Harlow Design Guide Addendum
Supplementary Planning Document
Adopted December 2021

To be read in conjunction with the main Harlow Design Guide




Harlow Local Development Plan

Harlow Council
Working together for Harlow

This Design Guide Addendum Supplementary Planning Document (SPD) applies to all areas of the Harlow district and **should be read in conjunction with** the main Harlow Design Guide SPD (adopted 2011) and the Harlow Local Development Plan (adopted 2020).

For the **Town Centre** specifically, it is important that this Addendum is **also read in conjunction with** the (currently draft) Town Centre Masterplan SPD, which contains further guidance on design in the Town Centre, including in relation to tall buildings and the public realm.

By 2023, the Council intends to have prepared, consulted on and subsequently adopted a new Design Guide SPD which will supersede both the current main Design Guide and this Addendum.

Following a period of consultation between July and October 2021, this Design Guide Addendum has been adopted as an SPD and sits alongside the main Design Guide as a material consideration in the determination of planning applications.

This SPD was prepared in accordance with the Council's Adopted Statement of Community Involvement and relevant legislation, including The Town and Country Planning (Local Planning) (England) Regulations 2012 (as amended). More information can be found within the SPD Consultation Statement.

CONTENTS

This Addendum comprises the following sections:

Sections 1, 2, 3 and 5 are new topics which are not covered in detail in the main Design Guide.

Section 4 provides additions to the existing Householder Guidance section of the main Design Guide.

SECTION 1:

Tall Buildings

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1. TALL BUILDINGS

1.1. Harlow is home to the first residential tower block in the UK. 'The Lawn', completed in 1951, won a Ministry of Health Housing medal for its design due to the architectural style which allowed each flat to have a south-facing balcony. There are now several tall buildings in the district which accommodate both commercial and residential use.

1.2. The majority of those are situated within the Town Centre, including Terminus House which is 14 storeys high, Joseph Rank House at 12 storeys and the Holiday Inn at 5 storeys. More recently, applications have been submitted and, in some instances approved, for 11, 12 and 16 storey buildings. Tall buildings make a valuable contribution towards housing, activity and the wider public realm if they are designed well.

1.3. Policy PL1 of the Harlow Local Development Plan (HLDP) sets out the design principles for new development including the consideration of local context, urban form, Green Infrastructure, scale, height and massing. This Tall Buildings section of the Addendum provides further guidance on how the criteria of Policy PL1 will be applied to tall buildings.

1.4. The (currently draft) Town Centre Masterplan Supplementary Planning Document contains further guidance on design in the Town Centre, particularly in relation to tall buildings and the public realm.

Definition and Types of Tall Buildings

1.5. This Addendum defines tall buildings as **structures that are more than 6 metres taller in height above that of surrounding buildings, or over 30 metres tall**. To put this into existing context, 'The Lawn', for example, is 35 metres tall.

1.6. Tall buildings usually fall into three categories:

1.7. **a. Townscape Buildings**, which can be arranged to form streets, squares and crescents and help define the character of a street. They are generally a few storeys higher than other buildings in the surrounding context and can support a greater mix of uses and services and add to the vitality, interest and viability of an area. Townscape buildings can be both long and bulky and so need to be incorporated into streetscapes in a sensitive way, connecting to the streets or spaces they line by providing complementary uses and frequent access and openings.

1.8. **b. Tower Buildings**, which are generally buildings that are tall and thin with a slender profile, usually substantially contrast in height from the majority of buildings within the surrounding area. They stand out and make an impact, make the best use of tight sites, add interest to the skyline and have a positive impact on long-range views. They can also provide a focus for regeneration, help with wayfinding and create vitality. Due to their height, they generally make a visual impact felt over a wider area than that of townscape buildings. However, they can be difficult to integrate sensitively into the landscape and their setting needs particularly careful attention and consideration.

1.9. **c. Slab Blocks**, which are more significantly broad in one direction and are typically less-often aligned along streets. Usually they are significantly taller than surrounding buildings and so are extremely prominent, often having a less-successful relationship to their context and street edge, resulting in blocked views. Slab blocks generally occupy space rather than define it and often fail to provide enclosure to streets or spaces, which results in poorly-defined public realm.

Sustainable Design and Climate Change

1.10. To ensure a tall building is sustainably designed and assists in mitigating against the effects of climate change, the Climate Change section of this Addendum must be considered.

1.11. Many of the measures in the Climate Change section are passive and can reduce the overall operational costs and emissions of a tall building. An example is the use of passive lighting, through careful design, which reduces the use of active lighting in a building.

1.12. The Climate Change section includes guidance relating to:
a. renewable energy production in tall buildings;
b. sustainable use of building materials;
c. flexible and adaptable uses of a building;
d. passive cooling, heating and lighting;
e. avoidance of overheating;
f. siting of buildings to ensure appropriate solar gain;
g. winds and heat loss;
h. water reuse;
i. flooding and SuDS;
j. appropriate building layouts to take maximum advantage of passive measures;
k. the Urban Heat Island effect.

Height, Scale, Massing and Materials

1.13. Proposed tall buildings should not exceed the general contextual height, unless there is evidence of strong mitigating circumstances or significant visual reasons and associated aesthetic townscape advantages. It may be appropriate to align a tall building in a manner which provides a stop to a visual axis, or frames a particular view or scene.

1.14. A balanced height is usually dependent on the general existing prevailing (majority) context and scale, and from this an acceptable height can be defined. A tall building acting as a 'point element' in a townscape of lower buildings would be considered on an individual case basis and in relation to the location, context, views and other relevant factors.

1.15. For tall buildings in the townscape, a more slender approach with a vertical emphasis is often more readily supported, as tall buildings appear better as more slender ‘point elements’ in the townscape rather than just bulky high buildings.

1.16. Groups of tall buildings can be less obtrusive, but this will only be acceptable in areas such as the Town Centre where there are already a variety of building heights and where the impact on light and privacy of houses is less likely to occur. Single high-rise residential buildings may be supported in existing residential neighbourhoods in Harlow, but these would generally be limited to 6-10 storeys and subject to other criteria set out in this Addendum and the main Design Guide.

1.17. Relief and diversity in height and massing of developments should be provided in different localities. Existing low-rise and low-density areas should be preserved to enhance diversity.

1.18. It is essential that new tall buildings make a positive contribution to their surroundings through an appropriate form, setback, massing and architectural language. In some instances, for example in the Town Centre, the developer may be required to produce a Massing Study as part of their planning application, in addition to other required analyses. Such a Massing Study should detail, in particular, how the proposed tall building(s) would make a positive contribution to their surroundings. This could include the use of 3D imagery.

