycle parking should be designed as an integral part of the development and developers are encouraged to consider internal cycle storage solutions, or integral stores with outside access, as these have a higher level of security and less visual impact than external cycle shelters.

4.14 Travel Planning

- 4.14.1 In association with SPD3: Parking Provision for Developments, developers should encourage alternative modes of transport to reduce the volume of single occupancy vehicle trips through a robust Travel Plan.

4.15 Home Zones

- 4.15.1 Home Zones are residential areas designed with streets to be places for people, instead of just for motor traffic. Home Zones allow the street and public realm to become areas for social interaction and play and are encouraged in new developments.

Developers should refer to guidelines published by the Institute of Highway Incorporated Engineers (IHE) when including a Home Zone in a scheme.
www.homezones.org.uk/

SPD 1: Sustainable Design Guide



(www.courtyardhousing.org.uk)



(www.futurecommunities.net)



(www.sustrans.org.uk)

- 4.15.2 Any Home Zone must be designed to minimise the speed of traffic passing through the zone. Shared surfaces, a curving street layout with short forward visibility and build outs, planted areas and street trees are all features that influence driver speeds. Entrance features should also be used to clearly indicate to drivers that they are entering an area designed for pedestrians. These features may include pillars, signs and changes in road surfacing. The area would ideally be designed as a 20mph zone.
- 4.15.3 The street should be designed to reduce the visual impact of the car and to provide areas for social activity. The creative use of trees, landscaped areas and street furniture would provide traffic calming and visual interest. Active frontages should be created and any front gardens should be minimal as these remove the dwellings from the street and reduce the community benefits of the Home Zone.
- 4.15.4 On-street parking is generally provided within the zones but should be located so that it does not dominate the street or impinge on other activities that may take place. Parking should be limited to small blocks that are interrupted by physical features, such as planting areas or street furniture, and opportunities for parking outside of designated areas should be removed.
- 4.15.5 When planning a Home Zone, attention should be given to the needs of children and people with disabilities. In particular, shared surfaces should be designed to take into account pedestrians with visual impairments. The current edition of the Tees Valley Design Guide and Specification details requirements and further information for the provision of home zones.

4.16 Waste Storage

4.16.1 All applications for new developments are expected to include a waste management plan. Developers of major schemes will be required to submit a waste audit that identifies the amount and type of waste which is expected to be produced by the development, both during and after construction. The audit should set out how this waste will be minimised and where it will be managed in order to drive waste management up the waste hierarchy.

4.16.2 Adequate bin storage areas, access for collection crews and vehicles, designated collection points (if required) and other aspects of waste management should be incorporated into the design at the planning stage, as these issues are difficult to apply retrospectively. To encourage residents to recycle waste, internal storage areas should ideally be designed into each unit to allow occupants to segregate their waste into recyclables and refuse.

Developers must notify the Council's Care for Your Area Department prior to the development being occupied so that arrangements can be made for the delivery of bins, recycling, containers and literature. Tel: 01642 391959 or email: careforyourarea@stockton.gov.uk

4.16.3 All developments should have designated external storage areas for waste containers. These areas should be carefully designed and sensitively located so as to avoid being conspicuous or causing a nuisance for neighbouring residents. The container storage areas should also be located so as to be convenient and accessible for both residents and collection crews.

4.16.4 Detailed guidance on waste storage and collection for all developments is provided within Appendix 1.

4.17 Backland Developments

4.17.1 Backland development is development that is situated on land (usually private garden) behind an existing dwelling. This type of development is generally out of view from the main street but still requires good quality design. Developers of these schemes should follow the general design principles within this document but it is also important that the new property avoids dominating the host property and is not larger in height, scale or massing than the host.

4.17.2 Private garden is classified as Greenfield land but this does not necessarily prevent development on these sites and all applications will be considered on their own merits. Nevertheless, the Council will often resist backland schemes as they can result in cramped developments that have an unacceptable impact upon the amenity of residents in neighbouring properties and upon local character. They may be appropriate under certain circumstances and this will generally be on larger plots or on sites that include land from a number of rear gardens. However, these schemes will also be resisted where the

SPD 1: Sustainable Design Guide

layout is not a common characteristic of the area or where large rear gardens are important to the distinctive characteristics of the area.

- 4.17.2 A common form of backland development is the provision of a new dwelling directly behind the existing. This is known as tandem development and often results in both properties being served by a shared access. The provision of an additional access point onto the highway for the new dwelling, alongside that of the host, will not normally be supported as it can result in significant impacts upon the street scene and pedestrian safety.
- 4.17.3 Access routes should be located at an appropriate distance away from the existing dwelling so as not to have a detrimental impact upon the amenity of these residents through noise and visual disruption. A suitable minimum separation distance is 3m from the edge of the access road to the edge of the nearest affected house, together with appropriate boundary treatment for screening. It may be necessary to increase this separation distance dependant on the location of habitable rooms and the frequency of use of the proposed access. This standard may also be relaxed, where the context of the site allows.

5.0 Environmental Sustainability

- 5.0.1 The construction and use of buildings leads to a range of significant environmental impacts, for example through water use, energy consumption, waste generation and the use of polluting materials. Improving construction methods and the environmental performance of new buildings can, therefore, make a significant contribution to sustainability and climate change adaptation.
- 5.0.2 Developers are required to seek to reduce the environmental impact of their developments and should include details of the environmental measures incorporated within the development with their application. This may be included in the Design and Access Statement or as a separate sustainability statement.

