6.0
Built Form

- Urban Grain
- Enclosure and Spaces
- Densities
- Elevational Design
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6.0 Built Form

A coherent pattern of development.

6.1 Introduction

6.1.1 Built Form relates to the pattern of development and the arrangement of development blocks, streets, open spaces, and individual buildings. The interrelationship between all these elements has the potential to create an attractive place to live, work and visit. Buildings and spaces can take many forms, depending upon their size, shape, height, bulk, massing, building lines and relationship to a plot boundary, for example. Together they create a sense of place and contribute to its character.

6.1.2 This section sets out guidance relating to urban grain and contextual development, building form and elevational design principles and how to achieve high quality development. The Design Guide also provides specific guidance on the following types of uses:

- Mixed use developments (see Uses)
- Flatted developments and urban design in the town centre (see Uses)

6.1.3 This section should be read in conjunction with chapters 7, 8, 11, 12 and 16 of the NPPF, the adopted Local Plan (policies R1, HQ1, HQ8, HQ9, HQ11, DC1, EE2, EE3 and EE4) and the National Design Guide, in particular sections B1, B2 and B3.

6.1.4 Other key documents and resources that should be referenced include:

- CBC Highways Constructions Standards and Specification Guidance
- CBC Housing Policy Technical Guidance SPD
- CBC Parking Standards for New Development SPD
- www.livingroofs.org.uk
- Guidance on Sound Insulation and Noise Reduction for Buildings (BS8233) (2014)
- Building Regulations Part K
- The Chilterns Building Design Guide
- Building for Life | Building for Life 12 | Built for Life Homes
- Secured by Design

6.2 Urban Grain and Contextual Development

6.2.1 Urban Grain is the pattern of individual building plots in an urban block. When this pattern is dominated by small plots it is described as fine urban grain. The pattern of fine-grained streets has generally evolved over time into a more coarse-grained pattern (larger scale plots with fewer streets). An analysis of existing urban form, urban grain, building heights, building frontages, and views should form part of the design process to understand the context and identity.

6.2.2 New developments should be designed to imitate and reflect the existing pattern, avoiding alterations to the fine urban grain in central locations. In urban areas, the relationship with existing facilities, roads and infrastructure will be critical. In rural and urban fringe areas, long views and skylines are important and will require analysis. Landscape design should complement the setting and be directly linked with enhancing green and blue infrastructure both on and off site. Maintaining and enhancing biodiversity opportunities as part of built form and landscape setting should also be included. Using and strengthening existing landscape features and considering building materials and finishes in relation to context, can assist in integrating buildings within the setting, particularly large-scale buildings. Further guidance on landscape, green and blue infrastructure and biodiversity is set out in the Nature chapter.

6.2.3 Main streets should be connected to other parts of a development or existing places by side streets. If more frequent connections can be achieved this is often more desirable to encourage walking and cycling. Increasing the number of connections is positive as long as the routes are well overlooked as this provides more passive surveillance and activity on the routes, increasing safety and security.

Figure 76 (top left) Some large footprint buildings can be designed as free-standing pavilions in a parkland setting, where their relationship to the landscape, including established trees, can enhance the scheme and be used to modify their environmental impact (Cranfield University Campus)
Figure 77 (bottom left) Incorporating a bus shelter into the street creating some activity and continuity of street frontage
Figure 78 (right) Foodstore related to the scale of the footpath (Biggleswade)

6.3 Characteristics of Urban Grain

6.3.1 Built form defines the pattern of streets and development blocks. Street types will depend on their width (which is related to its use), the height of buildings and consistency of building lines (leading to a sense of enclosure) and the relationship between fronts and backs of buildings.

6.4 Enclosure

6.4.1 The level of enclosure around a street or public space is an important factor in varying and determining character across a development. It can help reinforce legibility as well as define the hierarchy of different routes. Most well-designed places have an appropriate sense of enclosure.

Figure 79: Example of buildings creating a sense of enclosure around an open space

6.5 Consistency of Building line and Active Frontage

6.5.1 Spaces can be "static" such as a square or courtyard, where there is a sense of arrival into the space; or they can be "dynamic" such as a street or avenue where there is movement through it. Successful streets and spaces are defined by consistent building lines with active frontages, including building entrances and windows, which provide a strong passive surveillance of the street to increase safety and security. Active frontages should therefore be proposed at all floors of a building, including the ground floor level.

6.5.2 Steps in the building line can be used to create a sense of character and define a public space or a change in the route. Where a step in the building line does occur, it is important to address the end of a vista with active frontage and an architectural feature. Generally, steps in building line should occur where routes join, and should not occur mid-route unless a strong justification is given. Excessive steps in building line should also be avoided.

6.6 Hierarchy of Spaces and Enclosure Ratios

6.6.1 Places should have recognisable centres and edges, and this is achieved through varying urban grain. Public spaces and streets should have meaningful enclosure by being well defined, with passive surveillance through active frontage. An enclosure ratio is a measure of the shape of a street expressed as a ratio in which the first number relates to the height of the buildings and the second to the width of the street. A closer enclosure ratio will provide a more urban feel, whereas as looser ratios will provide a more open feel. Additional hard and soft landscaping can contribute towards enclosure, although consideration should be given to its relationship with buildings and the need to create active frontages.

6.6.2 Successful streets and spaces should include buildings at a scale that relates proportionately to the width of the streets and the size of the public spaces. This ensures that the overall sense of enclosure feels comfortable. The height of proposed buildings should also relate to the context and should not significantly change the context unless there is a well justified reason for doing so. Reasons for increasing density and height may include, but are not limited to, the efficient use of land, the creation of new mixed-use urban centres in communities and the creation of new communities with new centres, for example.

6.6.3 In urban areas, higher buildings in relation to the street widths and public space size can be proposed. In urban centres, high streets and secondary streets generally have an enclosure ratio of 1:1 with 80% of the ground floor frontage in high streets being active frontage (in terms of the proportion of openings and entrances). Primary streets are generally wider, signifying their importance as a route, with an enclosure ratio of 1:2.

6.6.4 An urban square should be positioned to maximise solar capture, allowing for open air markets, bus stops and events. These areas could be sensitively laid out as shared spaces in order to maximize pedestrian movement and calm traffic speeds. Shared spaces should be accessible to as many people as possible. These spaces therefore require careful design in terms of material and colour selection to signify a change from the road surface, and lighting to highlight the space, particularly the edges, and flush threshold design.

6.6.5 In designing a flush threshold to a shared space, it will be important to ensure that guide dogs and the partially sighted are able to understand that they have entered a shared space. Thresholds will therefore require a change in material and texture, as well as colour. It is also good practice to provide a gateway feature at the start and finish of shared space, to give further cues of the change in priority to vehicles. Further guidance on shared spaces is set out in the Movement section.

6.6.6 Where buildings present the opportunity for a combination of uses, for example within a community building, consideration should be paid to the impact the uses will have on the layout and design of the development, including the wider area.

6.6.7 If the proposed development is located on the edge of an existing settlement, its centre should create a visible link between the existing settlement and the new development, to maximise the footfall in the new centre.

6.6.8 In suburban, edge of centre locations, wider streets are required and building heights are reduced to create a more relaxed sense of enclosure in terms of proportion. Local centre streets are encouraged to have an enclosure ratio of 1:3 being enclosed by 2 to 3 storey buildings. Primary streets should form tree-lined boulevards and should aim for an enclosure ratio of around 1:5. Local streets in suburbs should be tighter, giving an enclosure ratio of around 1:2.5 and being surrounded by 2 storey development.

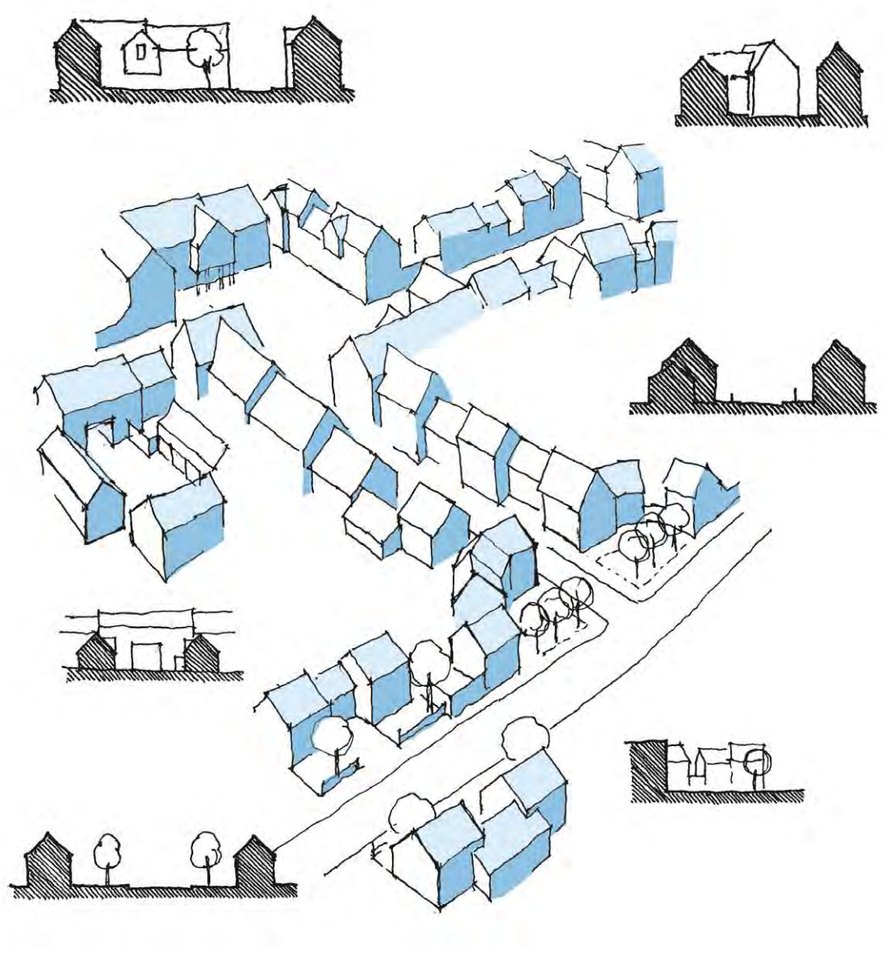


Figure 80: A scheme should demonstrate a hierarchy of spaces and different senses of enclosure, contributing to its character

6.7 Public and Private Space

6.7.1 Successful urban grain requires a clear distinction between public and private spaces. Public space includes streets, squares and greens. Semi-private space includes defensible spaces and front gardens between buildings and the public realm. Private spaces include rear gardens, and shared amenity spaces such as courtyards.

6.7.2 The front of buildings should face onto streets and public spaces, so that they define and overlook them with active frontage. The backs of properties should define private spaces or shared private spaces. All private spaces should be afforded security by being fully enclosed by buildings or by facing other private space, such as neighbouring back gardens which collectively are fully enclosed. Private spaces should not face the public realm.

Figure 81: Brick wall with railings providing a formal front boundary treatment (Ampthill)

6.7.3 While strong urban spaces and retail frontages have a direct boundary with streets, public spaces and the edge of buildings, in more suburban or residential areas, there is a line of planted defensible space and/or a front garden. These semi-private spaces act as buffers between public and private spaces, defining the entrance to properties and increasing the sense of ownership. Front garden spaces should be maintained by the owners or occupants of the property.

6.7.4 The relationship between backs of buildings plays an important part in defining the character of urban grain. The backs of buildings should be aligned with each other to ensure that building fronts define the edge of streets and spaces, and that private amenity space, gardens and shared courtyards are created. In urban situations back-to-back distances are generally tighter in line with the fineness of the grain, whereas in suburban and rural situations the distances are increased. Back-to-back distances should therefore relate to the built context.

6.7.5 The larger the back-to-back distance, the greater the privacy between upper floor habitable room windows and the more opportunity for increased sun-lighting and daylighting. In all situations, for privacy reasons, new developments should have a minimum of 21 metres between upper floor windows unless a justification for a smaller distance is given in terms of context to follow the existing, prevailing urban grain. In these exceptional cases, design solutions to ensure privacy should be adopted, such as oriel or bay windows to gardens and communal spaces which give an oblique view, or brise-soleil used to obscure direct views and to avoid any direct rear window relationship.