1.19. New tall buildings will be expected to improve and enhance the character and appearance of the local area, by providing an aesthetically-pleasing design and creating a landmark building. They should also celebrate the unique design heritage of Harlow and incorporate design cues from the immediate area – and Harlow more generally – with regards to scale, massing, colours, materials and detailing of the original fabric, and the integration of public art and sculpture.

1.20. Development proposals should take cues from the features and typical palette of materials of Harlow’s original New Town character to inform its building design. Buildings have colour accents and use is made of tile and other materials to complement brick, stone and concrete. For example, features in the Town Centre include vertical articulation of façades, large protrusions on façades and rhythm through the repetition of geometric shapes. Glazing on many buildings is encased by slender window frames which give a delicate distinctiveness to the façades and is fundamental to Harlow’s character.

1.21. The materials of a tall building would be dependent on the design, but the Council would prefer colours that are harmonious with the context and prevailing townscape colours. Brash colours which do not fit in with the local character should be avoided, as this visual approach usually dates quickly and erodes the local character. If a directly contrasting visual style or aesthetic to the local townscape is proposed, the contrast should have a design that demonstrably relates to the local context.

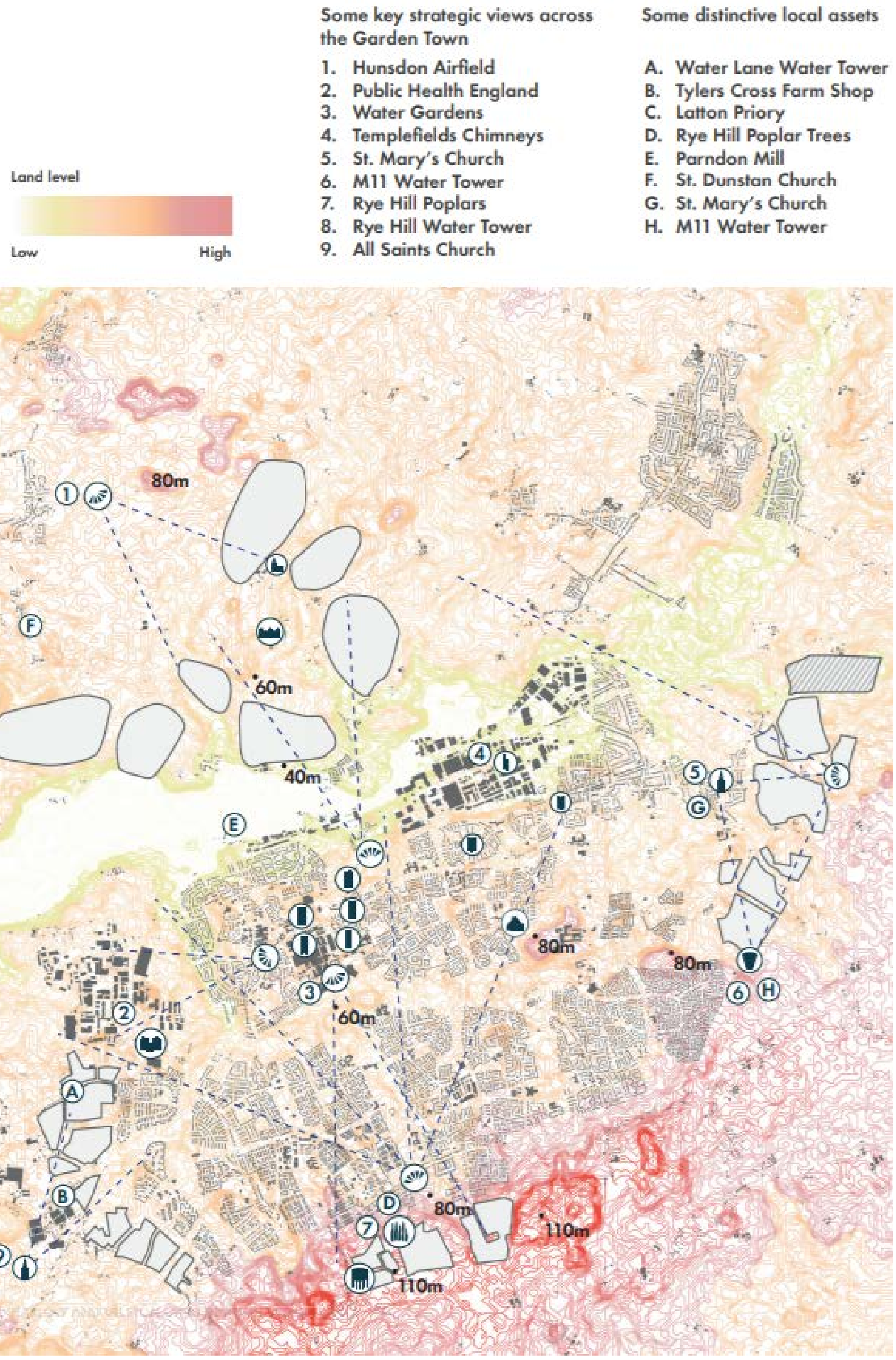
Views

1.22. As well as being of a suitable height and design for the local area, new tall buildings should take into account their visibility from further away. Tall building design should pay attention to how the building will be viewed from a range of locations, both from nearby and from afar.

1.23. There are a number of key viewpoints across Harlow (and beyond), largely due to the 'landscape bowl' within which the town was designed and built. For example, The Water Gardens were positioned by Sir Frederick Gibberd so that the view of the Green Wedge southwards from the Town Centre could be enjoyed. Such viewpoints must, therefore, be respected and protected.

1.24. The map overleaf (Fig. 1.1), from the Harlow and Gilston Garden Town Design Guide, provides examples of viewpoints across Harlow and beyond.

Fig. 1.1: Map of viewpoints



1.25. Developers should provide their own information, assessments and studies relating to viewpoints and how they would be respected, including maps, CGI images and physical models – as appropriate – to demonstrate any visual impact from the proposed development. This will also aid the understanding of Council Officers and Elected Councillors.

1.26. Consideration must also be given to impacts on important assets which are located further afield, given Harlow's position as a town set within the wider landscape, and how views out of and through these assets may be affected by a possible change to the Harlow skyline.

1.27. Where the development site for a tall building is located on a gradient, the lowest elevation of the proposed development should be measured, to ensure maximum impact on the surrounding area is considered.

1.28. In order to create a greater choice of views, create adequate natural ventilation and ensure sufficient daylight and flexibility in the use of rooms, it is expected that 90% of flats in a tall building will be dual aspect. However, a reduction in this requirement may be considered where strong justification and reasons for the reduction are provided.

Open Space and Physical Activity

1.29. Tall buildings should provide appropriately-sized amenity space for residents of the building, in accordance with the Amenity Space and Gardens section of this Addendum.