5.1 Energy Efficiency

- 5.1.1 The Council requires that at least 10% of the energy requirements of major developments, which include residential developments of 10 or more dwellings and non residential developments exceeding 1000 square metres gross floor space, is provided from renewable sources. As the energy efficiency of a development increases the amount of renewable energy provision required will be reduced. Energy efficient buildings also lead to lower fuel bills for occupiers.
- 5.1.2 Priority should be given to minimising the required energy use of the development before determining the installation of renewable energy supplies. Insulation measures, effective use of and tolerance to solar gain, inclusion of thermal mass to minimise diurnal and seasonal internal temperature variations and the use of controlled ventilation with heat recovery should all be considered.
- 5.1.3 Developers should, therefore, give early consideration to the most appropriate methods of improving the energy efficiency of their schemes and should seek to reduce the energy demand as much as possible. This energy demand should be quantified to enable benchmarking with the increasing availability of best practice examples as well as providing the base line to determine the proportion of on site energy demand that is met by renewable energy supply.

Construction and Materials

- 5.1.4 The reduction of heat lost from a property is one of the most important ways of maximising energy efficiency and adequate insulation can reduce the amount of heat lost from a residential property by up to 40% a year. High levels of floor, wall and roof insulation should be provided in all new buildings. Heat loss through windows can be reduced through specifying argon gas filled glazing or triple glazing.

SPD 1: Sustainable Design Guide

- 5.1.5 Developers should consider the use of materials with a high thermal mass. These are able to store heat during periods of higher temperatures and release it when outside temperatures cool, such as during the night, and can assist in reducing the need for artificial heating. The materials with the most thermal mass include brick, stone and concrete, which can be associated with other environmental impacts. Rammed earth provides a viable alternative with lower environmental impact in certain constructions and should also be considered.
- 5.1.6 All building materials will have an 'embodied energy' which is the energy that is used to extract or refine the material, to transport it to site, to deploy it and to dispose it of at the end of its lifetime. Locally sourced, reused materials have the lowest embodied energy. Concrete has a high embodied energy, but this can be balanced by the energy savings that come from its high thermal mass.
- 5.1.7 The Council recommends the use of locally sourced or re-cycled building materials, wherever possible, and developers are expected to give consideration to selecting the most sustainable building materials possible.

Solar Gain

- 5.1.8 The position and orientation of buildings will have a significant impact upon their energy efficiency. The principles of passive solar gain use the design and positioning of buildings to maximise the amount of natural heat and light that is obtained, thereby reducing the energy demand for heating and lighting. All developments should consider these principles.
- 5.1.9 In mixed height developments, taller buildings should, where possible, be located to the north of the site. This will avoid shading smaller buildings and maximise sunlight to all properties. Positioning car parking and garages to the north of buildings will also help to ensure that the development makes maximum use of available sunlight to reduce energy use through heating.
- 5.1.10 Buildings should be sited to take advantage of the southern aspect in order to maximise the available natural light and passive solar heat. They should be orientated to ensure that the main elevations are within 30° of due south. In dwellings, the principle habitable rooms should be positioned, as much as possible, within the southern side of the house and larger glazed areas should be located on elevations facing into the sun with the area of glazing on northern facing elevations being kept to a minimum. This solar gain will reduce heating costs and will have significant environmental benefits but should be balanced with the need to provide natural surveillance of public areas.

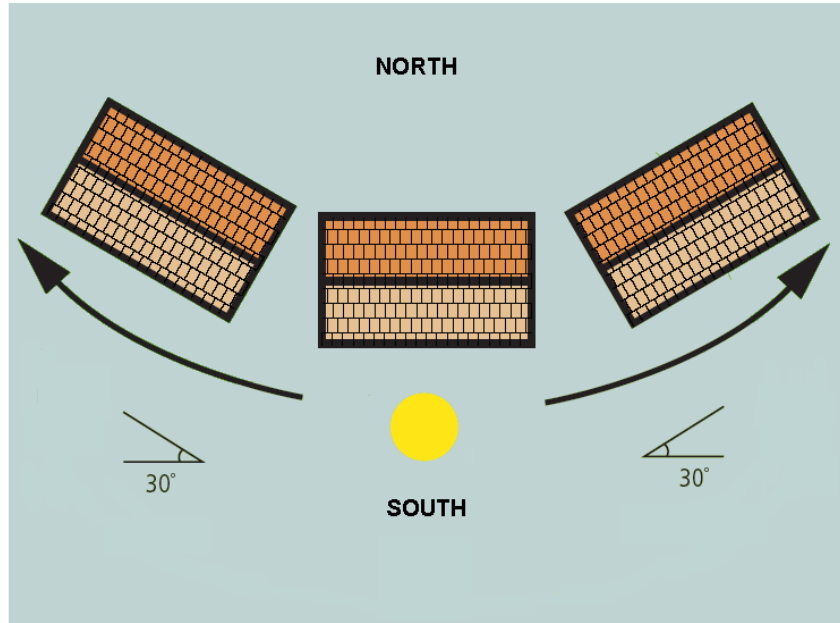


Figure 3: Dwelling Orientation for Solar Gain

5.1.11 It is also important that a balance is achieved between maximising the benefits from solar gain and causing over heating in summer. If a property becomes overheated, it may become necessary to install air conditioning, which will negate the benefits of reducing central heating. This is especially important in the case of office buildings and commercial buildings with a significant amount of glazing, as they can often attribute a large proportion of their energy use to artificial cooling.

5.1.12 In general, a south easterly orientation is generally preferred to south westerly as the early morning sun is less likely to cause over heating. Carefully considered planting, involving the use of deciduous species, may provide shading during summer and allow the benefits of solar gain during the winter months. It is also possible to use solar glass, internal window shades and blinds to achieve a balance. Incorporation of Photovoltaic (PV) cells in large areas of glazing may provide shading, as well as providing a renewable electricity supply to the building, and Brise Soleil shading systems can be used effectively on commercial buildings to reduce heat and glare.

5.1.13 Where proposed and existing mature trees are to be used to provide shading for properties, care should be taken to allow sufficient space for the development of the trees to maturity and future canopy spread.

Lighting

5.1.14 Developers should seek to maximise natural daylight and reduce the need for artificial light. In shallow buildings the use of light shelves and diffusers can ensure a high light level is maintained throughout the building. In deep building plots, or areas with no access to natural light,

sun pipes and internal atriums can be used to bring natural daylight into the area.