Figure 82: (top) Hedging and railings provide a formal front boundary treatment (Marston Moretaine)
Figure 83: (bottom left) Soft boundary treatment creating defensible space to the front of habitable ground floor rooms (Dunstable)
Figure 84: (bottom right) Ivy screens forming a soft and green side boundary treatment (Oxley)

6.8 Perimeter Blocks

6.8.1 Perimeter blocks are one way of achieving a strong definition of different types of public and private space. They come in a variety of layouts, but all have the common characteristic of the fronts of buildings facing the public realm to improve surveillance, and private rear gardens enclosed on the inside.

6.8.2 All perimeter blocks provide a continuous frontage facing the street and to help to maintain a sense of enclosure and continuity. If these contain shallow building depths, so that dual aspect accommodation is easier to achieve, this is best achieved with a maximum building depth of 11 metres.

6.8.3 There is also always a trade-off between block size and the provision of outside space. Large blocks deliver high levels of private green space but have low permeability, whilst small blocks are the reverse of this. A medium block size of between 60-90 metres in depth is a reasonable compromise.

6.8.4 The continual use of narrow blocks (e.g. 40 metres in depth) orientated in the same direction has the disadvantage of creating inactive frontages along the street due to the short ends of each block. Variation in block shape and orientation will help to resolve this. Squarer block forms will achieve the optimum amount of active frontage. The choice of shape and size of perimeter block will depend on the prevailing urban grain and an analysis of whether this should be adapted to produce more optimum forms.

6.8.5 Larger more square blocks can incorporate short cul-de-sacs, whilst still achieving a perimeter block structure. Care should be taken to avoid 'leaky cul-de-sacs' which involve a cul-de-sac with a poorly observed pedestrian route at one end. Any cul-de-sac that exceeds 5 dwellings will need to be designed to adoptable standards. Reference should be made to the Council's Highway Construction Standards and Specifications Guide (2019).

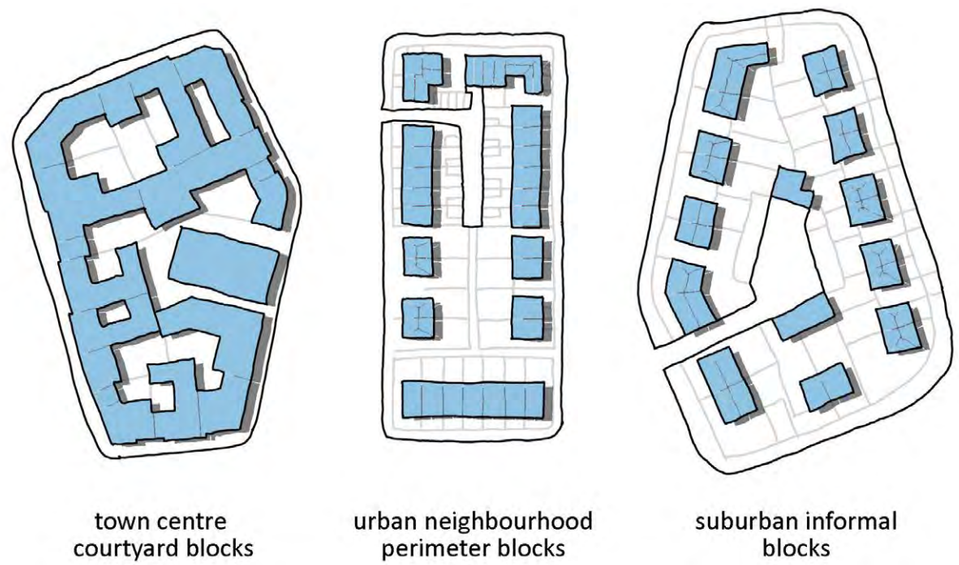


Figure 85: Different Types of Perimeter block structures

6.9 Densities

6.9.1 The density of a development is an important consideration in placemaking. Policy HQ1 of the local plan requires that the density of new developments is carefully considered to ensure they make the most efficient use the of land available whilst reflecting the existing character of the area.

6.9.2 Density should be determined by the context within which a development is to be built and should be sympathetic in terms of the surrounding context. Higher densities are appropriate in town centres and accessible locations close to public transport routes, shops, and facilities. As well as maximising land use, this helps to make shops and community facilities more viable and helps to create walkable environments that are not only more sustainable but have a greater degree of vitality and are more likely to encourage community cohesion.

6.9.3 Densities should also be maximised along existing and potentially new public transport corridors in order to secure the provision of commercially viable services, whilst still being mindful of parking and servicing requirements. Lower densities (below 25 dwellings per hectare net) are more likely to be appropriate toward the edges of developments or in rural locations and small villages.

6.9.4 It is important to note that high or low density does not necessarily equate to a certain type of built form. The schemes in Figure 86 are all built at the same density, but each create a completely different character. The key to creating an appropriate design is not about achieving a certain density, but much more about perimeter block design, massing, heights, housing mix, and use of open space.

6.9.5 Densities should be varied across strategic or large developments to create different character areas and hence interest, as well as making a development more legible. The figures from Figure 87 to Figure 101, showing corner turning dwelling and hedge garden boundary demonstrate different densities at different developments.

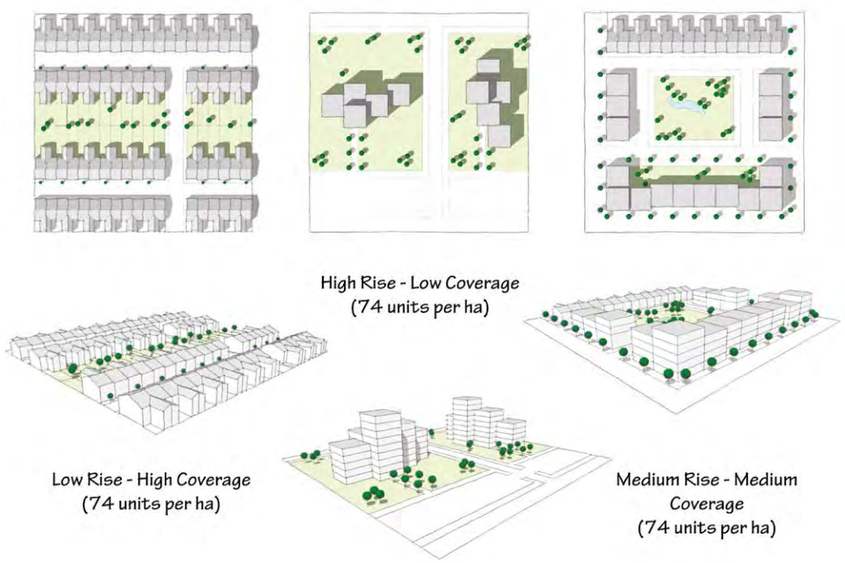


Figure 86: Examples of schemes at a density of 74 dwellings per hectare

Density of 74 dwellings per hectare (dph)

Figure 87: Density calculated at 74 dwellings per hectare

Figure 88: Aerial view London Road, Dunstable

Figure 89: Density Street View

Density of 60 dwellings per hectare (dph)

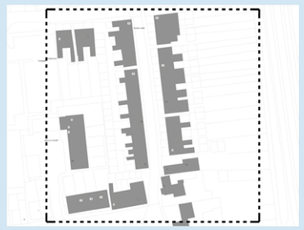


Figure 90: Example Plan of Biggleswade Development- showing Density of 60 dwellings per hectare

Figure 91: Aerial view of Biggleswade

Figure 92: Density Street View

Density of 35 dwellings per hectare (dph)

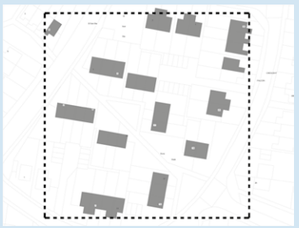


Figure 93: Example Plan of Manor Road Development, Flitwick- Density approximately 35 dwellings per hectare

Figure 94: Aerial view of Manor Road, Flitwick - Some perimeter blocks and some poorly defined street edges

Figure 95: Manor Road, Flitwick, Density Street View

Density of 20 dwellings per hectare (dph)

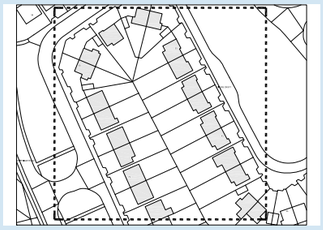


Figure 96: Indicative Map of Whipsnade Road, Dunstable (20 dwellings per hectare)

Figure 97: Aerial view Whipsnade Road, Dunstable

Figure 98: Whipsnade Road Dunstable Density Street View

Density of 12 dwellings per hectare (dph)

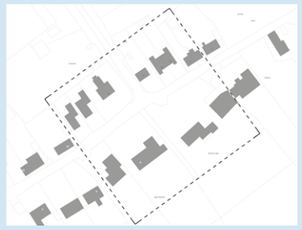


Figure 99: Density calculated at 12 dwellings per hectare

Figure 100: Aerial view of Eversholt

Figure 101: Density Street View, showing corner turning dwelling and hedge garden boundary

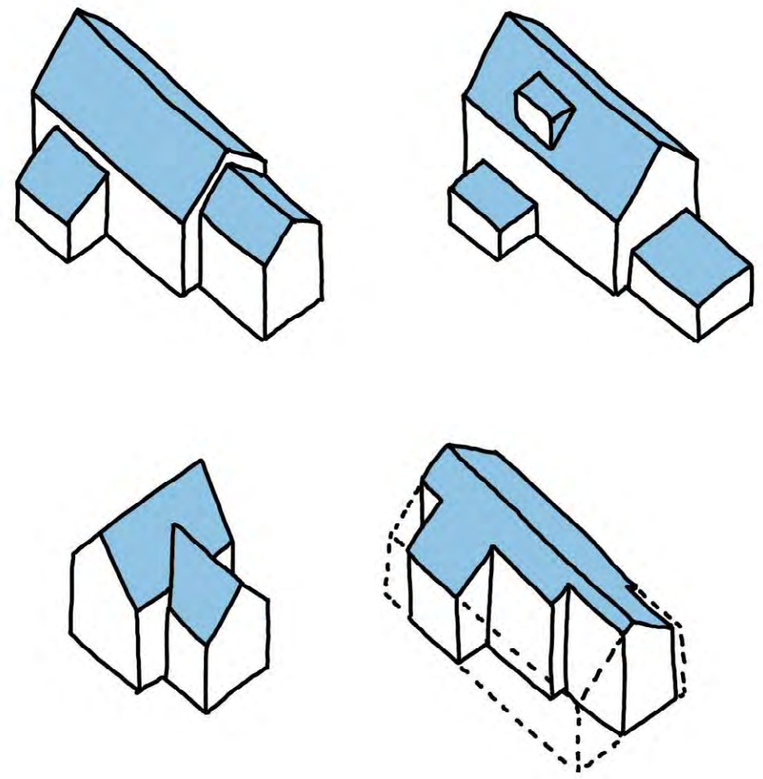


Figure 102: Examples of families of form

6.10 Building Form

6.10.1 Well-designed developments are informed by an analysis of existing context and character, and new character areas in larger developments should also relate to those found locally. New buildings should therefore be reflective of the existing building forms, scale, rhythm, materials, and patterns of development.

6.10.2 A positive characteristic of local buildings in Central Bedfordshire is the use of shallow building forms. A building with a floor plate (the total floor area of a storey within a building or structure contained within the outside surface of the exterior walls) exceeding a depth of 7 metres, is likely to appear as a large 'boxy' building and floor plates that exceed 11 metres are likely to preclude dual aspect apartments. A building floor plate in excess of 7 metres should therefore be avoided for houses, and floorplates in excess of 11 metres in depth should be avoided for apartments.

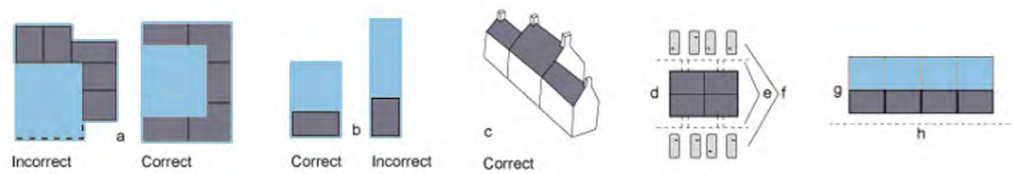


Figure 103: Examples of building form: a – Deep-plan houses result in less frontage width available for enclosing space; b – Deep-plan houses result in longer, thinner gardens for the same garden area; c – Gable ends of deep-plan terrace concealed by shallow plan houses on ends; d – Lack of private garden; e – Car parking both sides; f – Small dwellings back-to-back; g – Street; h – Small dwellings in terrace

6.10.3 Deep plan terraces should be avoided as they have a narrow building façade which reduces the available frontage for enclosing urban space, and results in a rear garden space which is unnaturally long and thin. Placing small dwellings back-to-back can also result in a deep-plan form. Small dwellings are better arranged as shallow plan and dual aspect.