1.30. It is also expected that tall buildings provide increased open space around the building, especially in front of the building. Tall buildings should also provide good landscaping and, where possible, link amenity space and landscaping to the district's Green Infrastructure network.

1.31. Tall buildings can be designed in such a way to provide opportunities for physical activity, which is particularly important given that most individual dwellings in tall buildings do not benefit from private garden space. In accordance with Sport England's Active Design Guidance, the following should be taken into account when providing opportunities for physical activity.

1.32. a.) Amenity spaces provided for residents of tall buildings should be multi-functional to encourage use by a range of users, with circular routes that are suitable for walking/running, outdoor gym equipment and supporting infrastructure such as seating.

1.33. b.) Use of the stairs in the building should be promoted for those who are able to use stairs. This should be enabled by prominent position of stairs, appropriate signage and stairwells that are spacious and welcoming.

1.34. c.) To enable residents of the building to regularly and safely cycle, bicycle storage should be appropriately designed, secure and prominent, with facilities for charging electric bicycles. Communal storage should be adequate to serve the number of dwellings in the building.

1.35. For more information on open space in tall buildings, please refer to the Amenity Space and Gardens section of this Addendum.

Impacts on Street Level and the Surrounding Area

1.36. At the street level, tall buildings should have a successful human-scale interface which should be active and engaging but with a contextual visual strength to anchor the building to the street. Visual and spatial interaction with wider surrounding areas is also encouraged.

1.37. Developers should consider the night-time aesthetic of proposed tall buildings. Lighting, in particular, is a key design consideration, as it can greatly impact on long and near views. Lighting can be manipulated to the advantage of a tall building, to accentuate particular features.

1.38. Development involving tall buildings should aim to provide high-quality public realm and active frontages, user-friendly and legible entrances and approaches, sunshine zones, and legible links with transport and pedestrian routes.

1.39. When proposing development involving tall buildings, consideration should be given to the potential impact on the amenities of the surrounding area. Specifically, careful considerations should be given to the potential impacts of particular issues, as follows (but not limited to):

- outlook/aspect;
- privacy (see the Privacy and Overlooking section of this Addendum);
- daylight/sunlight;
- noise;
- light glare;
- overbearing impact;
- effect of wind;
- effects on exiting Green Infrastructure and biodiversity;
- increased sense of enclosure.

1.40. The Climate Change section of this Addendum should be referred to when considering the design of a tall building, including in the context of impacts on the street level and surrounding area. For example, it provides further guidance in relation to the effects of wind and how the unnecessary cooling of a tall building due to the effects of wind can be avoided.

1.41. Applicants must submit a Daylight and Sunlight Assessment in accordance with the Building Research Establishment's Site Layout Planning for Daylight and Sunlight guidance, including information to determine the existing and expected levels of daylight, sunlight and overshadowing on neighbouring properties, and the measures that will be taken to reduce the expected impact of the proposed development.

1.42. Consideration should be given to the negative effects of the diversion and funnelling of wind arising from the effects of a tall building. Windswept spaces must be avoided through architectural devices such as awnings, terraces, setbacks in the façade of the building, trees or soft landscaping.

1.43. Wind mitigation measures should be permanent features which are wholly within the development site boundary and are well-designed and integrated into the overall design of the scheme.

1.44. The applicant will be expected to provide a Wind Microclimate Study to fully ensure safe wind conditions in and around the tall building and any surrounding highway, covering impacts on all users of that space (including pedestrians, cyclists and motorists) at all times of year.

1.45. The Study should select appropriate wind statistics for the development site, determine the impact of the proposed development through computational fluid dynamics tools or wind tunnel testing, produce ‘speed-up’ ratios in a wide area around the site, and combine these ratios with wind statistics to obtain comfort ratings.

1.46. The impact of shadowing throughout the day and at different times of year will need to be assessed. Shadowing caused by tall buildings can be difficult to remove completely, but it can be minimised through appropriate siting of the building and through careful orientation, floor space dimensions and overall building height.

1.47. Projecting balconies should be well-spaced to avoid overshadowing of balconies below.

1.48. Access to natural light as well as privacy issues for new and existing residents should be considered during the design process. Redevelopment of an existing site could also present the opportunity to improve any existing issues of overshadowing or overlooking.

1.49. The sub-section on light angle distances, in the Privacy and Overlooking section of this Addendum, contains guidance which specifically relates to tall buildings.

1.50. Tall buildings can potentially have a major impact on a skyline. It is important that this impact is positive with appropriately-designed roofs and termination with the skyline.

1.51. All rooftop plant and machinery, service bays and air conditioning should be screened, for example with Green Infrastructure, to avoid an unsightly appearance. Designers should, therefore, incorporate a contextual and aesthetically-balanced termination of the building.

Pre-application consultation

1.52. The Council’s new Statement of Community Involvement encourages applicants to carry out significant engagement with the local community at the pre-application stage. This would be particularly useful and effective for development which incorporates a tall building(s).

SECTION 2:

Privacy and Overlooking

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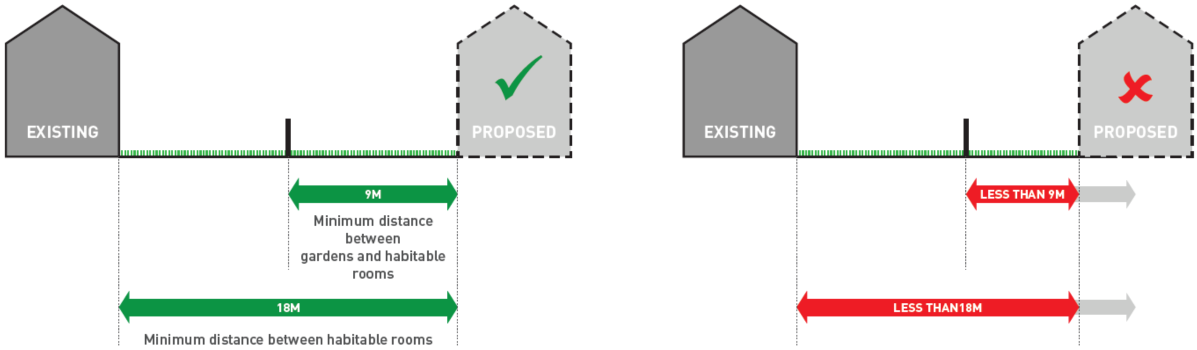
2. PRIVACY AND OVERLOOKING

2.1. Development of new dwellings and additions or alterations to existing dwellings should ensure a good level of privacy inside buildings and within private outdoor space.