- 5.1.15 Supplementary artificial lighting should be of a low energy design. Individual control switches and motion sensors should be standard to allow maximum flexibility of lighting and to avoid lighting unoccupied areas.

Ventilation

- 5.1.16 Building ventilation is necessary to provide cooling, fresh air and for the removal of moisture and odours. Substantial energy savings can be made if buildings are designed to maximise the use of natural ventilation. Ventilation stacks and atria can aid the flow of air through a building, with warm stale air being guided up and out of a building by cooler, fresher air.
- 5.1.17 Utilising the thermal mass of a building can aid passive cooling and reduce the need for air conditioning or mechanical cooling, as the use of materials with a high thermal mass results in steady ambient temperatures within the building.

5.2 Energy Generation and Renewable Technologies

- 5.2.1 The Council requires that all major developments provide a minimum of 10% of their total predicted energy requirements on site and from renewable sources. A number of technologies can provide this renewable energy and the developer will be required to determine the most suitable options for their site.
- 5.2.2 Renewable energy systems need to be incorporated into new buildings at the construction stage, as retrofitting is difficult and expensive, therefore good reasons should be given as to why renewable energy systems cannot be included within a development.

District Heating

- 5.2.3 Developers should consider the use of District Heating Systems. These heating systems generate heat from one or more sources and deliver this heat to a number of properties. They may be used for different scale developments including small-scale housing projects and schemes of over several hundred individual buildings.
- 5.2.4 District heating systems will use a centralised boiler to heat water, which is then pumped around a system of pipes that run past each building. These buildings will be fitted with a heat exchanger that allows each property to take the heat they require from the main pipe system. This heat can then be used for heating living space or providing hot water.

- 5.2.5 District heating systems can use a heat only boiler or can use heat from a combined heat and power plant (CHP) The use of this system can result in lower energy bills for occupiers, who only purchase the heat they need and don't have to maintain individual boilers. They also result in reduced energy use and emissions.

Combined Heat and Power

- 5.2.6 A combined heat and power (CHP) plant generates both electricity and heat within the same process. CHP plants can use energy from both fossil and renewable sources and are much more efficient than conventional electricity generating plants, extracting the maximum amount of energy from the fuel as the heat produced during the process is not lost.
- 5.2.7 CHP can now operate on a domestic scale with the emergence of micro CHP generators, which are gas fired and can provide a dwelling with all of its heating and some of its electricity needs. CHP is highly efficient and can significantly reduce energy costs and carbon emissions.

Heat Pumps

- 5.2.8 Heat pumps utilise the heat energy contained within the surroundings of a building to heat that building. They rely on a source of power to drive a compressor and are therefore, only low carbon if the power for the compressor comes from low carbon sources. However, they are more efficient than traditional central heating systems, can provide significantly more heat energy than they use and are generally considered as renewable energy sources.

Ground Source Heat Pumps

- 5.2.9 Ground Source Heat Pumps (GSHP) utilise low-grade heat taken from shallow depths underground, where there is a relatively constant temperature throughout the year. The pump circulates a mix of water and anti-freeze through lengths of pipe buried in the ground. The liquid absorbs the heat from the ground, which can then be converted into useful heat for a building. The piping can be either coiled into horizontal trenches of about 2m in depth or, if space is restricted, can be installed in a vertical borehole of up to 150m.
- 5.2.10 GSHPs work best with under floor heating systems and need to be incorporated into new buildings at the construction stage, as retrofitting is difficult. They can work efficiently for different types of building, from individual houses to blocks of flats and commercial buildings. GSHPs can also be operated in reverse to provide cooling during the summer.

Air Source Heat Pumps

5.2.11 An Air Source Heat Pump (ASHP) extracts heat from the air outside a building and either circulates it, with fans, to heat the home or uses it to heat water for radiators. An ASHP can be used where space is restricted, as only a compact pump system is needed. However, the externally located fan does generate noise and its siting should be carefully considered to avoid issues for any neighbouring residents.

Solar Water Heating

5.2.12 Solar water heating relies on the energy from the sun heating fluid that passes through a solar roof panel and that is then used to heat a water cylinder. Using pre-heated water can significantly reduce the energy consumption of the building, contributing to the mitigation of climate change and reducing the energy bills of a household. This system can be successfully used in most properties, but benefits from a southern facing roof line, and is particularly suited to low rise housing.

Solar Photovoltaics

5.2.13 Solar Photovoltaic cells convert the energy from the sun into useable electrical energy and can be combined into panels and installed on a variety of buildings. They require daylight, rather than direct sunlight, and can operate all year round without generating noise or having any moving parts.

5.2.14 Solar Photovoltaic panels can be fitted onto an existing roof or can be incorporated into the building as roof tiles or slates, or as wall cladding. When proposing a PV system, consideration should be given to issues of shading and orientation. PV systems also have a visual impact and may not be suitable for use in conservation areas or on listed buildings.

Biomass

5.2.15 Biomass is organic matter that can be burned as a fuel to provide heat and power. This matter generally comes from timber and crops that are grown specifically to be burned. Biomass is considered to be carbon neutral, as the growing plants will utilise the Carbon Dioxide that is released through burning.

5.2.16 On a domestic scale it is generally used in wood burning stoves or boilers to heat water or spaces. Due to the need for fuel storage (typically logs, wood chips or pellets) the installation of biomass stoves and boilers should be carefully considered and may not be acceptable in properties without external storage space.

Wind Turbines

- 5.2.17 A large wind turbine could be used to provide energy for a development or small-scale turbines have been developed that can be installed on single residential properties. However, the use of wind turbines to provide energy for developments must be carefully considered. Even small domestic turbines have the potential to cause disturbance to neighbouring residents through the generation of noise and shadow flicker. Their size and appearance can also lead to a significant visual impact.
- 5.2.18 Any applications including wind-turbines will need to provide justification for their use. It should be demonstrated that they will be effective, taking into account the site constraints, and accurate information on wind-speeds through the site should be provided.