6.10.4 On sloping sites, buildings with a large, deep plan often sit awkwardly and usually require substantial ground works. The design and layout of the building should therefore be changed to fit more comfortably on to the site, by 'stepping' down the hill.

6.10.5 Blocks of apartments should be one apartment deep to be more flexible, provide cross ventilation and to reduce overheating in bedrooms. If roads, car parks and access are located on both sides of a block, there tends to be a lack of screened amenity space suitable for sitting outside. Sufficient space for amenity use must be provided adjacent to the building on at least one side.

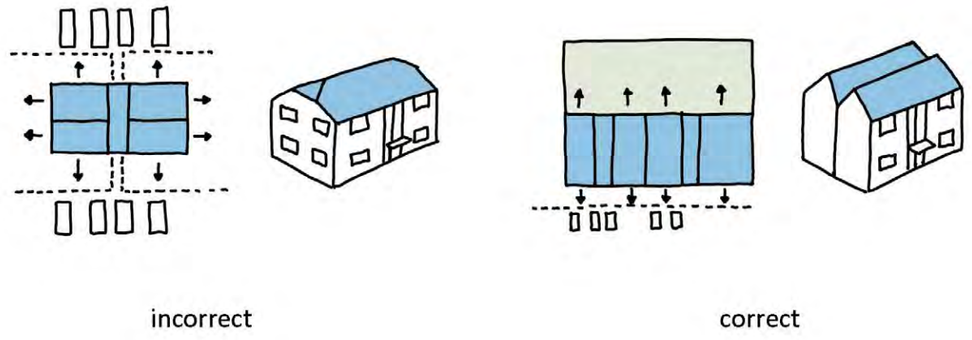


Figure 104: Design of apartments

6.11 Infills and Backland Development

6.11.1 Infill development must demonstrate that it accords with the surrounding character, pattern, and grain of development, having regard to plot size, frontage length and dwelling size. Limited by space, key considerations could include access, transport connectivity, parking, ownership, infrastructure, existing structures (above and below ground), services, trees, air pollution, listed structures, conservation areas and possible contamination to be resolved.

6.11.2 Infill development should not take place at the expense or loss of the positive aspects of the character of the street scene, the area, or the unacceptable loss of amenity of the original house on the plot, or its neighbours.

6.12 Buildings on Key Frontages

6.12.1 Buildings on key frontages will be seen by the most people and help establish the identity and legibility of an area. They generally relate to primary streets connecting to, or through, a new development and need a greater attention to design detail. Elements that require particular consideration include:

- Height and vertical proportions.
- Roof Style.
- Window detailing.
- Elevational materials (including the use of coloured render).

6.13 Focal Point and Key Building Groups

6.13.1 Landmarks help make places recognisable and enable people to navigate within spaces. They can be buildings, structures, spaces, public art and existing local landmarks and create distinct visual orientation points to provide a sense of location within an area. These can be created by a significant natural feature, or by an architectural form which is highly distinctive and relative to its surrounding environment. Offsetting the angle of streets that approach the landmark can help to create a sense of surprise and interest.

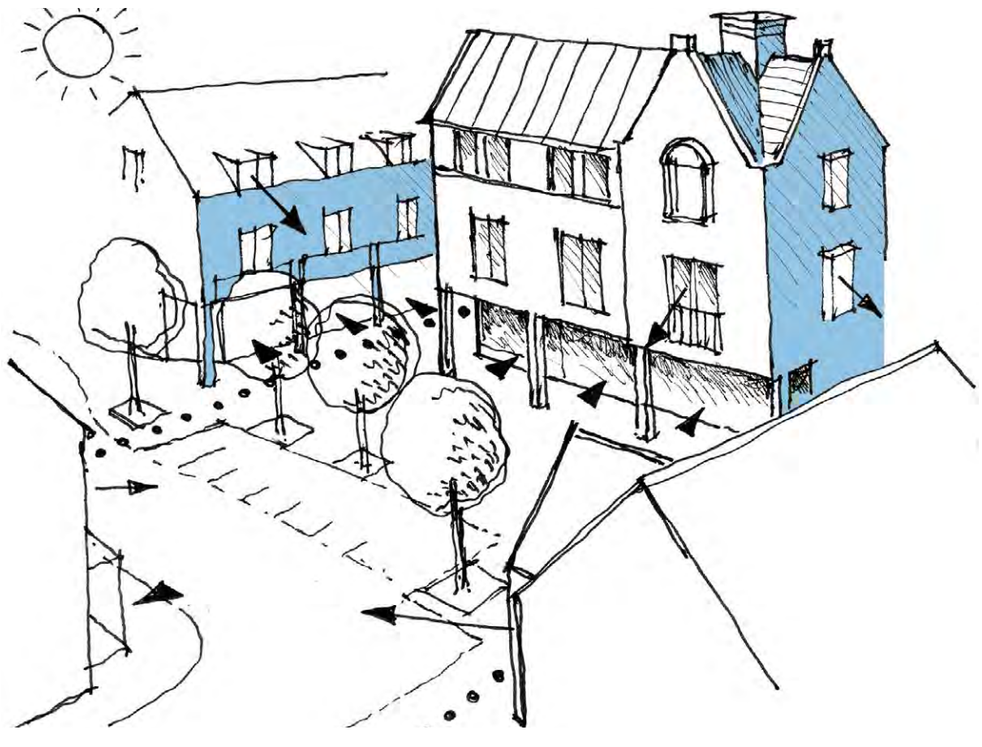


Figure 105: Key building groups.

Figure 106: Example of quality distinctive development at Fairfield Park demonstrating a mix of uses, green amenity space and local centre

6.13.2 Focal Points are prominent structures, features or areas of interest or activity. A common example is a transport interchange or public square. Gateways are buildings, sites, or landscapes that symbolise an entrance or arrival to a place. Vistas are a line of vision, contained by buildings or landscaping, to a building or focal point which terminates the view.

6.13.3 Once a vista line is created, an appropriate landmark or building should be used to end the vista. In terms of architecture, this may mean a change of material, an increase in height or variance in architectural detailing such as the use of bay or oriel windows and gables. Key building groups or individual landmark buildings can be used in specific locations to make a significant contribution to the character or sense of place of a development. They can also make places legible – making it easy for people to find their way around.

Figure 107: Illustration showing a gateway building located at a key street junction, symbolising an entrance or arrival to a space.

Figure 108: Vistas

Figure 109: Landmark corner building providing an orientation point

Figure 110: Illustration showing a focal point building on the corner at the end of a vista to provide a form of interest or activity

Figure 111: (top) Example of Gateway building in Silsoe
Figure 112: (middle left) Example of a contemporary landmark corner building within a residential development in Dunstable
Figure 113: (middle right) Terminating a streetscene and emphasising the corner in the road in Fairfield Park
Figure 114: (bottom left) Terraced properties with changes in roof forms, Linmere, Houghton Regis
Figure 115: (bottom right) High quality development with a mixture of house types, Mulberry Close, Houghton Conquest

6.14 Building Design

6.14.1 The detailed design and appearance of development is important as it can contribute to or undermine the character, identity, or sense of place. This is in part because the external appearance of a building creates an important and visual backdrop to the public realm. The following guidance sets out what should be considered throughout the design process and demonstrated clearly within planning application submissions.

6.14.2 There is no single design solution appropriate to every situation, nor is there any stated preference regarding architectural style. Consideration should be given to the surrounding context and local identity in determining the architectural style. Architectural creativity and innovative design solutions are encouraged and should be explored where opportunities exist to bring positive modern and contemporary design to developments.

6.14.3 If an alternative 'heritage' style is explored in preference to contemporary design, it is essential that the design demonstrates a full understanding of the heritage architecture to be adopted – its intentions, its guiding proportions and correct detailing. A pastiche design derived from poorly understood principles does not contribute to the creation of a sense of place for a development nor the quality of the built environment, especially if it is seen in relation to historic buildings.

Figure 116: (top left) Good quality architecture in a traditional style (Ampthill)
Figure 117: (top right) Contemporary design (Sandringham Drive, Dunstable)
Figure 118: (bottom left) Good quality design in a traditional style (Ampthill)
Figure 119: (bottom right) Good quality traditional architecture that has created a strong character (Silsoe)

Figure 120: Learning from local precedent - attractive grouping of cottages (Tebworth)

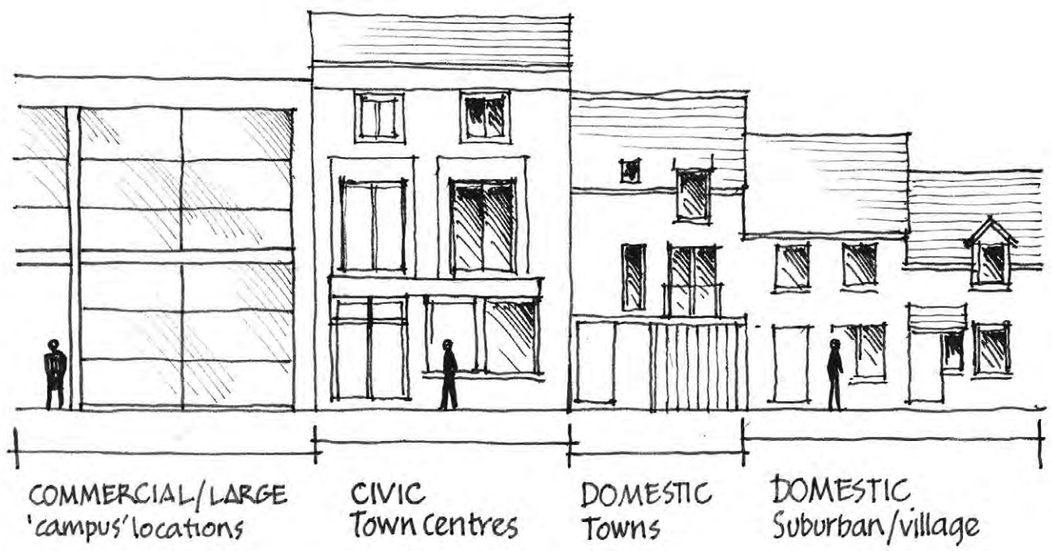


Figure 121: Scale is not only defined by height and bulk, but by the size and proportions of the openings in an elevation and the size of the units (brick or precast panel) in relation to the person

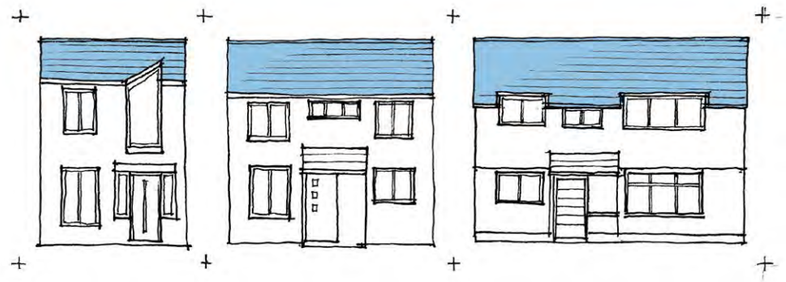


Figure 122: Vertical Emphasis is seen in more urban contexts where vertically proportioned buildings occur on a narrower fronted building, often in a terraced group. The principles outlined in these examples are relevant to most types and a balanced elevation occurs.

6.14.4 In accordance with the Local Plan, an appropriate mix of housing (both market housing and affordable housing) should be provided. All developments are required to be tenure blind to ensure that affordable housing cannot be differentiated from market housing in terms of design. The quality and design of affordable housing should be of an equally high standard as market housing, with similar detailing. Affordable housing should also be dispersed throughout a site to promote community cohesion, and large clusters in less favourable locations, such as near external noise sources, should be avoided.

6.14.5 Affordable housing should also be indistinguishable from private tenure in terms of the size of dwellings. Applications should therefore avoid provision of predominantly larger 4- and 5-bedroom market provision with the affordable provision from the scheme providing a predominance of two bed houses. For further guidance on Housing Mix refer to the Housing Policy Technical Guidance SPD.