2.2. Directly-facing habitable room windows will normally require a minimum separation distance of 18 metres, except where the existing character of the area varies from this (see Fig. 2.1 below), such as potentially in the Town Centre. A distance of 9 metres should be kept between gardens and habitable rooms.

2.3. There is no legal definition of a habitable room, but the Royal Institute for Chartered Surveyors describes habitable rooms as providing the living accommodation of the dwelling, including any living room, dining room, study, home office, conservatory or bedroom. Excluded from the definition is any bathroom, WC, utility room, storeroom, circulation space or kitchen (unless it provides space for dining).

Figure 2.1: Minimum separation distances between facing habitable room windows



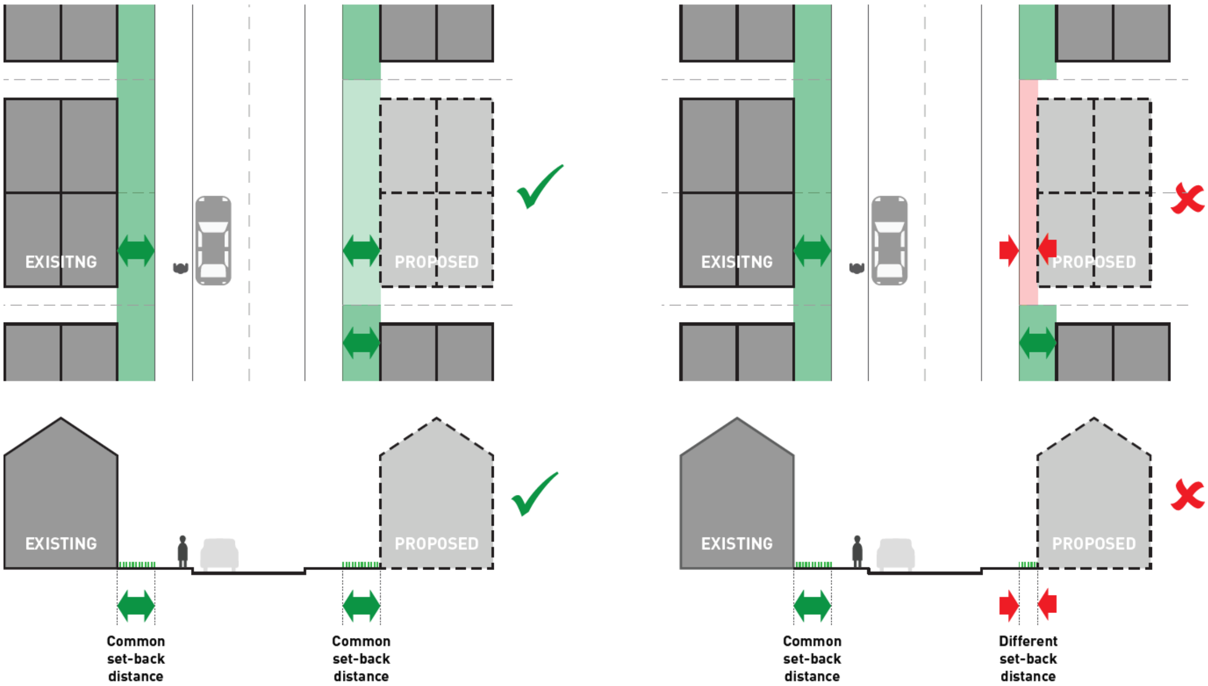
2.4. For frontages, a reduced distance may be acceptable if there are high-quality design solutions which can mitigate impacts and allow for efficient use of land.

2.5. In order to manage and monitor the impact of development on privacy and overlooking, the Council may remove certain Permitted Development Rights, which relate to new extensions, from certain properties.

2.6. For sites within an existing street scene, the distance between front elevations should normally be determined by set-backs and stepping of the road in the area (see Fig. 2.2 overleaf). Privacy should be balanced with active frontage and overlooking of public spaces. Setbacks which are insufficient in size lead to reduced animated façades and active frontages, as well as views from within the home.

2.7. The 'Streets for All' chapter in the Urban Design Group's 'Building for a Healthy Life' guidance document should be referred to for further advice on the impact of design on the streetscape.

Figure 2.2: Building lines should be set back from the footway and respond to the context



2.8. Windows to side elevations may be designed to direct views in certain ways, or be provided with obscure glazing and fixed shut to avoid overlooking in other directions.

2.9. Main windows should normally be positioned in the front and rear elevations (to habitable rooms) with secondary windows to the side (to non-habitable rooms and circulation spaces).

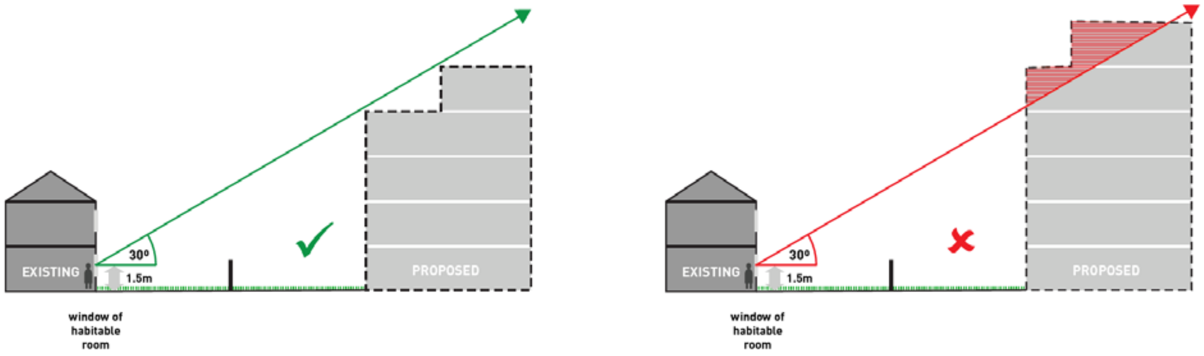
2.10. Windows are encouraged where they adjoin the public realm, to support passive surveillance.

Light angle distances

2.11. New development should be set below a line of 30-degrees from the centre of the lowest window of a habitable room in an adjoining existing property (the '30-degree rule'– see Fig. 2.3 overleaf).