5.3 Energy Statement

- 5.3.1 In order for the Council to ensure that the correct level of renewable energy generation is provided on major developments, developers will be expected to submit an energy statement with their application. This may be incorporated into the Design and Access Statement.
- 5.3.2 The statement should outline how the 10% requirement will be met, including the types of technology to be used and how they will achieve the expected energy generation. The statement should include calculations for the total predicted heat and power demand across the site and will need to consider the energy performances of the proposed buildings.
- 5.3.3 Information should be provided which demonstrates that all energy generation or efficiency measures have been considered and justifies the options chosen. The developer will also be required to demonstrate that the approach taken will meet the renewable energy requirement. Where the 10% requirement is not going to be met, the developer should provide evidence to demonstrate why the requirement is unreasonable .

Developers should use the Regional Micro Renewables Toolkit when providing energy statements.
www.strategyintegration.co.uk/

Energy Statement – Submission Requirements

- Establish the energy demand of the site, and the total energy required to be from renewable sources in order to provide at least 10% of the demand.
- Provide details of the technologies selected and demonstrate how they will meet the 10% requirement.
- Provide information to justify the selected options and demonstrate that the most appropriate approach has been taken.
- Demonstrate how the technologies will be integrated into the development.

Outline Applications

- Establish the predicted energy demand and the percentage renewable contribution from benchmarks.
- Provide an initial assessment of feasible technologies.

Energy demands shall include reasonable estimates of all on-site requirements, including lighting of car parks, streets and communal areas.

5.4 Green and Brown Roofs

5.4.1 A green roof is a roof that is designed to allow plants to be grown on the surface. There are three main types of green roof:

- Intensive – These roofs consist of a relatively thick layer of substrate to allow a wide variety of plants, including trees and shrubs, to be grown. They can even provide space for recreational use. However, intensive roofs place significant weight on the building structure and generally require a high level maintenance.
- Extensive – These roofs have a shallow level of growing material (up to 10cm) that supports low-growing, drought resistant plant species. They add little extra weight to the building structure and need little, if any, maintenance.
- Semi-Extensive – These roofs have a slightly thicker layer of substrate than extensive roofs and support a greater variety of plant species, whilst being relatively light weight and requiring low levels of maintenance.

5.4.2 A brown roof is similar in basic design to an extensive green roof. However, the roof will be covered by a thin layer of crushed rubble and gravel and will be left to colonise naturally. A brown roof is intended to recreate the important wildlife habitat that is provided by brownfield sites and is often lost to development.

- 5.4.3 The use of green/brown roofs is especially encouraged in developments as there are numerous benefits. They provide a level of insulation that can reduce heat loss and the energy used to heat a property during the winter. The insulative properties can also prevent overheating in summer and evaporation from the plants on the roof can also have a cooling effect. Green/brown roofs can provide important urban habitats for wildlife and can substantially reduce the amount and rate of surface water run off from roofs, contributing to a wider sustainable drainage scheme. Additional benefits include the protection of roofing membranes from sunlight and extremes of temperatures, thereby significantly increasing the life of the roof.

5.5 Water Efficiency and Sustainable Drainage

Sustainable Drainage Systems

- 5.5.1 Sustainable Drainage Systems (SUDS) are methods of managing surface water drainage and utilise a combination of techniques to slow down the flow of surface water, hold excess water and/or increase the infiltration rate of surface water. SUDS can be a combination of a variety of approaches and measures. Details of some of the various SUDS techniques can be found in Appendix 2.
- 5.5.2 The suitability of the various SUDS components for each development will depend upon factors such as the development proposal and local ground characteristics, and new approaches may come forward as technology and experience improves. It is important that developers properly establish the soil, geological and hydrological conditions of each locality, as well as investigating possible contamination and the presence of underground utilities, prior to proposing a particular SUDS method.
- 5.5.3 The Council will encourage the prioritisation of measures such as water butts and permeable paving, that reduce surface water run off as near to the source as possible, especially in smaller developments. In large schemes, the Council would support a holistic approach to surface water drainage where the features provide multiple benefits in terms of open space, habitat creation and recreation; though small scale measures should still be utilised.
- 5.5.4 The Flood and Water Management Act requires developers to seek approval for all surface water drainage associated with new developments and there is no longer an automatic right to make a new connection to a surface water sewer. Developers will be required to incorporate SUDS into their proposals and will have to demonstrate that these schemes will meet a set of national standards on the construction and operation of SUDS.
- 5.5.5 Developers will need to seek approval for surface water drainage through the Council or a SUDS Approving Body, as applicable, and this

SPD 1: Sustainable Design Guide

approval will form the basis for adoption of the scheme by the Council. Developers are, therefore, advised to enter into discussions with all relevant stakeholders, which includes the Local Authority, the Highway Authority and Sewerage Undertakers, at an early stage during the planning process. Where an application does not propose to incorporate sustainable methods of surface water drainage, sufficient information should be submitted to justify the decision.

- 5.5.6 The principles set out in the Flood and Water Management Act 2010, regarding sustainable drainage systems are endorsed by the Council, as secondary legislation is awaited. In anticipation of this secondary legislation, all new development sites should be subject to an assessment of drainage capability and potential flood risk. This is to include the risk of flooding from surface water, sewer incapacity, main rivers and ordinary watercourses. The development must not contribute to or cause any surface water or sewer flooding on adjacent land. If there are any drainage capacity issues in the vicinity of the site, the development will require a sustainable drainage solution.
- 5.5.7 Where appropriate, the Council will seek to make use of planning conditions and Section 106 agreements to secure the implementation and maintenance of a SUDS scheme.



SUDS can contribute to biodiversity and the amenity of open space

Rain Water Harvesting

- 5.5.8 Water Harvesting can form part of a SUDS scheme as it will lead to the reduction of surface water runoff. However, rain water harvesting and the collection of grey water also contribute to increasing the water efficiency of a property.
- 5.5.9 The most common and simplest way to collect rain water is with a water butt, which stores rain water for use on the garden. This method is suitable for use on residential properties where there is a provision of private amenity space. Other, more complex, rain water harvesting systems, with filters and storage tanks, can be installed.