6.15 Elevational Design Considerations

6.15.1 The detailed design of a building is a key part of defining the character of a scheme and should be informed by an analysis of existing context. Larger and strategic schemes should also use this context analysis to identify new character areas which should be used to inform the elevational design.

6.15.2 The elevational appearance of a building is strongly influenced by the positioning, size, and detailed design of the windows. The pattern of window openings has a collective effect on the elevation and within an overall street scene it can impact on the character of the development. It is important to consider the basic window to wall ratio as more window to wall gives a light airy impression, whilst more wall than window conveys a robust, thick set exterior. The subdivision of glazing should also be given careful thought. As a minimum the width of wall next to a window should be at least as wide as the window itself. Consideration should be given to the dimensions and placing of windows in an elevation. Figure 124 shows different sill heights related to activities and sitting positions in the home. The sill heights shown (in millimetres) are approximate guides.

6.15.3 Traditionally, windows were slightly taller than they were wide, and this is a positive characteristic that can be included in new developments. Another positive characteristic is the use of larger windows to lower floors, and smaller windows to higher floors, and the vertical alignment of windows. Misaligning windows often produces an unbalanced elevation, but depending on context, it is possible to align windows along a vertical axis and still maintain some horizontal adjustment. The overall aim should be a balanced elevation.

6.15.4 In more contemporary approaches to elevational design, differently shaped windows can be considered (e.g. floor to ceiling, windows that 'turn the corner'), while glazing bars and visible sills and lintels could be excluded. However, the overall proportion of these windows should be taller than they are wider, and the scale of the windows should reduce with height in line with identified characteristics in local context analysis.

Figure 123: Interesting and lively elevational design resulting from use of windows related to room functions (Broughton, Milton Keynes)

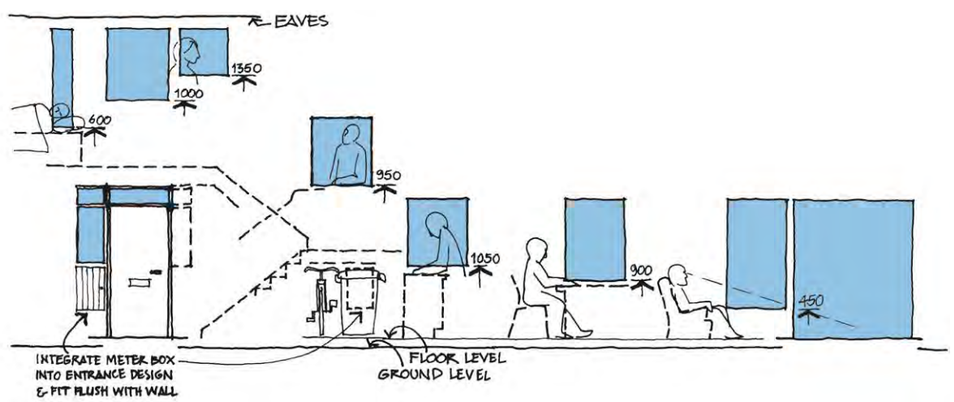


Figure 124: Size and proportion of windows should relate to the function of the room

6.16 Symmetrical/Asymmetrical Balance

6.16.1 Symmetry is usually associated with classical design and is organised around the vertical centre line of the building. Symmetrical design is most appropriate in formal situations and where the elevation of a building is likely to be seen in full. Symmetry could be considered as an option for focal point buildings/buildings terminating views.

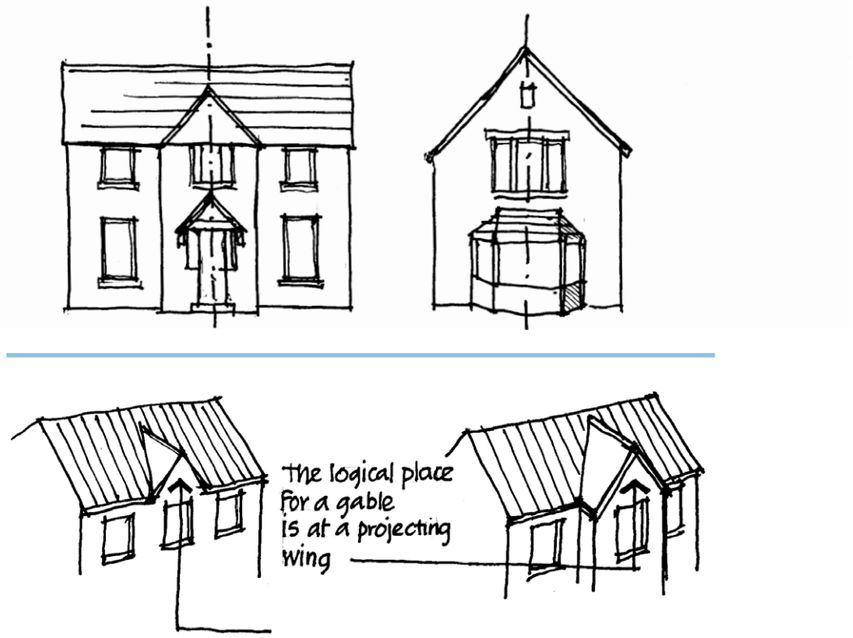


Figure 125: (top) Symmetrical elevations
Figure 126: (bottom) Symmetrical elevation with gable roof

6.16.2 An asymmetrical elevation is composed of differently sized elements, which appear to balance through careful consideration of their overall visual effect (e.g. a large window on one side of a doorway may be offset by a larger amount of wall with small windows on the other). This approach usually reflects the functional requirements of the different rooms in the house.

Figure 127: Asymmetrical elevations

6.17 Subservient/Additive Form

6.17.1 Successful elevational design is often created by breaking down the building into its component parts (e.g. the main house as the primary form, with the garage and minor details such as the porch, playing a supporting role as additions). Subservient additions could be used in sensitive locations to break up the massing and bulk of built form.

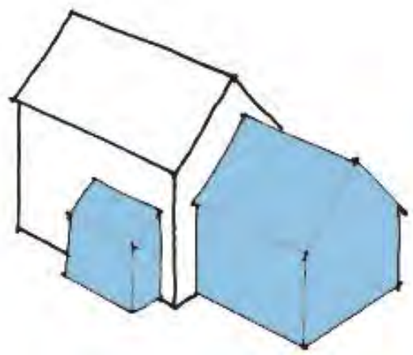


Figure 128: Subservient additions to the main dominant form

6.18 Modelling of the Elevation

6.18.1 The degree to which the parts of an elevation project or recede will affect the character of a building and its impact on the streetscape.

Figure 129: The requirements of sustainable design provide opportunities for creative roof profiles and elevations

6.19 Flush Façade

6.19.1 A flush façade is used when simple building forms and shapes are required. Windows, doors, sills and eaves are usually aligned flush with the building's façade. Many existing vernacular cottages, farm buildings and contemporary designs demonstrate these characteristics.

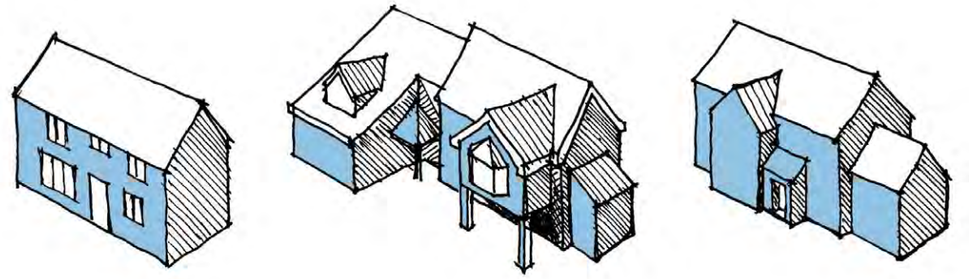


Figure 130: Left; Flush façade, Middle; Deep modelling; Right Shallow modelling

6.20 Deep and Shallow Modelling

6.20.1 Using forward projections or set-backs from the main line of the building elevation can produce interest by creating highlighting and shadow and differentiating between various elements of the building. Elements such as porches, bay windows and gable ends project from the elevation, but usually by no more than a metre and not intruding into the public realm/highway. Some use of recessed elements, such as garages, can also link buildings and provide some privacy between rear gardens. However, projections and setbacks that are exaggerated can result in a fussy appearance and those that create deep shadows can cause parts of elevations to be deprived of sunlight and should be avoided.

6.21 Window design

6.21.1 Windows and doors are often set back by the depth of a brick and sills project forwards by no more than 100 millimetres. Increasing the set back of windows can create a more layered façade which can be quite effective, particularly in contemporary architecture.

6.21.2 Consideration should be given to good acoustic design principles for windows that overlook or face towards sources of noise sources e.g. transport or industrial sources. In terms of window design, the use of glazing bars can affect the character of the overall elevation and their use should be informed by local context analysis. The aim is to use an arrangement of glazing bars and sashes that adds rhythm and proportion to the elevations and to provide a more human scale.