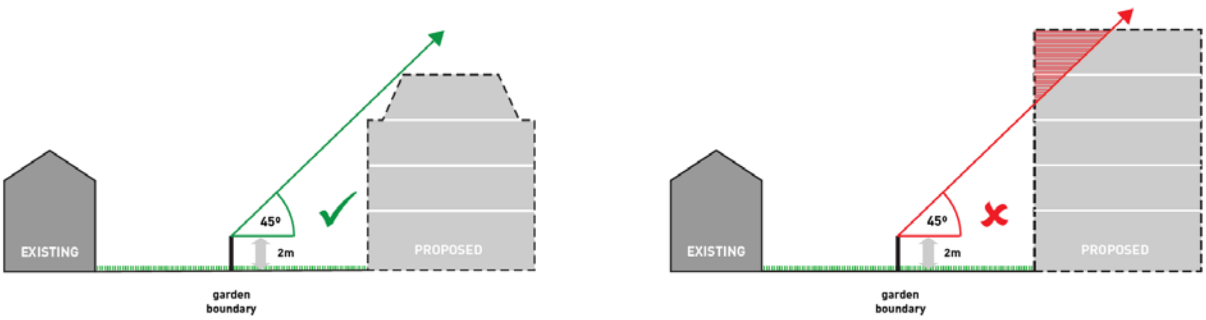
2.12. Flexibility on light angles may be allowed for tall buildings where they are able to provide overall acceptable levels of daylight/sunlight, subject to the submission of a Sunlight and Daylight Assessment which demonstrates that neighbouring properties would receive acceptable daylight and sunlight levels in accordance with the Building Research Establishment's Site Layout Planning for Daylight and Sunlight guidance.

Figure 2.3: Development above the 30-degree line will impact upon the habitable windows of adjoining properties



2.13. Where proposed development adjoins private amenity/garden areas, the height of the development should be set below a line of 45-degrees at the garden edge, measured from a height of 2 metres above the ground (the '45-degree rule'– see Fig. 2.4 below).

Figure 2.4: Development above the 45-degree line will impact upon private amenity area of adjoining properties



2.14. Information on light angle distances for extensions to dwellings can be found in the [Householder Guidance section](#) of this Addendum.

SECTION 3:

Amenity Space and Gardens

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3. AMENITY SPACE AND GARDENS

3.1. The minimum acceptable standards for the size of external private amenity space (rear gardens) for new dwellings are set out in Table 1 below. Flexibility to this may be given where viability is an issue, subject to the submission of an independent viability assessment.

Table 1: Minimum Garden/Amenity space standards for new dwellings

No. of bedrooms	Space Standard
1 or 2	50m^2
3	70m^2
4	90m^2
5+	110m^2
Flat (any beds)	20m^2 per flat

3.2. In order to preserve amenity spaces and gardens, no more than 50% of the original external private amenity space for a dwelling should be built on for extensions, outbuildings or parking areas.

Flats

3.3. The minimum standard for flats, as shown in Table 1 above, could include balcony space and a proportion of informal and formal communal areas (and also public amenity areas if considered appropriate), roof-top gardens, amenity areas above ground floor and children's play spaces.

3.4. A lower standard may be considered appropriate if the site is within a 10-minute walking distance (or 800 metres as the crow flies) of an alternative, appropriate and accessible multi-functional (formal and informal) green space.

3.5. When reduced provision of balconies is required and can be sufficiently justified, high-quality communal amenity space should be provided to offset the lack of private amenity space.

3.6. Flats at ground floor level should be provided with a minimum 1.5 metre deep front garden with an additional 0.5 metre strip for planting against the public realm.

3.7. Communal amenity spaces should be designed with clear landscape proposals and will be expected to create a usable and attractive environment, including tree planting and landscaping.

3.8. In accordance with Sport England's Active Design guidance, communal amenity space should be designed to provide opportunities for physical activity. This should be achieved by ensuring the space is multi-functional to encourage physical activity by all groups within the community.

3.9. For example, space suitable for informal sport should be provided to encourage use by children and young people, along with space suitably designed to accommodate small community pop-up events and allow for circular walking/running/cycling routes around the open space. Such space should also be supported by seating and other infrastructure (e.g. drinking fountains and signage) to encourage people to visit and use the space.

Daylight

3.10. In order to be adequately sunlit throughout the year, and in accordance with Building Research Establishment's Site Layout Planning for Daylight and Sunlight guidance, private amenity space should be positioned in such a way that it would receive at least two hours of sunlight on 21 March each year.

Fencing

3.11. Low decorative railings or low walls are suitable boundaries for front gardens. Higher walls and fences and high hedges are generally not suitable as they obscure visibility, cause overshadowing and deter planting. However, higher walls and fences may be allowed if they are in character with nearby boundary treatment or are along the rear or side boundaries of gardens.

SECTION 4:

Householder Guidance




4. HOUSEHOLDER GUIDANCE

PLEASE NOTE: This section provides guidance in addition to that already set out in Section 4.12 of the main Harlow Design Guide.

General extension principles

4.1. For all householder development, dwellings should remain well-proportioned, respecting local character and using building materials which are durable and attractive.

4.2. In the context of this Addendum, extensions also include conservatories, new garages, loft conversions and porches. All planning applications for extensions and alterations will be considered on their individual merits.

4.3. Proposed extensions should:

i. be visually subservient to the original dwelling;

ii. be constructed with materials and features which complement the original dwelling, incorporating energy efficiency measures;

iii. retain privacy with regards to overlooking from adjoining properties (see the Privacy and Overlooking section of this Addendum);

iv. retain daylight levels to ensure there is no loss of daylight or overshadowing of adjoining properties, particularly loss of light to main windows serving habitable rooms such as living or dining rooms (see below for light angle calculation; see paragraph 2.3 for a definition of "habitable room");

v. ensure outlook from adjoining properties is retained;

vi. have a roof type(s) determined by the form of the main roof of the original dwelling, matching pitch angles and materials used on the main roof;

vii. ensure eaves and gutters do not overhang the boundary (this is not an issue which can be taken into account when determining a planning application, but it is good practice to avoid possible maintenance and ownership problems);

viii. avoid a sense of enclosure or overbearing impact on adjoining properties;

ix. avoid being designed with side windows (unless facing the public realm, in which case side windows are encouraged);