These enable the use of the stored water for purposes, such as flushing the toilet and in a washing machine.

Greywater Collection

5.5.10 Greywater is water that has already been used for washing and can be collected for reuse. This water comes from washing machines, baths, showers and hand basins. It does not include toilet water or water from a kitchen sink that may contain traces of grease, oils and other contaminants.

5.5.11 There are a variety of systems that can be used to collect greywater. The most simple diverts untreated bath water for immediate use on the garden. Due to the presence of nutrients or bacteria within the previously used water, greywater can only be stored if it has been treated. Chemical disinfectants and various technologies, such as membrane filtration, can be used to allow the storage of greywater and its use within washing machines and toilets.

5.5.12 Installing systems to recycle waste water can significantly reduce the amount of water used within a household and the water discharged into a public sewer. This could save consumers with water meters money on both their water supply and waste water bills and can contribute towards developers achieving a higher level against the Code for Sustainable Homes, as levels 5 and 6 of the code require that daily water use per person is less than 80 litres.

Small-Scale Measures

5.5.13 Simple and relatively inexpensive measures can be installed in individual properties that will also improve the water efficiency of the property. These include installing toilets with a small capacity cistern and providing aerating taps and showerheads.

APPENDIX 1 – WASTE STORAGE AND COLLECTION GUIDANCE FOR DEVELOPERS.

1. Introduction
2. Requirements for housing developments
3. Design Guide and Specifications
4. Requirements for flats and apartment developments
5. Commercial Developments
6. Appendices
 - A) Container Dimensions
 - B) Storage Areas For Flats, Apartments, Commercial and Mixed use Developments
 - C) Container Collections from Flats, Apartments, Commercial and Mixed use Developments
 - D) Mixed use Developments

1. INTRODUCTION

In addition to the legal obligations that are placed on the local authority to collect waste and recyclable material, Stockton-on-Tees Borough Council has developed a series of Policies and Actions to enable the delivery of the Action Plan that is set out in the Tees Valley Joint Waste Management Strategy.

Some of the key priorities of the Joint Waste Management Strategy are to increase recycling and work towards zero landfill. These priorities focus on the need to make recycling facilities readily available through kerbside or near kerbside collections, to all residents of the borough and reduce the amount of residual waste collected.

To meet the objectives it is essential that new buildings are designed to enable waste to be segregated for recycling and to be stored and collected in such a way that is beneficial to all parties involved.

The aim of this appendix is to aid all those involved in the design and management of buildings to produce strategies that facilitate the storage of waste and maximise the amount that can be sent for recycling. It is essential that developers are conscious of the waste that will be generated by their developments and that their proposals satisfy the requirements of this document.

This guidance has been developed by the Council's Waste Management Section and the Planning Department to ensure that it is both useful and useable for all parties involved.

This document should be read within the context of other Council policies and legislation and is part of a process to develop best practice for the design and management of buildings within Stockton-on-Tees Borough Council. It also serves to ensure that developments have adequate storage capacity and access to aid the collection of waste and recyclable material from properties within the borough.

This guidance shall apply to all new builds, commercial and domestic, and any development to existing properties that result in inadequate refuse and recycling storage and collection facilities outlined in sections 2 - 8 below.

2. REQUIREMENTS FOR HOUSING DEVELOPMENTS

The minimum requirements for storage of waste and recyclables in containers are shown below and dimensions for the containers can be found in Appendix A.

Waste Type	Refuse	Garden Waste	Paper	Plastic & Cardboard	Glass & Cans	Household Batteries
Container Type	Wheeled Bin	Reusable Sack	Reusable Sack	Reusable Sack	Box	Small polythene bag
Capacity (Litres)	240/ 360*	90	30	55	55	To contain batteries**

* 360 litre bins are only issued to large families on application. Consideration should be given to accommodate this size of bin where the type of development necessitates.

** Post consumer batteries are normally contained in small polythene bags and placed in the 55 litre recycling box along with the glass and cans.

Storage or designated areas for the containers described in the table above should be of sufficient size to accommodate the minimum requirements and must be accommodated within the boundary of each property.

Designated storage areas are required to be within the curtilage of the property and should ideally be at the rear or side of the property, sensitively located, taking into account the aesthetics of the area.

3. DESIGN GUIDE AND SPECIFICATIONS

The below refers to the Tees Valley Residential and Industrial Estate Design Guide and Specification:

- Container storage areas should be in a position that makes it convenient for the householder to present them at the kerbside for collection, whilst also being accessible for collection crews to undertake assisted collections that may be required by current or future residents.
- For the purposes of Refuse collections and Recycling collections the maximum distance from collection point to vehicle pickup point shall be 25 metres.
- The design of the development should allow residents to easily present their bins, sacks and boxes at the kerbside on collection days and likewise return them as soon as possible after collection. Designated collection points maybe required for multi-occupant builds if access to the collection point exceeds the 25 metres maximum distance.
- New developments including any access roads will need to be designed to accommodate the collection vehicles described in Appendix B. Auto tracking examples, to show vehicle access, maybe required to fulfil this requirement.

More details on the design guide can be found by visiting:

www.middlesbrough.gov.uk/ccm/navigation/transport-and-streets/roads-and-highways/developers-guidance/

4. REQUIREMENTS FOR FLATS AND APARTMENT DEVELOPMENTS

Houses or buildings that are developed or that have been converted to accommodate between 2 to 6 flats will be expected to provide storage areas for both refuse and recyclables as per the minimum requirements as 4 above for each flat or apartment.

Developments of flats/apartments that number 7 or above will need to provide storage areas for Eurobins for both refuse and recyclables. The table below gives an indication of the types of material that can be collected in the designated containers.