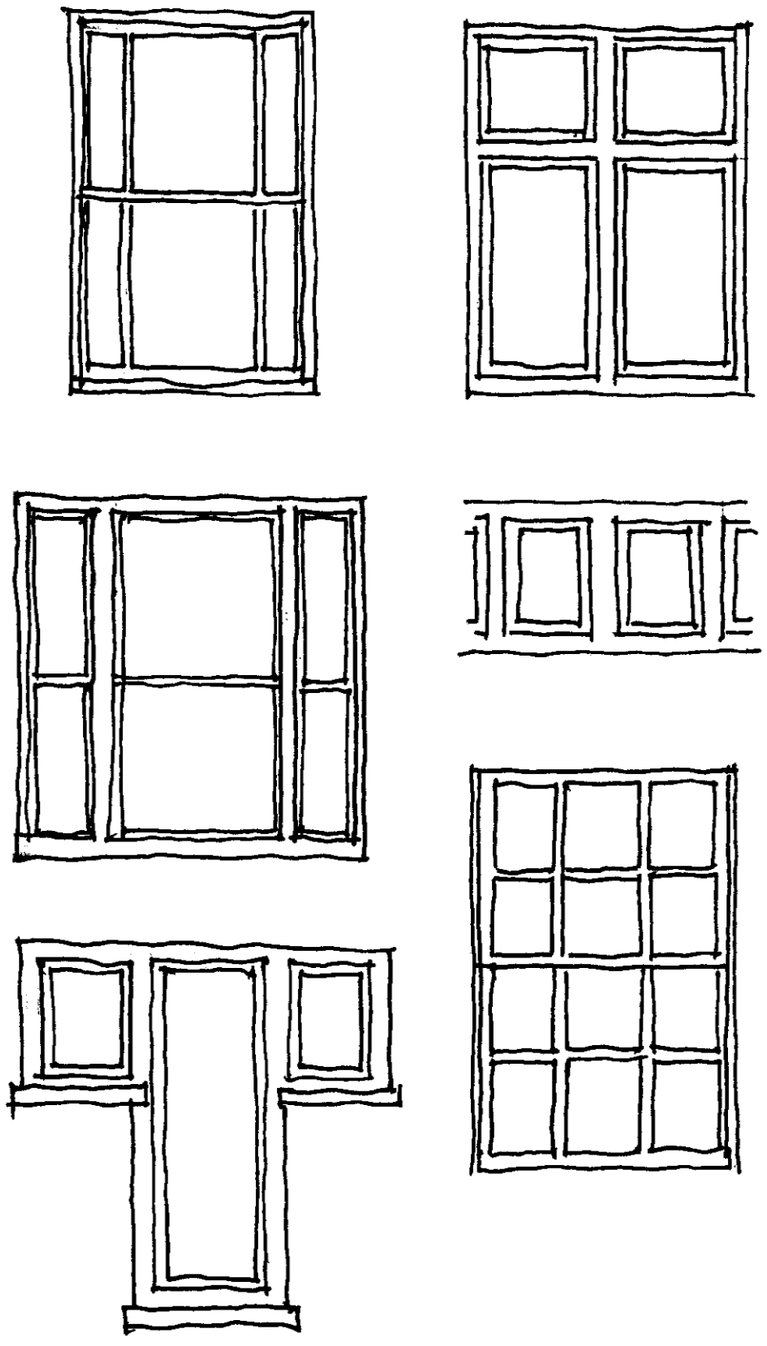


Figure 131: Examples of well-proportioned windows

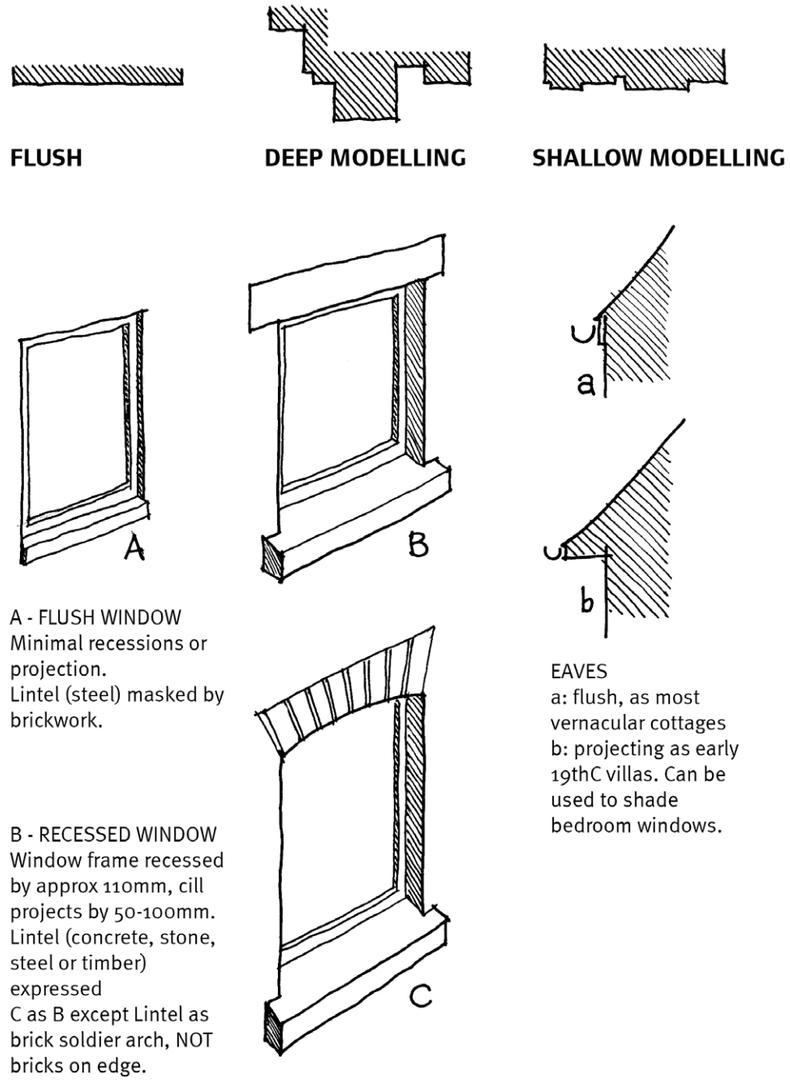


Figure 132: Window Types

6.21.3 Figure 133 illustrates the use of vertical proportions – a characteristic of many town centres. Exposed lintels and/or panels under windows can reinforce vertical proportions. The 'chimney' element is a bold skyline feature grouping together extracts, ventilation equipment or sun pipes. However, the use of chimneys should be informed by the local context. Figure 134 uses domestic scaled proportions and windows which appear awkward in larger wall areas, where floor to ceiling height is greater than in domestic situations. Non-functional chimneys and repetitive and/or exaggerated party wall parapets, boxy dormers, cutaway eaves and visually weak arches should be avoided.

Figure 133: (left) Alternative Street scene elevation A
Figure 134: (right) Alternative Street scene elevation B (not recommended)

6.22 Designing House Types

6.22.1 The design of house types within a layout should contribute to placemaking and local distinctiveness and it is essential to consider the individual role each house has in creating streets. The following section sets out guidance notes for dwelling typologies and covers:

- Houses that turn corners
- Houses that terminate views
- Street houses
- Three storey houses
- Houses that have south facing fronts
- Single aspect houses and flats

Houses That Turn Corners

6.22.2 Corners can offer challenging design opportunities and their resolution will make an important contribution to the character and attractiveness of a place. A corner building is one that is seen in three dimensions and inevitably will become a minor landmark. The highlighting of corners can ensure that developments are easier to navigate and to can enhance identity. Corners should therefore

- Address both aspects with active frontages from habitable room windows.
- Be distinctive by using architectural details such as projections, materials and /or height, which are informed by the context.

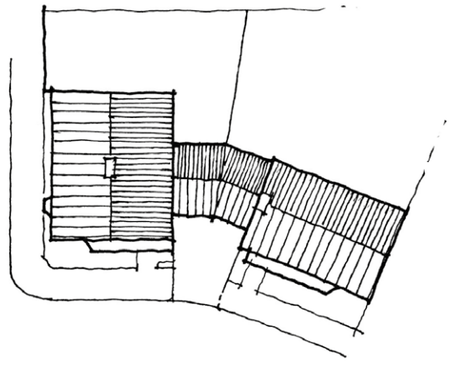


Figure 135: (left) Two linked houses turning concave corner
Figure 136: (right) Building that turns the corner well (Fairfield)

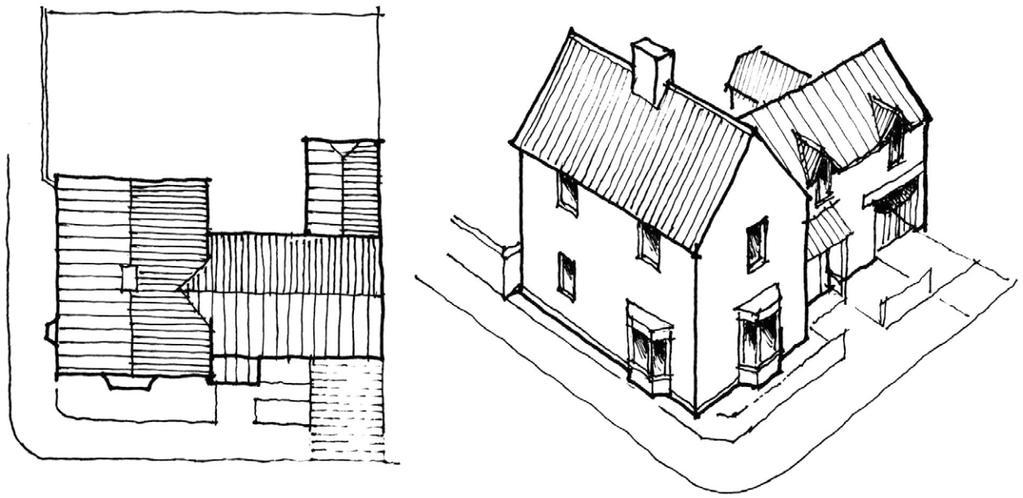


Figure 137: Large individual corner house: steep pitched roof and bay windows emphasise its pivotal position

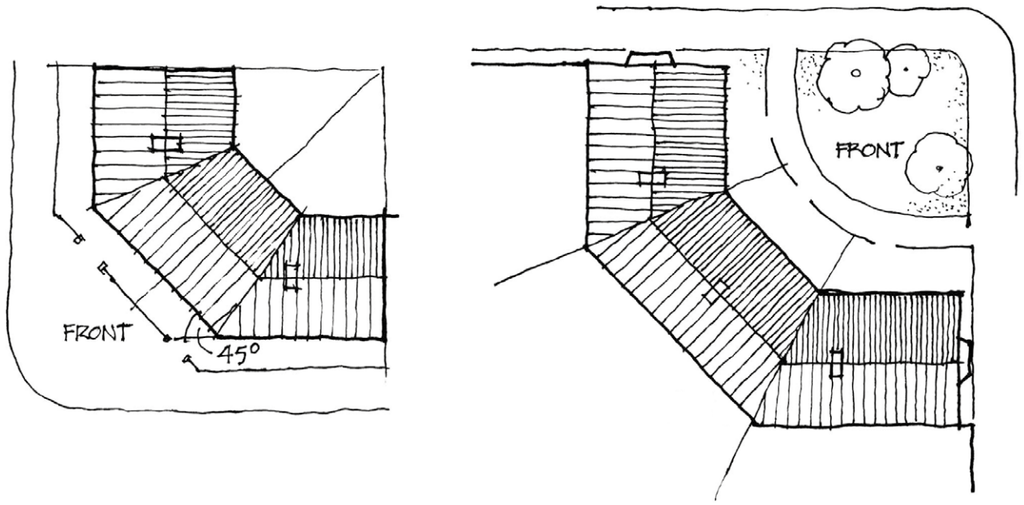


Figure 138: (left) 45° convex corner frontage type. This should be avoided as it normally results in overlooking and overshadowing problems in rear gardens. It is alien in alignment in traditional townscapes.
Figure 139: (right) 45° concave corner frontage type. This gives a spacious entry impression to a development. Appropriate in relatively formal situations. Good rear gardens.

Houses That Terminate Views

6.22.3 Houses that terminate views are an important part of layout design. Classic townscapes comprise a sequence of linked spaces within walkable distances. Buildings are used to frame and end views and often have distinctive elements such as gable ends, openings, and other architectural features to give the buildings emphasis. This results in settlements being designed at a pedestrian scale, as opposed to creating endless corridors of roads that encourage higher vehicle speeds and lack character due to unbroken views.

Figure 140: Victorian cottage terminating a view

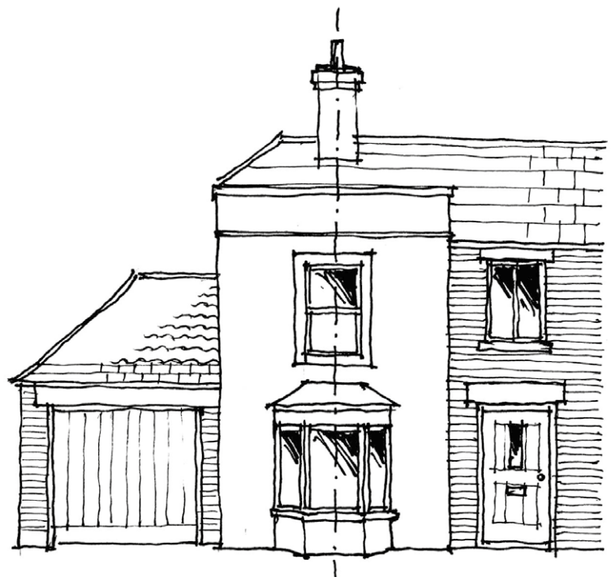


Figure 141: A strongly emphasised centreline gives a focus to the view

Figure 142: The architectural expression shown here is indicative only. Many ways of expressing an elevation can be used depending on context i.e. urban, suburban, or rural, formal, or informal

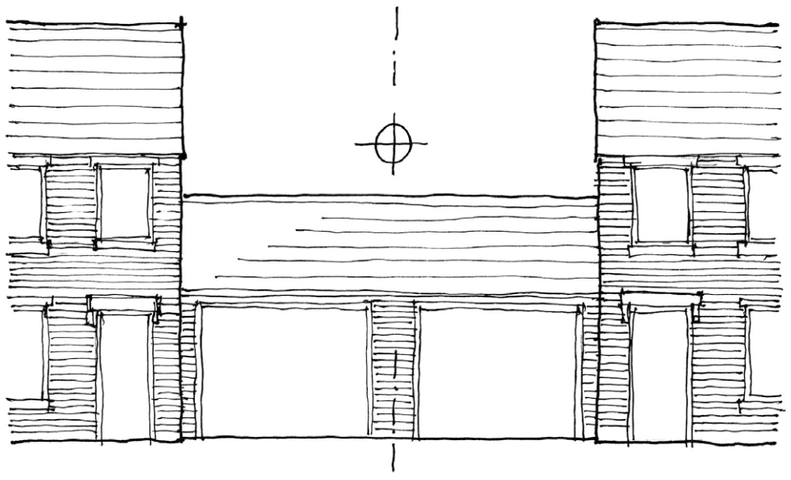


Figure 143: Avoid placing garages in a terminating position; they do not fully enclose the view and there is little to focus upon

Street Houses

6.22.4 Successful streets are comprised of houses that ensure continuity of frontage and an appropriate sense of enclosure. They should relate to each other to provide some coherency yet have sufficient variety to allow for individual preferences and a degree of personalisation.