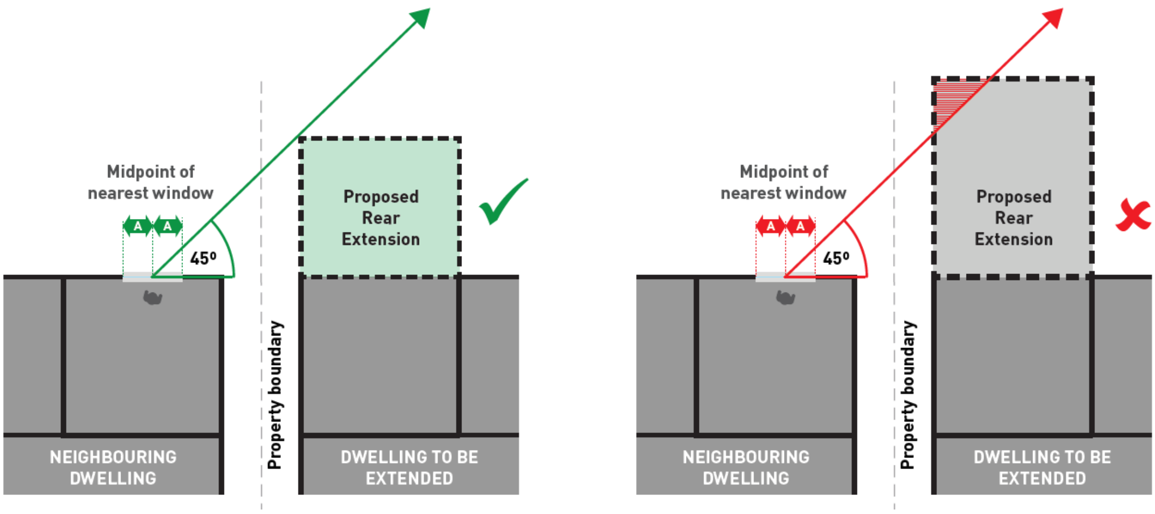
x. ensure windows are of a similar design to that of the original dwelling and are positioned in a way which would line up with those on the original dwelling;

xi. ensure Green Infrastructure which contributes to the local amenity is retained;

xii. take land levels into consideration.

4.4. For all extensions, the availability of daylight into an existing window on an adjoining property, which provides the only means of light for a habitable room, should be unaffected. This should be measured from a 45-degree angle from the mid-point of the horizontal sill of the relevant window – see Fig. 4.1 below.

Figure 4.1: Development beyond the 45-degree line will impact upon the light of adjoining properties



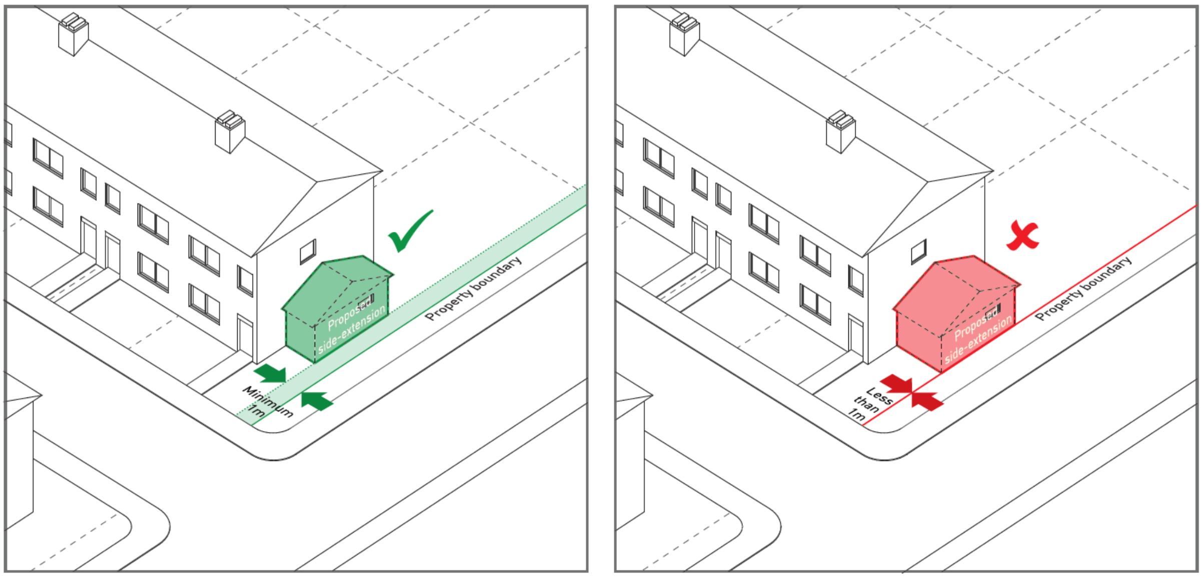
4.5. As set out in the Amenity Space and Gardens section of this Addendum, in order to preserve amenity spaces and gardens, no more than 50% of the original external private amenity space for a dwelling should be built on for extensions, outbuildings or parking areas.

Side extensions

4.6. Proposals for side extensions should comply with the main Design Guide requirements and the guidance below.

4.7. Proposed single or double-storey side extensions to corner properties must retain a gap of at least 1 metre between the extension and the boundary which adjoins the public realm – see Fig. 4.2 overleaf.

Figure 4.2 – Minimum 1 metre gap between single / double storey side extension and property boundary



Rear extensions

4.8. Proposals for rear extensions should comply with the main Design Guide requirements and the guidance below.

4.9. Where a proposed rear extension would be visible from the street, for example if the house is on a corner, the scale and form of the extension should not negatively impact the street-scene.

4.10. Height can have a significant impact on the light into a neighbour's home. Therefore, the maximum height allowed for a flat roof is 3 metres on the boundary, including parapets. If a pitched roof is proposed, the maximum permitted height is 4 metres.

4.11. In general the depth of rear extensions will not normally exceed 4 metres. This is, however, subject to other considerations set out in this Addendum and the main Design Guide, including the loss of garden space and impact on privacy and light of neighbouring properties.

4.12. Two-storey rear extensions to flat-backed rear elevations of terraced and semi-detached properties are likely to cause unacceptable light loss to adjoining dwellings. However, subject to aspect, such proposals may be acceptable if the adjoining neighbour has a similar extension or if the rear elevations of the dwellings have different projecting elevations.

4.13. The roof form of rear extensions should preferably have a roof type(s) determined by the form of the main roof of the original dwelling.

Dormer Windows and Velux Windows

4.14. Proposals for dormer and Velux windows should comply with the existing Design Guide requirements and the guidance below.

4.15. Velux windows may be acceptable on front elevations provided the materials are sympathetic with existing roof finishes.

4.16. Dormer windows ('dormers') are, as a principle, uncharacteristic of Harlow's residential areas and are not likely to be permitted where they are readily visible from the public realm.

4.17. Dormers should be set down from the ridge by at least 0.3m and must be set up from the eaves line by at least 0.5m, measured along the roof plane.

4.18. Additionally, where a dwelling adjoins another dwelling, the dormer must be set in by at least 0.3m from the boundary of the adjoining dwelling.

4.19. Where a clear rhythm of fenestration is established, the position and proportion of dormer windows should respond to existing windows.

Roof Forms

4.20. The main Design Guide states that "No alteration to a roof will be allowed to alter the existing ridge unless the property can be viewed in isolation. Proposed roof alterations that diverge from the prevailing roofline should not be visible from the public realm".

4.21. This is still the case; however, alterations to the ridge may be considered acceptable if the proposal relates to a terrace with stepped heights and is required for insulation purposes.