Waste Type	Refuse	Glass	Paper, cardboard, food & drinks cartons (TetraPak), food and drinks cans, & plastic bottles	Garden Waste *
Container Type	Eurobin	Eurobin	Eurobin	Reusable Sack
Capacity (Litres)	1100	1100	1100	90

* Where grounds around flats/apartments are managed and maintained by a landlord or contractor, the landlord or contractor will need to make separate arrangements for the collection of garden waste for which a charge may be made as this waste will not fall under the council's green waste collection service.

The number of containers required for each material will be dependant upon the amount of flats/apartments at any one site. The table below shows how to work out how many Eurobins for each type of waste are required for any given location.

Waste type	No. of flats	Volume of waste for each flat (litres)	Total volume of waste	Eurobin size	Total Eurobins required
Refuse	Number	120	Number of flats multiplied by litres of waste	1280 1100 940 770 660 360 240	Bins required = Total volume of waste ÷ Eurobin size
Co-mingled recycling	Number	110	Number of flats multiplied	1280 1100 940 770	Bins required = Total volume of

SPD 1: Sustainable Design Guide

			by litres of waste	660 360 240	waste ÷ Eurobin size
Glass	Number	10	Number of flats multiplied by litres of waste	1280 1100 940 770 660 360 240	Bins required = Total volume of waste ÷ Eurobin size

The example below is based on weekly collections of both residual and recyclable waste. The developer needs to be aware that recycling collections are normally undertaken on a fortnightly basis so the volumes of waste for recycled material may need to be doubled (figures shown in brackets in table below). The developer is encouraged to contact Care for your Area or Waste Management (see 7 for details) to discuss any queries they may have with regards to storage areas and/or number or size of containers.

Waste type	No. of flats	Volume of waste for each flat (litres)	Total volume of waste	Eurobin size	Total Eurobins required
Refuse	20	120	2,400	1280	2
Co-mingled recycling	20	110 (220)	2,200 (4,400)	1100	2 (4)
Glass	20	10 (20)	200 (400)	240	1 (2)

If the refuse storage area is an integral part of the building an internal access door from the residential part of the building should be provided to allow residents access to the storage area. This door should be connected to the residential area by a lobby so as to prevent nuisance odours entering the residential area. The storage area will also need to comply with fire safety regulations. An external access door will also be required if the waste and recycling containers are to be collected and emptied from this point. If access keys are needed to gain entry these will need to be supplied by the landlord or contractor.

Use of chutes

Chutes for the disposal of waste in apartments or flats should not be used for either refuse or recycling as they can create problems for segregating and storage. Waste blocking the chutes and the full time requirement for an on-site warden to monitor the containers underneath the chute can cause health and safety problems if not managed correctly and could cause injury to the collection staff.

Waste compaction

On-site waste compaction is not an option for residential developments as it presents problems for collection.

Bulky waste

Stockton Council currently offers a collection service for bulky household items for which a charge for collection of up to six items is made. Items include furniture, fridges, washing machines, electrical goods etc.

To enable residents in apartments/flats access to the same service an area of approximately 10 cubic metres should be set aside for the storage of bulky items. The area must satisfy the requirements set out in Appendix C.

5. COMMERCIAL DEVELOPMENTS

Storage and containment of waste

The volume of waste generated and thus the number and type of containers that a commercial development requires is ultimately dependent on the activities of the businesses that occupy the development. Normally a minimum storage provision for one 1100 litre container per business would be acceptable and there should also be provision for similar containers for recycling.

The number of containers should be maximised to keep the number of collections to a minimum, therefore reducing the amount of collection vehicle movements.

Businesses must contain their waste in compliance with section 34 of the Environmental Protection Act 1990 (The Duty of Care)

Waste compaction

On-site waste compaction is an option for commercial premises, however Stockton Council does not provide a collection service for compacted waste. Adopting this approach must not discourage occupants from segregating their waste for recycling.







Food waste from commercial outlets

Developments that are likely to generate food waste will need to comply with the requirements of the Animal By-Products Regulations 2005.







- The Regulations place specific controls on the collection, handling, transport, storage and disposal of animal by-products. This may have implications for the design of the building and refuse storage areas.
- Further information regarding the Animal By-Products Regulations 2005 can be sought from DEFRA – <http://www.defra.gov.uk>

6 APPENDICES


A) CONTAINER DIMENSIONS

Container	Dimensions (mm)		Floor space required (mm)	
1280 ltr Eurobin	Width	1280	1480 x 1200	
	Depth	1000		
	Height	1445		
	Height (with open lid)	2455		
1100 ltr Eurobin	Width	1280	1480 x 1200	
	Depth	1000		
	Height	1380		
	Height (with open lid)	2380		
940 ltr Chamberlain bin	Width	1050	1250 x 1200	
	Depth	1000		
	Height	1500		
	Height (with open lid)	2350		
770 ltr Eurobin	Width	1280	1480 x 1010	
	Depth	810		
	Height	1360		
	Height (with open lid)	2120		
660 ltr Eurobin	Width	1265	1465 x 940	
	Depth	740		
	Height	1330		
	Height (with open lid)	2060		
360 ltr Wheeled bin	Width	600	800 x 1080	
	Depth	880		
	Height	1100		
	Height (with open lid)	1690		