6.22.5 The terraced house is an efficient type, which can achieve higher densities without having to resort to high rise. Traditional terraces in the smaller settlements of Central Bedfordshire demonstrate that this effective form of housing can make attractive streetscapes. The challenge is to develop a family of terrace types with related characteristics, but which offer different combinations of accommodation, have different plot widths and frontage depths and the ability to achieve subtle changes of direction.

6.22.6 Consideration should be given to the number of terraced properties in a row to avoid monotony. Any perpendicular parking to the front should be well integrated into the street, and roof heights should also be in proportion to the wall below. If the terrace is on a slope, the individual houses should be stepped. This is a useful way of allowing buildings to follow the contours, however, it is not recommended in other instances where sites are level.

6.22.7 Careful consideration must also be given to cycle parking and bin storage when designing terraced properties, and any storage must be conveniently located and not detract from the quality of the design, see Figure 152. If pathways to the rear are used, right-angle turns should be avoided to assist with walking with a cycle.

Figure 145: An informal terrace of traditional cottages (Silsoe)

Consider a range of storey & eaves heights & window proportions to provide variety in the street scene & to achieve appropriate scale at edges, corners, courtyards etc.

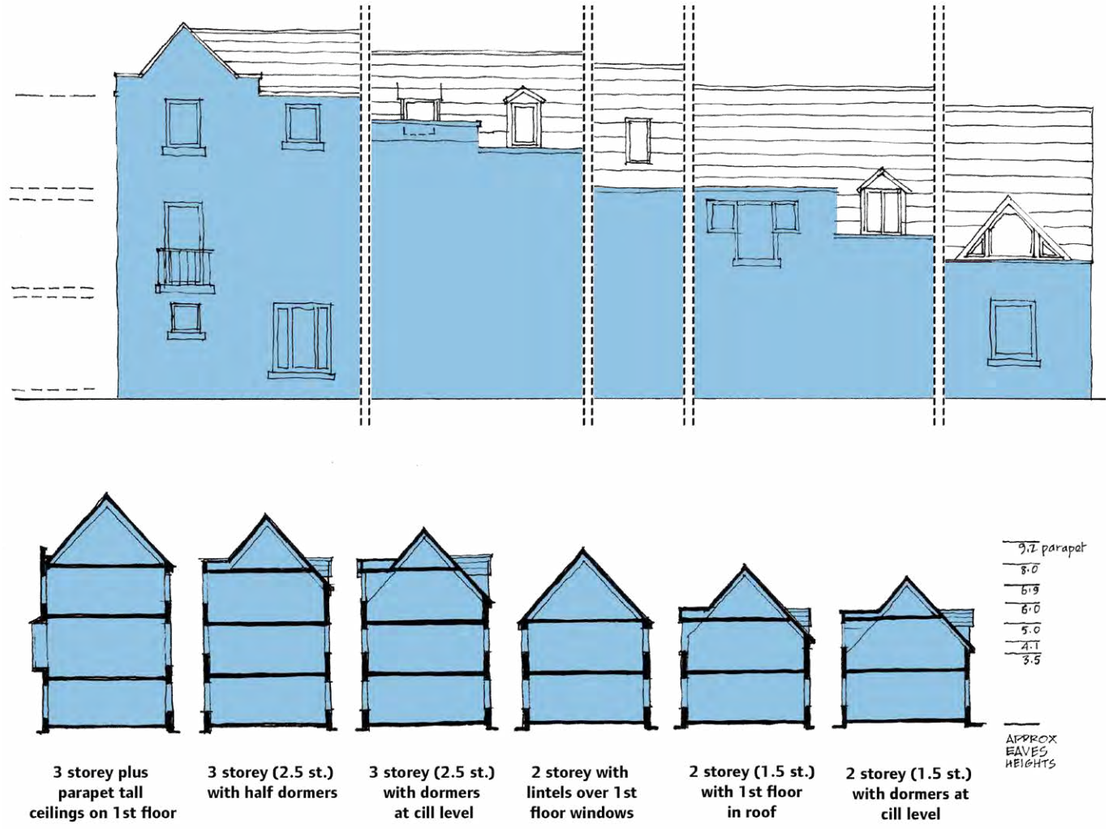


Figure 144: Utilise the full range of massing of 2 to 2.5 storey houses to create formal and informal, modest, or civic spaces

Figure 146: (left) An informal terrace (Lidlington)
Figure 147: (right) Terraced properties with a feature building (Ampthill)

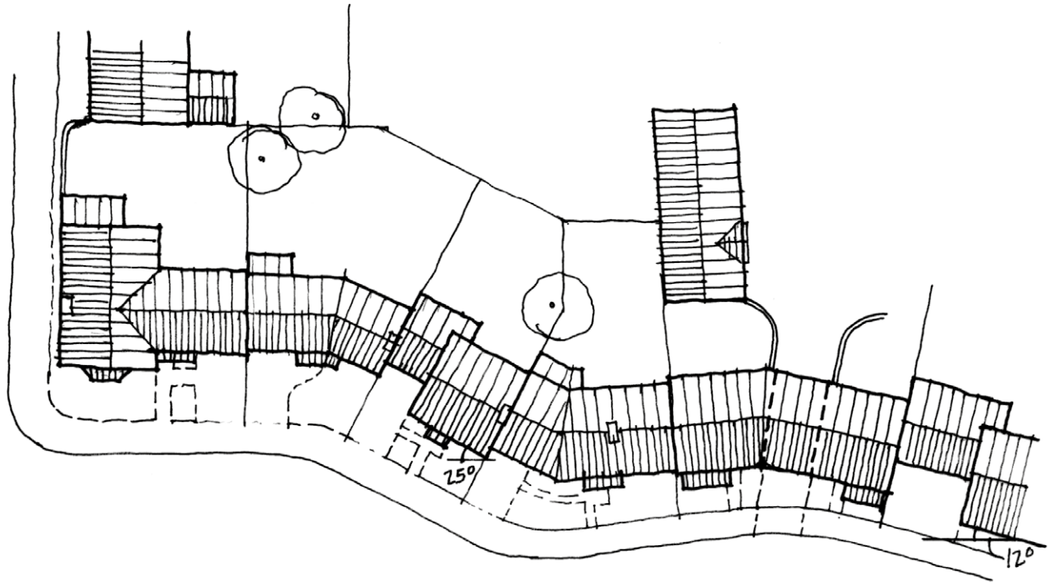


Figure 148: An informal layout. Note how the use of a slight 'crank' in a house or garage plan can create an attractive and interesting street frontage

Figure 149: Vehicular access way (Ampthill). Note also the upper windows centred over the archway

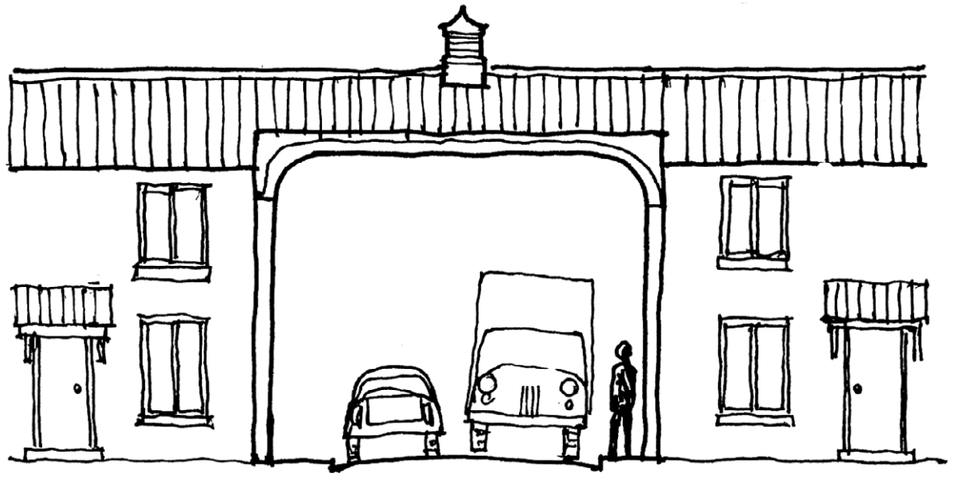


Figure 150: Minimum height of arch 3.7 metres if it must be accessed by a fire appliance

6.22.8 The use of a mixture of terraced, detached and semi-detached houses with some linking features, such as garden hedges or walls can overcome the effect of buildings 'floating' in an unrelated manner. To provide a sense of coherency, each building should have a complementary design and materials. Varying garden sizes and shapes can also help to avoid an overly rigid layout. Consideration also needs to be given to accommodating appropriate car and cycle parking and the location of bin storage for all typologies. Rear parking courts which are further away from the property than on-street parking and are not overlooked by the vehicle owners are rarely used as intended and are discouraged, and should be used as a last resort in the design process. Further guidance on parking is set out in the CBC Parking Standards for New Development SPD.

Taller Houses

6.22.9 Three storey houses have been built in the area since at least the 18th Century. They are usually found grouped in town centres for example Leighton Buzzard, and Ampthill, or sporadically in some smaller settlements such as Woburn, Aspley Guise and Potton. These historic examples are usually wide fronted. Most three storey houses are narrow fronted with integral garages. Generally, the three-storey house should be used in the higher density areas of a scheme, enclosing urban spaces. They can also be used successfully to front a formal avenue. Single groups of two or three can be used as corner elements or as accents in the street scene. It is unlikely that the whole or most of any scheme will be three storeys, except in higher density infill situations.

6.22.10 Apartments and affordable housing may also be three storey units. It is important to ensure apartments are dual aspect and of a shallower plan. This guidance on height applies to individual houses. Higher buildings may be acceptable for apartments depending on the context and location.

Figure 151: Where access by a fire appliance is not required, two storey high archways should be avoided, especially if topped only by a roof and spanning a full road width. This creates and emphasises a large, non-domestic scale

Houses with South-facing Fronts

6.22.11 Orientating housing to optimise solar gain and provide attractive private garden space is an important objective but can be challenging when the fronts of buildings face south onto the street. The design of the front boundaries is important. The design of the elevation will need to take into consideration the conflicting demands of solar gain and glare, privacy, security, and outlook. The resulting street can potentially have a pleasant green linear fringe on one side, with more traditional shorter frontages on the north-facing side. This asymmetric street profile can lend a specific character to streets with an east-west orientation.

6.22.12 Solar gain can result in overheating and opportunities should be sought to manage this during summer months. This could include the use of low g–value glazing (which lets through a low percentage of solar heat); shutters and blinds; and brise-soleil (shading of windows and building facades). Internal layouts should also be designed to allow adequate ventilation. The use of landscaping and vegetation, such as shrubs, hedging, small trees, and creepers, can also provide natural cooling and is encouraged.

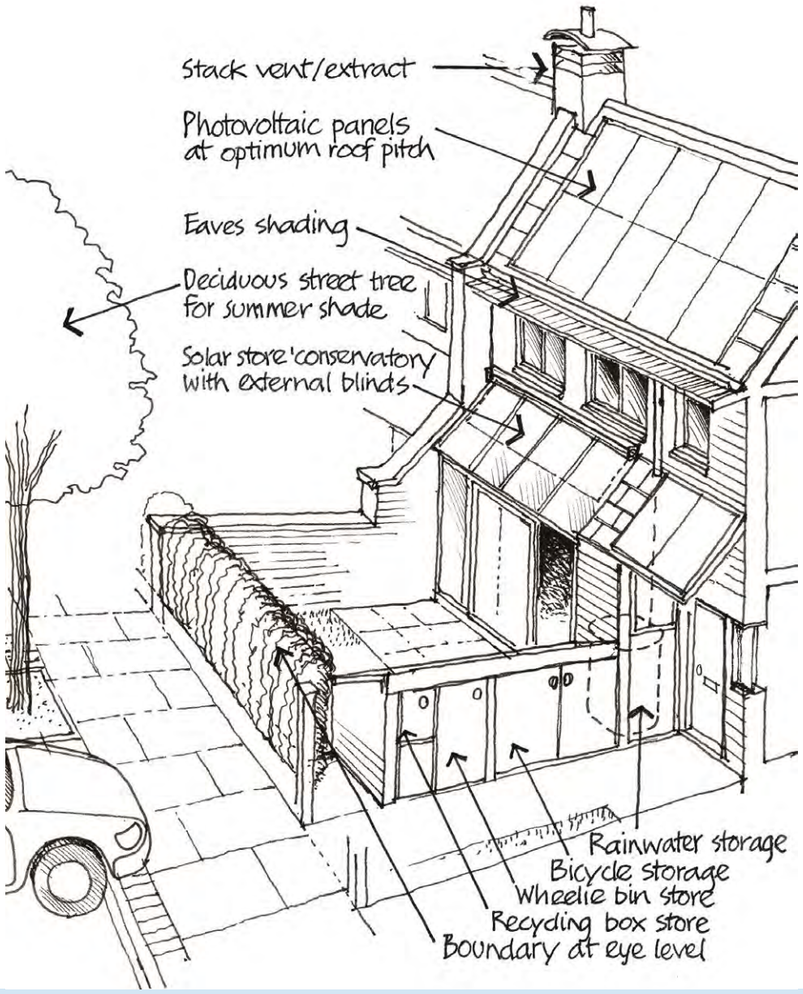


Figure 152: Houses having a south facing frontage

6.23 Avoidance of Single Aspect Houses and Flats

6.23.1 This house type consists of two-bedroom single aspect flats above four garages, or patio-type single storey houses and is often used in tight backland situations, in housing blocks or as infill. Single aspect dwellings should not face south and should only be used when there are no alternative opportunities for other designs. It is important that habitable rooms have adequate natural light, be of sufficient size and have protection from potential ground floor noisy uses (such as take aways, restaurants, pubs). Consideration must also be given to the provision of satisfactory refuge storage and cycle storage within the site.