SECTION 5:

Climate Change

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5. CLIMATE CHANGE

5.1. Many Councils across the country, including Harlow Council, have declared a climate emergency in response to the urgent issue of climate change.

5.2. Effective spatial planning is an important part of a successful response to climate change as it assists in the reduction of emission of greenhouse gases. In doing so, local planning authorities should ensure that protecting the local environment is properly considered alongside the broader issues of protecting the global environment. Planning can also help increase resilience to climate change impact through the location, mix and design of development.

5.3. Addressing climate change is one of the core land use planning principles of the National Planning Policy Framework and is central to the economic, social and environmental dimensions of sustainable development.

5.4. Policy PL3 of the Harlow Local Development Plan expects high standards of sustainable design and construction and efficient energy use in new development. This section of the Addendum provides further information on how to implement the principles of Policy PL3 within new development.

5.5. This section should also be read in conjunction with the Harlow and Gilston Garden Town (HGGT) Sustainability Guidance and Checklist. More information can be found at the end of this section.

Renewable Energy, Energy Efficiency and Operational Carbon

5.6. As well as being energy efficient through design and methods such as effective insulation, well-planned development should incorporate the production of renewable energy into the design of its buildings. This is particularly relevant for tall buildings, which have significant opportunities for the production of renewable energy.

5.7. Such energy could be produced, for example, through:
a.) suitable PV/solar panels on south-facing roofs (in particular sloping roofs);
b.) solar water heating equipment on roofs;
c.) vertical-axis wind turbines;
d.) electric vehicle charging points;
e.) the use of low-temperature district heating and heat pumps.

5.8. Some building designs have inherently different energy requirements to others. For example, flats and terraces are generally more energy efficient than detached or semi-detached dwellings because they have fewer external walls relative to living space from which heat can escape.

5.9. A compact urban form is generally more energy efficient as there is less opportunity for heat to escape. However, this needs to be balanced with the need to avoid the Urban Heat Island effect (see more information later in this section).

5.10. As well as considering operational carbon in a net-zero carbon approach to building, embodied carbon should also be considered. Embodied carbon includes all CO2 emitted in producing the building materials used, the building process itself and any deconstructing at the end of a building's life.

5.11. The issue of embodied carbon can be mitigated against by using locally-available raw materials, transporting vehicles using low-carbon vehicles, minimising waste and maximising recycling, and designing the building to be able to change its use over time (see more on flexibility and adaptation below).

5.12. Developers should also consider implementing an electric energy strategy that takes advantage of the decarbonisation of the National Grid, thereby allowing the building to be net-zero enabled.

Flexibility and adaptation

5.13. Buildings should be designed from the outset to be flexible to accommodate changing needs (including family size, home working, old age and disability). This will reduce the need for refurbishment and extensions and will prolong the life of the building. This is particularly the case where buildings are designed to occupy a specific purpose, such as student housing.

5.14. Alongside this, buildings built today will need to be able to become zero-carbon in the future. Buildings should be designed to enable, and not impede, future retrofit measures that improve energy efficiency or allow the use of zero-carbon energy.

5.15. When there is a change of use of a building, for example for conversion of an office to a shop, sustainable design should be considered when any retrofitting of the existing building is taking place.

Passive solar gain, passive cooling, and overheating

5.16. Passive solar gain refers to the process where a building is heated by the sun, either directly from sunlight passing through a window, or indirectly as sunlight warms the external fabric of the building and heat subsequently builds inside.

5.17. Passive solar gain can reduce the need for mechanical heating, which in turn reduces energy use. Whilst passive solar gain can, therefore, reduce the carbon emissions associated with heating, if used incorrectly it can lead to overheating. This in turn can lead to the unintended use of mechanical cooling equipment.

5.18. Mechanical cooling increases energy consumption and requires maintenance, resulting in costs and carbon emissions. Mechanical cooling units also produce heat that requires dissipation. The need for mechanical cooling can be avoided or lessened by designing-in passive ventilation and passive cooling measures.

5.19. Developments should not incorporate mechanical cooling unless passive measures have been fully explored and appraised. Proposals incorporating mechanical cooling should clearly demonstrate why passive measures would not be adequate. Such cases could include where noise or air quality conditions mean that passive measures, including openable windows, could not be relied upon and need to be supported by a mechanical ventilation system.

5.20. Key factors that influence passive solar gain include the physical characteristics of the site, immediate surroundings, orientation of buildings, external design, internal layout and the construction materials used.

5.21. To maximise solar receipts and reduce shading, tall buildings in a development should normally be located to the north of the site.

5.22. Orientation and layout of habitable rooms (see paragraph 2.3 for a definition of "habitable room") and window size and orientation should be carefully considered in relation to the path of the sun.

5.23. Rooms that are most frequently occupied should benefit from a southerly aspect, but with appropriate measures to avoid overheating. Rooms that include a concentration of heat generating appliances (e.g. kitchens) or are less frequently occupied (e.g. bathrooms) should be located in the cooler part of the building, generally the northern side.

5.24. Zonal heating and ventilation systems and controls should be incorporated, allowing areas subject to high solar gain to occupy their own temperature control zone. Flexibility on this may be allowed where there are site-specific constrains relating to matters such as orientation, aspect, and proximity to and nature of neighbouring buildings.

5.25. Conservatories and atria can be used to assist natural ventilation in the summer by drawing warm air upward to open roof vents, and to collect heat during the spring and autumn.

5.26. The prevailing wind should be a consideration in site design as exposure to cold winds will increase heat loss and energy use. Conversely in the summer, gentle breezes can be used positively within design to enhance natural ventilation, improving comfort levels and reducing energy use of mechanical cooling systems.

5.27. Shelter belts (wind breaks) may be used to protect buildings from excessive winds. Shelter belts should be set out in a convex layout against the prevailing wind direction, rather than concave, to deflect the wind instead of blocking it. They should be dense enough to reduce wind speeds by allowing some wind to pass through but not block the wind in its entirety, as this could result in an airflow accelerating over the top of trees or other obstacles and descending on the building in a turbulent fashion.

5.28. Projections should be sized and angled appropriately so that they provide shading from the sun during the hottest part of the year when the sun is at its highest in the sky, but allow solar gain in the colder months when the sun is at a lower angle. Deep projections that overshadow windows should be avoided, particularly on south-facing elevations.

5.29. Where there is a chance that overheating can occur (e.g. due to large expanses of glazing on roofs and south facing elevations), design measures such as roof overhangs, brise soleil[1], external shuttering, photochromatic and thermochromic glass and a lighter colour palette should be incorporated. Where measures such as a lighter colour palette are used, steps should be taken to ensure that future building owners/occupants are aware that what may appear to be a design feature actually assists with the function of the building, so should be retained and maintained accordingly.