SPD 1: Sustainable Design Guide

240 ltr Wheeled bin	<table border="1"> <tr><td>Width</td><td>590</td></tr> <tr><td>Depth</td><td>750</td></tr> <tr><td>Height</td><td>1100</td></tr> <tr><td>Height (with open lid)</td><td>1750</td></tr> </table>	Width	590	Depth	750	Height	1100	Height (with open lid)	1750	790 x 950	
Width	590										
Depth	750										
Height	1100										
Height (with open lid)	1750										
55 ltr Box	<table border="1"> <tr><td>Width</td><td>590</td></tr> <tr><td>Depth</td><td>410</td></tr> <tr><td>Height</td><td>340</td></tr> </table>	Width	590	Depth	410	Height	340	590 x 410			
Width	590										
Depth	410										
Height	340										
Battery Bag	<table border="1"> <tr><td>Width</td><td>310</td></tr> <tr><td>Height</td><td>165</td></tr> </table>	Width	310	Height	165						
Width	310										
Height	165										
Plastic & Cardboard Sack	<table border="1"> <tr><td>Width</td><td>380</td></tr> <tr><td>Depth</td><td>300</td></tr> <tr><td>Height</td><td>560</td></tr> </table>	Width	380	Depth	300	Height	560				
Width	380										
Depth	300										
Height	560										
Garden Waste Sack	<table border="1"> <tr><td>Width</td><td>490</td></tr> <tr><td>Depth</td><td>490</td></tr> <tr><td>Height</td><td>470</td></tr> </table>	Width	490	Depth	490	Height	470				
Width	490										
Depth	490										
Height	470										
Paper Recycling Sack	<table border="1"> <tr><td>Width</td><td></td></tr> <tr><td>Height</td><td></td></tr> </table>	Width		Height							
Width											
Height											

SPD 1: Sustainable Design Guide

Commercial waste sack	Width Height			
-----------------------	-----------------	--	--	--

B) STORAGE AREAS FOR FLATS, APARTMENTS, COMMERCIAL AND MIXED USE DEVELOPMENTS

- Containers should have designated external storage areas that are sensitively located and designed.
- Container storage areas should be conveniently positioned to allow easy access for occupants and the collection crew.
- The design of storage areas should allow for easy removal of the containers over smooth, continuous surfaces that are free from steps or other obstacles. Dropped kerbs shall replace any stepped kerbstone.
- Doorways should provide at least 1.3m clearance and should be designed to open outwards. A method of securing the doors in the open position is required to prevent them closing or blowing shut on windy days.
- A walkway at least 1.3m wide should be provided leading to the store that allows access from the store to the collection vehicle. Space should also be adequate enough to allow access to each of the individual containers and ensures that an individual container can be removed from the store without the need to remove any other container.
- It is recommended that where there are separate storage areas for refuse and recycling, the recycling store should be the easiest to access (e.g. the closest).
- Storage areas need to be located away from windows and ventilators, to avoid any nuisance odours entering the premises.

Household bulky waste storage areas

Flats and apartments will require a separate storage area set aside for bulky items such as furniture, fridges, washing machines and electrical goods, to allow occupants the level of service (i.e. bulky waste collection service) afforded to other households within the borough. The storage area set aside will need to reflect the amount of apartments within the development but should be no less than 3m x 3m with adequate access for collections crews from outside the building. This area can be incorporated into the container storage areas, as stated above, but if this is the case will need to include the additional measurements. This service maybe the only outlet residents will have to remove bulky items from the property and will require an area designated to place such items for the collection to take place.

SPD 1: Sustainable Design Guide

It will be the responsibility of the occupants, caretaker or management company to make such bulky items available for collection. Collection crews will not collect bulky items from individual flats or apartments.

C) CONTAINER COLLECTIONS FROM FLATS, APARTMENTS, COMMERCIAL AND MIXED USE DEVELOPMENTS

- Containers can either be collected from a storage area (that complies with Appendix C) or from a designated collection point, in line with the points outlined below.
- It is the responsibility of the caretaker or management company (or similar) to allow the collection crews access to the container store or collection point on collection day and to ensure that access is not restricted, for example, by parked cars.
- Collection crews will generally not be expected to hold keys, codes or electronic fobs in order to collect the bins. However, subject to the approval of Stockton-on-Tees Council, Care for your Area Officers and/or any private refuse or recycling contractor, arrangements such as these may be accommodated. The responsibility for supplying or replacing keys, electronic fobs or any other access device will rest entirely with the developer, caretaker or management company.
- Collection vehicles should be able to approach to within a maximum distance of 10m of the storage area or designated collection point.
- The maximum gradient of any slope that the containers need to be moved over shall not exceed 1:12 and ideally should slope down to the collection vehicle from the pick up point. The maximum distance from container collection point to vehicle pick up point shall not exceed 25m.
- Surfaces that containers need to be moved over shall be at least 1.3m wide and shall be of a smooth and continuous finish and free from steps and other obstacles. Dropped kerbs shall replace any stepped kerbstone.
- Following collection, containers must be returned to storage as promptly as possible. There should be a clear responsibility for who undertakes this task (caretaker, management company, waste contractor, council operative).

D) MIXED USE DEVELOPMENTS

In the event of mixed-use developments, separate storage areas for refuse and recycling should be provided for the commercial aspects of a development and the residential aspect. Mixing of commercial waste and household waste is not permitted.

APPENDIX 2 - SUDS TECHNIQUES

This is not intended to be a comprehensive list of the full range of potential SUDS components and instead provides a summary of the most common techniques. The variety of techniques allows SUDS schemes to be possible for most proposals, from individual dwellings to major developments.

Permeable Surfaces

Hard surfacing reduces the amount of available land for infiltration and, therefore, increases surface water runoff. Minimising the areas that are paved with impermeable materials allows a greater inflow of water into the underlying soil and can reduce the need for surface water drains and off-site sewers. Pervious surfaces include:

- Block Paving
- Cellular Grass Grids
- Porous Tarmac

Loose gravel surfaces will not normally be accepted due to the potential for damage to the highway from stone spillage.

Infiltration Trenches and Filter Drains

A trench is a shallow excavation that is filled with rubble or stone. They form a temporary storage area for storm-water runoff and can convey water into other SUDS components and allow gradual infiltration of the water into the soil. They can also assist in filtering pollutants and sediments out of the runoff water.

Filter drains are similar to infiltration trenches but contain a perforated pipe to carry the flow along the trench.

Filter Strips and Swales

Filter strips and swales are both vegetated surface features that are designed to drain water away from impermeable areas. A swale is a long shallow channel and a filter strip is a sloping area of ground. They are both designed to use vegetation to slow and filter the flow of water, although swales have a greater impact upon flow and infiltration rates.