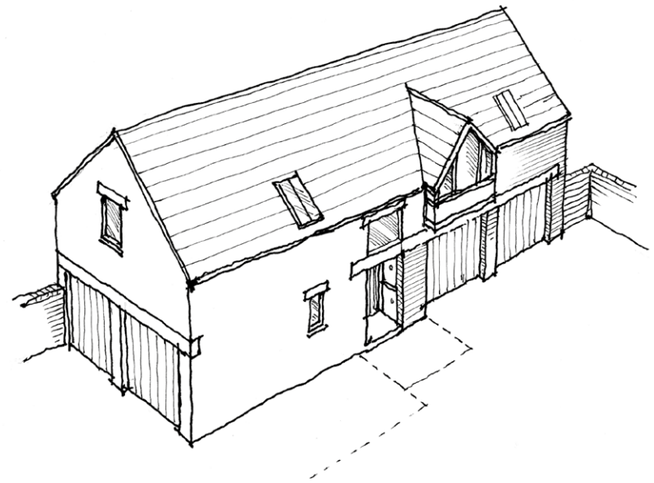


Figure 153: A coach-house type

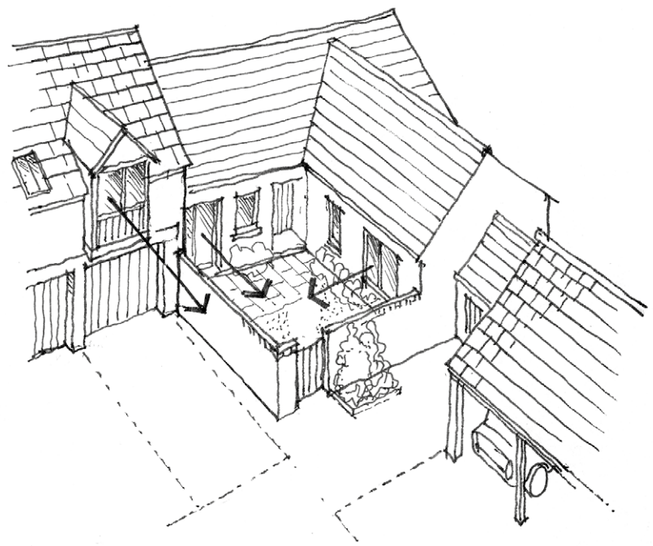


Figure 154: Single aspect types utilising a difficult internal corner

6.24 Roof design

6.24.1 Roof design is one of the key characteristics of a well-designed development and the following elements need to be considered:

- Roof pitch and shape in relation to the depth of building (e.g., plain, gable, hip, flat, mono-pitch etc.)
- Whether a living roof is appropriate
- The use of flat roofs to accommodate amenity space, green blue and brown roofs.
- Eaves overhang, fascia, bargeboards
- Dormers and rooflights
- Roofing materials
- Construction form and detailing
- Parapets
- Renewable energy generation

6.24.2 A variety of roof styles can be used across a large development. Developments should not just include the traditional pitched roof but, particularly on key frontages, should consider incorporating alternative styles such as mono-pitch, flat and curved as they can become a focal point or help create a distinctive character for a development or street.

6.24.3 A positive characteristic of local buildings in Central Bedfordshire is the use of steeper roof pitches to provide vertical emphasis. It is therefore recommended that shallow roof pitches under 40 degrees are avoided. However, there may be scope for shallower pitches, with wide eaves overhangs, in line with local context. Care should be taken to ensure roof pitches are steep without an excessive proportion of the street scene being taken up with roof when compared to the wall.

Figure 155: (left) Buildings with prominent gable ends creating a strong character (Tilla Place, Dunstable)
Figure 156: (right) The use of a mono-pitched roof adds character to this development (Sandringham Drive, Dunstable)

6.24.4 Lengthy stretches of pitched roof on terraces at the same ridge height should be avoided. The massing of roof forms can be broken by vertical protrusions through the eaves into the roof, but they should not be over complicated. Variations of the conventional pitch form to a projecting bay should be considered

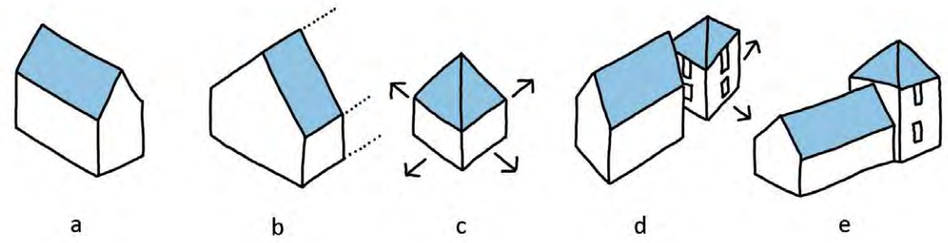


Figure 157: Roof pitches: a – Roof pitches should follow the vernacular pattern and span across the narrowest plan dimension; b – Roofs like this should be avoided; c – Square plan forms suggest a pyramid roof and each elevation should be treated equally; d – Such square plan forms need to be isolated in space as they otherwise appear uncomfortable in conjunction with other structures; e – One exception is with abutting blocks, where this problem is less apparent

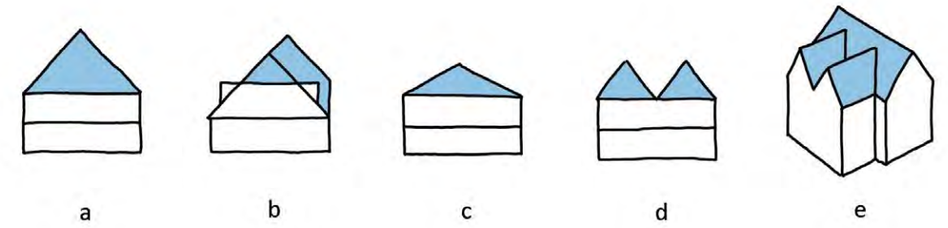


Figure 158: Examples of different roof designs: a - Uneconomically large roof space; b – Lowering of eaves with upper storey in roof; c – Untraditional slack roof pitch; d – Traditional solution: parallel roof-spans; e – Traditional solution: projecting gables

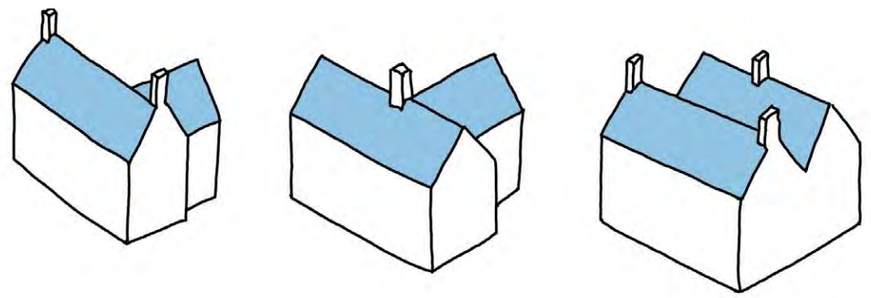


Figure 159: Complex forms

6.24.5 Buildings that try to pitch a larger span than 7 metres usually result in uncharacteristically wide gable ends and roofing issues can arise, with a lower eaves level and the upper storey being inserted within the roof. Roofing issues can also arise from a reduction in the roof pitch angle. The traditional solution to the deep-plan form is to use parallel roof spans.

6.24.6 Careful consideration should be given to the use of dormers. They can clutter the roofscape and spoil the proportions of the building if they are used excessively or made too large and overcomplicated in design. Conversely a well-designed dormer can add interest and quality to the building. Dormers should be designed to ensure they do not restrict use of solar technologies and should be avoided on roof slopes with a good solar orientation.

6.24.7 Opportunities should be sought to install photovoltaic (PV) panels on south facing roof pitches. Mono-pitch roofs and asymmetric or flat roofs also provide a greater roof area for the inclusion of Photovoltaics. The ideal solution is for inset solar that runs flush with the roof as opposed to bolt on top of roof. Care should be taken in the design of these panels so that they relate to the fenestration below. In flat roofed buildings it is possible to optimise the pitch of the PVs so that they are 30 degrees, and to also hide them from street views behind parapet walls. Views of PVs on flat roofs from streets and public spaces should be designed out.

6.24.8 Living Roofs can provide many environmental benefits including thermal insulation and biodiversity net gain. Further guidance on green and living roofs is given in the Resource section and also at www.livingroofs.org. Flat roofs are an opportunity to include for green, brown or blue roofs. Green roofs are low maintenance, with thin layers of substrate and green layers such as Sedum. Brown roofs are not planted but rely on windblown seed and bird dispersal to self-vegetate from the surrounding ecosystem. Blue roofs are designed to increase rainwater attenuation and are only suitable where large expanses of roof terrace are required and can be combined with rooftop box planting. Use of living roofs can also be expanded into the street scene by utilising street furniture such as bus stops to expand on the greenery in the area.

Figure 160: Bus stop with green roof, West Street, Dunstable

6.24.9 The use of hips on both ends of a house gives it a suburban look and makes it difficult to integrate into the street scene and should be used sparingly. A hipped roof at the end of a terrace will lead the eye round and provide continuity into the adjoining street. It may also be preferable to present a narrow gable end to the street, by concealing an otherwise unsightly wide gable end with a front-to-back cross wing at right angles.

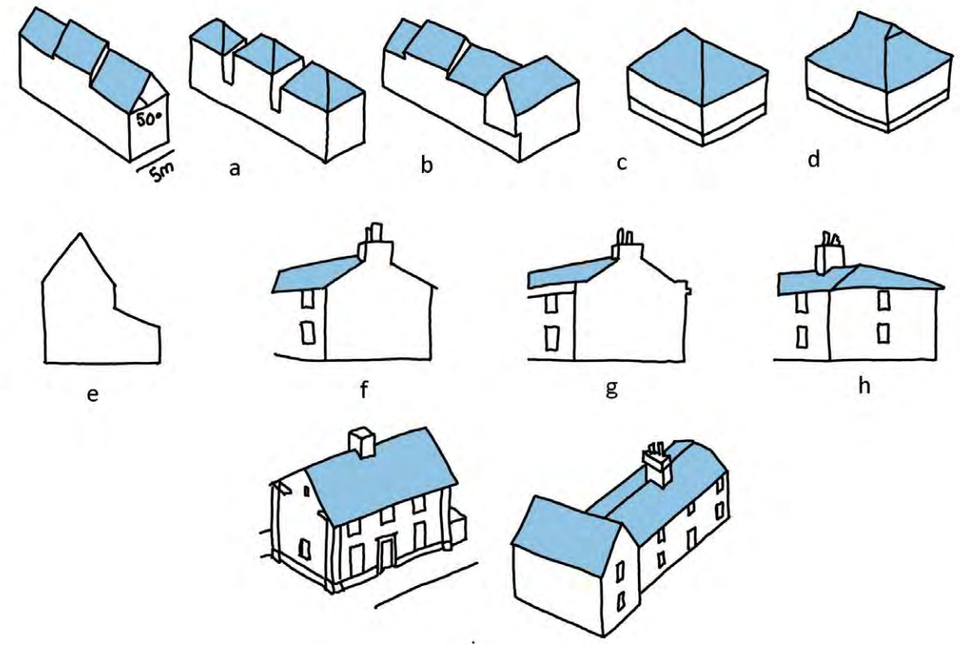


Figure 161: Roof design options; a – Hips are difficult to integrate into street scene; b – Correct use of a hip in the urban context; c – Hips with a short ridge should be avoided; d – Gablets can sometimes provide a solution; e – Shallower roof pitch on rear lean-to; f – Deeper plan with eaves overhang; g – Deeper plan with parapet eaves; h – Deeper plan with eaves overhang; I – Narrow, steep-pitched cross wing conceals wide, shallow-pitched gable end

6.25 Chimneys

6.25.1 Chimney features can enliven roofscapes and enhance the overall quality of houses for traditional building styles. Due to the impacts of environmental pollution, chimneys should only be considered where the development is located within an existing setting or context that exhibits chimneys, such as a conservation area or development of a listed building.