5.30. Buildings should be designed for passive ventilation, such as cross-ventilation with windows located on opposite walls and/or roof mounted turbines or wind cowls that assist with circulation of air by drawing air through windows or top floor openings. An alternative is passive stack ventilation (PSV) which uses pressure differences to draw in fresh air from outside to replace rising warm air which is released from the top of the building. A heat exchanger can be placed where the air escapes the building to reduce heat loss.

5.31. Strategically-sited tree belts can provide shelter from prevailing winds and shade in the summer without blocking light in the winter. Well-placed deciduous trees can increase the shading and natural cooling of buildings and spaces during the summer months, and allow more natural light and heat to be received during the winter months after the leaves have fallen and when demand for heating and lighting is highest. Tree planting can also be used to shelter buildings from the wind and minimise unwanted cooling.

5.32. Additionally, planting of all types – not just trees – can be used to create a more favourable microclimate and help to manage flood risk. Use of native, non-invasive plant species are often most valuable to local wildlife and have the further benefit of being able to thrive and sustain the local soil and climate conditions.

5.33. The slope or topography of a site should be considered. Partially or fully building into a slope or setting a building into the ground will enhance thermal buffering.

Passive lighting

5.34. Passive (or natural) lighting reduces the energy used for artificial lighting and creates a healthier internal environment. Issues to consider include how much of the sky is visible through a window, the dimensions of the interior living/working space and distance from the window, and the proportion of glazed surfaces.

[1] This is an architectural feature of a building that reduces heat gain by deflecting sunlight. It allows low-level sun to enter a building in the mornings, evenings and during winter, but reduces direct light during summer.

5.35. The depth of the room is an important factor in determining the amount of natural light received. Naturally dark rooms may be lit passively through measures such as sun tubes which ‘pipe’ sunlight from light areas to internal darker areas.

5.36. A compact form can sometimes lead to deeper floor plans which then can lead to poor natural lighting and ventilation; where this is the case it can be offset by including central atriums or sun tunnels.

5.37. Care is needed to avoid creating spaces with excessive heat gain. This could occur if solar gain is combined with the heat associated with internal lighting and, in the case of commercial buildings, high occupancy and operating equipment such as machinery and computers. A higher proportion of glazing on north facing surfaces can increase natural lighting without significantly increasing solar gain, thereby minimising excessive heat gain.

5.38. Glare created by natural or artificial light can be uncomfortable for people both inside and outside a building. This can be minimised if considered early in the design process through building layout (e.g. low eaves height) or building design (e.g. blinds, brise soleil screening).

Rainwater harvesting

5.39. Rainwater harvesting is the collection of rainwater directly from a surface it falls on (e.g. a roof). Once collected and stored, it can be used for non-potable purposes such as watering gardens, supplying washing machines and flushing toilets, thereby reducing consumption of potable water.

5.40. Potable water, however, is produced through a purification process and is pumped over large distances, both of which require energy and result in embodied carbon that is not present in water harvested locally.

5.41. In a residential development, rainwater can be captured for domestic use using water butts connected to a down pipe. Larger systems can use water stored in underground water tanks. Schemes should be designed to include space for water storage. In residential developments, down pipes should be carefully placed so that water collection and use is convenient for residents.

Greywater re-use

5.42. Water that is recycled from bathrooms and kitchens for non-potable uses is known as greywater. Greywater systems must ensure treatment is carried out on a regular basis to prevent a build-up of bacteria, and some systems are powered, which entails an energy cost. As a result, greywater reuse is generally less preferable than water use minimisation measures.

5.43. Water recycling systems are better suited to new developments rather than retrofitting in existing buildings because of the excavation required for storage tanks and changes needed to the plumbing system, and they are generally more cost-effective for new developments and developments of a larger scale.

5.44. Recycling systems should be backed up by a mains supply or a sufficiently large reserve storage system to meet higher demands during dry spells. Storage tanks will need an overflow to allow excess water to be released which should be able to flow into a soakaway.

5.45. In order to prevent water wastage, water-use minimisation measures should be integrated into the design of buildings. Such measures include low-flush toilets, smaller baths, and taps and showers with flow regulators.

Flooding

5.46. Well-designed flood adaptation can have additional benefits for water quality and resource management, and enhance public spaces. Impermeable surfaces can be replaced by Sustainable Drainage Systems (SuDS), which mimic natural drainage as much as possible. Examples of SuDS include permeable pavements and the use of gravel or grass so that water can soak away. Within parks and green spaces, storage areas such as infiltration ponds can be constructed to be used as SuDS.

5.47. The use of green open space and green roofs and walls in developments can reduce runoff and ameliorate pressure on drainage systems during heavy rainfall. Other options which would need consideration include widening local drains to increase drainage capacity, managing flood pathways and removing 'pinchpoints' so that heavy rainfall can drain away.

5.48. Within buildings, flood resilient measures should be incorporated into the design, including:

- raising floor levels, electrical fittings and equipment;
- rain-proofing and overhangs to prevent infiltration of heavy rain around doors and windows;
- temporary free-standing barriers which hold back floodwater from properties.

Urban heat island effect

5.49. The urban heat island effect refers to the situation where urban areas are substantially warmer than rural or less-urban areas surrounding them. It occurs due to the shape of the urban environment and the replacement of natural land cover with dense, hard, impervious and generally dark surfaces that absorb large amounts of solar energy and trap heat. The urban heat island effect increases energy costs (e.g. for air conditioning), air pollution levels and heat-related illness and mortality.

5.50. Choice of materials should reflect the need to avoid overheating. Incorporating natural green features into development, such as green roofs or walls, can also reduce heat build-up and allow ambient heat to escape. Trees and plants can also be incorporated to provide shade that cools surfaces and reduces ambient air temperature through evaporation of water via leaves. Water features, such as ponds or fountains, can also aid cooling through the process of evaporation.

5.51. Urban places can be designed to provide areas of coolness through the shading of streets and public spaces. Urban schemes should demonstrate that the urban heat island effect has been addressed and that open spaces and green and blue infrastructure will reduce the effect and provide respite during times of excessive heat.

Harlow and Gilston Garden Town Sustainability Checklist and Guidance

5.52. The Garden Town Sustainability Checklist and Guidance provides practical and technical guidance on how to apply sustainability indicators and policies (environmental, social, and economic) in new major developments in the Garden Town.

5.53. It has been designed to be used by developers, design teams, consultants and contractors in shaping development proposals, ensuring co-ordinated and integrated consideration of sustainability principles and targets at an early stage.

5.54. At the planning application stage, a Sustainability Strategy incorporating the Checklist, with relevant evidence / certification, must be submitted alongside planning applications.

5.55. The Checklist and Guidance has been formally endorsed by various Councils including Harlow Council.