Basins and Ponds

Infiltration basins are depressions in the ground, designed to store runoff and allow it to infiltrate into the ground. They are generally planted with vegetation and free from water during normal conditions. Basins can be used for sport and recreation and are often incorporated into areas of open space.

Ponds also provide both an opportunity for water storage and infiltration and will also remove pollutants through sedimentation and biological processes. They have a permanent pool of water with extra capacity for storm water and can provide amenity areas and increase biodiversity.

Wetlands

Wetlands are areas of shallow ponds and marshy areas that are planted with aquatic vegetation. They provide areas for the removal of sediment and pollutants from runoff and also form an important wildlife habitat.

Green Roofs and Rain Water Harvesting

A green roof can provide some temporary storage of rainwater in the plants and growing substrate and can reduce and slow water run-off. Rainwater harvesting systems collect and store rainwater and also reduce run-off. Further details on both of these techniques can be found in Chapter 5.

Good Management

Poor maintenance of paved areas and the improper use of chemicals, such as anti-freeze and detergents, will lead to an increase in pollutants reaching the drainage system. The regular sweeping and cleaning of hard surfaces, a reduction in the use of salt in road and pavement gritting, the use of measures such as silt traps, downpipe filters and petrol separators, and the education of site users can all reduce the contaminants in surface water.

APPENDIX 3 – FEED IN TARIFFS

Feed in Tariffs (FiT) were introduced in April 2010 as an incentive to renewable energy generation and are a payment to the owner of a renewable electricity system (up to 5MW) for every kWh generated. The tariff is paid on the total output of the system, whether the energy is used within the development or fed into the grid. The table below shows the generation tariffs from 1 April 2010 to 31 March 2013. Further information on FiTs can be found at <http://www.energysavingtrust.org.uk/>.

Technology	Scale	Tariff level for new installations in period (p/kWh) [NB tariffs will be inflated annually]			Tariff lifetime (years)
		Year 1: 1/4/10 - 31/3/11	Year 2: 1/4/11 – 31/3/12	Year 3: 1/4/12 – 31/3/13	
Anaerobic digestion	≤500kW	11.5	11.5	11.5	20
Anaerobic digestion	>500kW	9.0	9.0	9.0	20
Hydro	≤15 kW	19.9	19.9	19.9	20
Hydro	>15-100 kW	17.8	17.8	17.8	20
Hydro	>100 kW – 2MW	11.0	11.0	11.0	20
Hydro	>2MW – 5MW	4.5	4.5	4.5	20
MicroCHP pilot*	≤2 kW*	10*	10*	10*	10
PV	≤4 kW (new build)	36.1	36.1	33.0	25
PV	≤4 kW (retrofit)	41.3	41.3	37.8	25
PV	>4-10 kW	36.1	36.1	33.0	25
PV	>10-100kW	31.4	31.4	28.7	25
PV	>100kW-5MW	29.3	29.3	26.8	25
PV	Stand alone system	29.3	29.3	26.8	25
Wind	≤1.5 kW	34.5	34.5	32.6	20
Wind	>1.5 – 15 kW	26.7	26.7	25.5	20
Wind	>15-100 kW	24.1	24.1	23.0	20
Wind	>100-500 kW	18.8	18.8	18.8	20
Wind	>500kW- 1.5MW	9.4	9.4	9.4	20
Wind	>1.5MW-	4.5	4.5	4.5	20

SPD1: Sustainable Design Guide

	5MW				
Existing microgenerators transferred from the RO		9.0	9.0	9.0	To 2027

* Note the microCHP pilot will support up to 30,000 installations with a review to start when the 12,000th installation has occurred.

From April 2011 it has been proposed that a similar arrangement of tariffs be paid against renewable heat. This is a key element of the Renewable Heat Incentive for which consultation closed in April 2010. RHI tariff levels are much lower than FiTs but unlike the renewable electricity incentive there is no upper heat generation limit.

RHI will provide payments for air and ground source heat pumps, so a development incorporating PV and heat pump would receive a double benefit. Biomass, anaerobic digestion and solar thermal, along with biomethane injection, are more appropriate to larger scale schemes.

Whilst suggested tariffs have been published (see table below) this is still subject to the Government response and formal announcement of the detailed arrangements.

Proposed RHI Tariffs

Small Scale

Technology	Scale	Proposed tariff (p/kWh)	Deemed or metered	Tariff Lifetime (years)
Solid biomass	Up to 45kW	9	Deemed	15
Bioliquids	Up to 45kW	6.5	Deemed	15
Biogas on-site combustion	Up to 45kW	5.5	Deemed	10
Ground Source Heat Pumps	Up to 45kW	7	Deemed	23
Air source Heat Pumps	Up to 45kW	7.5	Deemed	18
Solar Thermal	Up to 20kW	18	Deemed	20

Medium Scale

Technology	Scale	Proposed tariff (p/kWh)	Deemed or metered	Tariff Lifetime (years)
Solid biomass	45-500kW	6.5	Deemed	15
Solid biomass	45-500kW	2 (fuel tariff)	For metered kWh above deemed number of kWh	15
Biogas on-site combustion	45-200kW	5.5	Deemed	10
Ground Source Heat Pump	45-350kW	5.5	Deemed	20
Air Source Heat Pump	45-350kW	2	Deemed	20

SPD1: Sustainable Design Guide

Solar Thermal	20-100kW	17	Deemed	20
---------------	----------	----	--------	----

Large Installations

Technology	Scale	Proposed tariff (p/kWh)	Deemed or metered	Tariff Lifetime (years)
Solid biomass	500kW and above	1.6-2.5	Metered	15
Ground Source Heat Pump	350kW and above	1.5	Metered	20

Biomethane Injection

Technology	Scale	Proposed tariff (p/kWh)	Deemed or metered	Tariff Lifetime (years)
Biomethane Injection	All scales	4	Metered	15