6.25.2 Chimneys generally provide vertical emphasis and can be replicated on new developments particularly at street corners. Substantial chimney stacks should be centred on the ridgeline. Care should be taken with the design of chimneys and active frontage on gables ends. Chimneys should not replace or overly restrict window fenestration.

6.25.3 Where chimneys are provided, they should be functional. Where this is not possible, alternative means of vertical emphasis and punctuation should be explored, such as passive stack ventilation elements, roof vents, light tubes, and expressed half dormers as long as they are designed in a contextual way.

6.26 Balconies

6.26.1 Balconies can provide an important external amenity area for apartments and can add interest to an elevation, but care needs to be taken to ensure they maintain the privacy of nearby properties and do not overly clutter the elevation. They should be designed into the elevation and not appear as a 'bolt-on' with a different material. Recessed or cantilevered balconies are a simple solution. Care should be taken so that any external supports complement the overall street scene design rather than cluttering it and balconies should not intrude into the public realm/highway.

6.26.2 External noise levels for occupiers having access to the balcony area also need to be considered, particularly in relation to ground floor uses. Guidance on sound insulation and noise reduction for buildings (BS8233:2014) is the British Standard regularly referred to by Local Authority planning departments to ensure that residents of proposed new build or refurbished developments have adequate noise insulation and are suitably protected from noise outside. The acoustic design standards set out in BS8233:2014 are expected to be achieved in this respect.

6.26.3 The design of the balustrading and guarding to the balcony should also be carefully considered. The Building Regulations Part K requires a maximum spacing between vertical guarding of 100mm. Contextual use of vertical supports such as black painted metal flats or expressed timber uprights can be effective in providing a layered vertical emphasis to an elevation. Other approaches include the use of opaque glazing which can help screen householder possessions on the balcony from being seen from the public realm. Compliance of final designs with fire regulations and Building Regulations will also be necessary.

6.27 Materials

6.27.1 The choice and distribution of materials can help to add interest to a building façade and influence the character streets and spaces as well as the overall development. The choice of materials should normally reflect the character of the setting of the development, or role of the building in its setting. In large schemes the contextual analysis should create a character area strategy which can be used to inform the materials within different parts of the wider scheme.

6.27.2 The choice of materials for a development should relate to its urban, suburban, or rural location, whether it is large or small scale, or whether the building is a 'landmark' (small or large). Where there is a well-established pattern of local building materials within the setting of a proposed development, this should be recognised and complemented in the choice of proposed materials. The following criteria should be applied when selecting materials:

- Appropriateness to the function of the building.
- Scale: the unit size of the material related to a person or those in adjacent buildings.
- Colour and texture (assertive, complementary, or recessive): Bold or assertive colours may be appropriate on a key frontage or for a key corner building.
- Performance: e.g., ventilation, thermal and acoustic properties, heat retention (heat islands) and reflection, embodied carbon, and environmental impact rating.
- Durability: e.g., design life, robustness, and ease of maintenance.
- Sourcing: sourcing the materials locally/regionally.

6.27.3 The Context and Identity section of this Design Guide includes guidance on traditional material typologies in Central Bedfordshire, which should be considered where traditional materials are appropriate or where Listed buildings and conservation areas are involved.

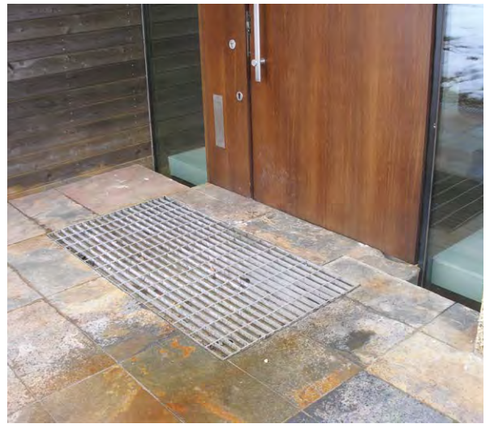


Figure 162: (bottom left) Simple expression of materials, lintels, and colours to convey the character of riverside buildings in the region, and to be legible in long distance views (Biggleswade)
Figure 163: (top) A limited palette of materials helps enforce a strong character for this street (Sandringham Drive, Dunstable)
Figure 164: (bottom right) Careful detailing of materials to achieve a flush threshold in a rural setting (Nicolas Tye Architects studio near Maulden)

6.28 Larger Footprint Buildings

6.28.1 Town centres and local centres can occasionally be required to accommodate larger footprint buildings, although these also tend to be located at junctions of major roads on the outskirts of settlements. This building type includes uses such as foodstores, warehouses, educational facilities and leisure uses.

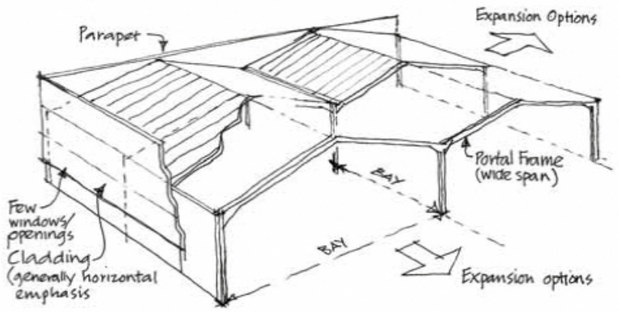
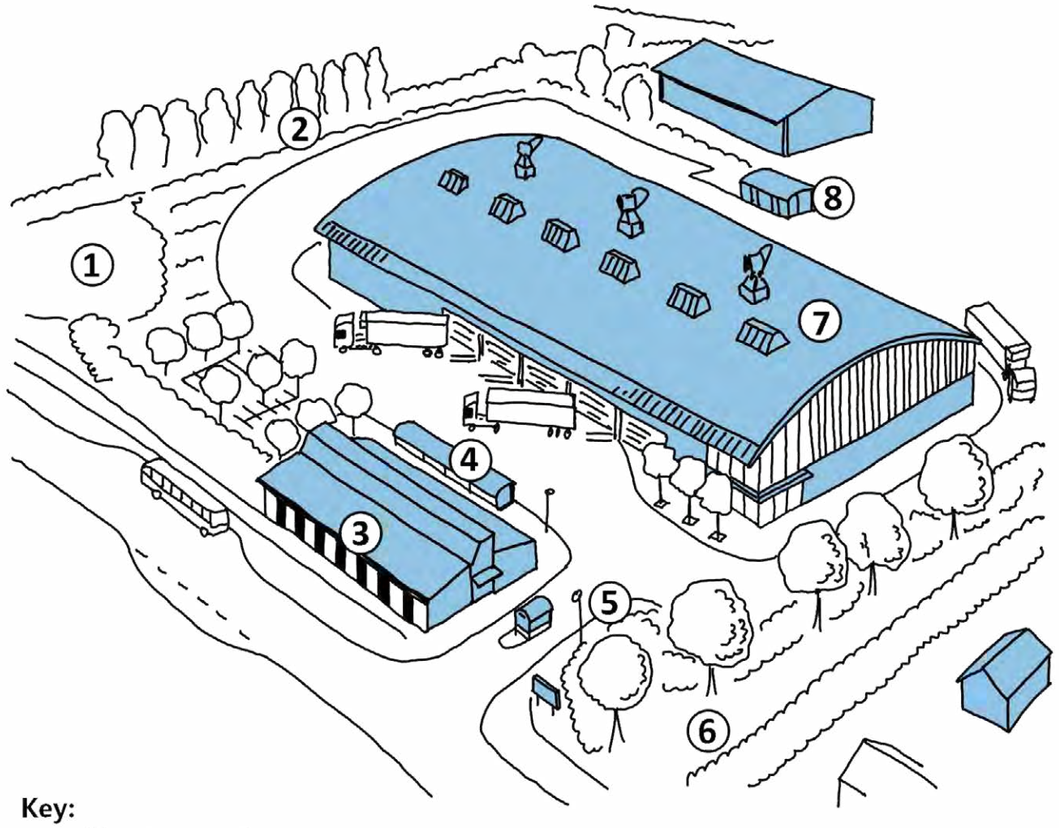


Figure 165: Conventional Large Footprint Building

6.28.2 Policy HQ9 of the Local Plan requires design coding for large footprint buildings at Outline planning stage to, in part, inform site wide mitigation both in terms of built design and landscape setting.

6.28.3 Due to their size, scale, materials and accessibility, large scale buildings are likely to have a high carbon footprint and physical and visual impact in all settings. These building forms should be designed so that they integrate into backland developments and so that an entrance is provided to the street.

6.28.4 These building types can be surrounded by other forms of development such as apartments which can either be located around larger buildings or on top of them to prevent large areas of inactive frontage. Efforts should also be made to provide vertical emphasis and active frontage any remaining exposed elevations to these large footprint buildings by location of reception areas, offices, staff restaurants, shopfronts, etc.



Key:

1 - Infiltration pond
2 - Existing hedgerow and trees retained and reinforced
3 - Active frontages on street where appropriate
4 - Cycle parking
5 - Lighting designed to minimise light pollution
6 - Existing hedgerow reinforced with bund & new planting
7 - Green roof with photovoltaics, air extract/vents and rooflights
8 - Waste management conveniently located

Figure 166: Indicative layout considerations for large footprint warehouses within an urban fringe context

6.28.5 A larger footprint building will potentially have a large surface area of roof which will be suitable for intensive green roof treatment to provide a landscaped courtyard deck. Alternatively, it is the opportunity to provide large amounts of solar PV Panels.

6.28.6 When considering retail and warehouse parks, the spaces between the buildings become important. In these cases, warehouses should be grouped together so that the service yards can be arranged back-to-back. Careful landscaping can ensure the buildings are screened from view and this can help to avoid long stretches of blank walls. There is an opportunity to group external hard landscaping areas for social gatherings outside main active frontages and building entrances. Other landscape opportunities include the provision of trim trails and external exercise equipment as well as landscaped cycle and foot paths. Where soft landscaping is used in parking areas, consideration needs to be given to how occupants will access their vehicles. For example, ensuring there is sufficient space and hardstanding for the occupant to open the doors on their vehicle without trampling on or hitting the landscaping features.

Figure 167: Window shading on south facing elevation

6.29 Building Heights - Mixed Use Buildings

6.29.1 Denser mixed-use developments are encouraged at junctions of routes, and in local and town centres. Building heights of these developments will be considered on their merits, considering the height of surrounding development, roofline impact, views, and scale of development. In existing towns, it is likely that town centre development will be within the range of 2.5 to 4 storeys. Half storey hights may be appropriate where it can help to ensure there are no restrictions for space for installations of solar technologies/heat pumps on the roofs. In new settlements, building heights would be determined by the relevant masterplan or design code. In this case, contextual factors such as impact on the landscape, historic environment and the need to create a landmark focus will be relevant factors.

6.29.2 Whilst commercial development often requires greater floor to ceiling heights than some traditional building types, every effort should be made to reduce the differential between existing and proposed storey heights and floor depths. In most cases the differential which results in two storeys of proposed development being of the height of three storeys of existing would not be acceptable.

6.29.3 Wherever possible, differentiation between storey heights, reflecting different uses on ground, upper floors, and attic floors, should be used to give articulation to a façade.

Figure 168: Large span foodstore with structural bays expressed and south facing walls recessed to create shading. Note also large, glazed areas allowing daylighting and creating an active frontage.