Building**Futures**
Sustainable Design Toolkit

Large & Mixed Use

MASTERPLANNING | ENERGY & CLIMATE CHANGE
LANDSCAPE & BIODIVERSITY
DESIGN & SAFETY | WATER | AIR & NOISE
MATERIALS & WASTE

www.hertslink.org/buildingfutures

BuildingFutures

Contents

Introduction

The Building Futures Partnership

Building Futures is an initiative run in partnership by Hertfordshire's eleven Local Planning Authorities with support from industry groups and stakeholders. Its purpose is to promote sustainable and high quality development through the planning system in Hertfordshire. It currently does this in three ways:

- Web based guidance for planners, designers, consultants and clients on sustainable design.

- Hertfordshire Building Futures Awards which promotes and rewards high quality and innovative development in the county.

- Hertfordshire Design Review Panel which provides independent and expert design review services for new development in Hertfordshire.

The Sustainable Design Toolkit

Development at all scales brings change to the environment we interact with and rely upon. This change has the capacity to make a sustainable and positive contribution, both today and over the lifetime of the development.

The Sustainable Design Toolkit has been developed by the Building Futures Partnership to improve the communication and understanding of sustainable design so that new development in Hertfordshire achieves sustainable and positive change.

The Sustainable Design Toolkit achieves this by providing a framework of questions and guidance to provoke thought at the early concept stage of development schemes, can structure design and pre-application discussions between stakeholders, and informs design decisions.

The Sustainable Design Toolkit has been shaped by dialogue with built environment professionals and stakeholders in Hertfordshire and the UK, including:

- **Hertfordshire's eleven Local Planning Authorities**
- **Hertfordshire's Local Authority Building Control Group**
- **BRE Global**
- **Town and County Planning Association**
- **Herts & Beds Constructing Excellence Network**
- **University of Hertfordshire**
- **Hertfordshire Design Review Panel**

The Sustainable Design Toolkit has also been widely consulted on to gain feedback from statutory consultees, the development industry, industry agencies and organisations, local civic and community groups, and other stakeholders.

Richard Thake, Executive Member Environment and Community Safety:

> *"The toolkit is an exciting addition to the Building Futures initiative and offers a simple framework of questions and engaging advice that places sustainable design and construction at the heart of new development in Hertfordshire. I would strongly advise those involved in bringing forward development in the county to use this valuable toolkit."*

How to use the Sustainable Design Toolkit

The Sustainable Design Toolkit can be used at all stages of the design and planning process, as explained below. The Sustainable Design Toolkit should always be read and used alongside relevant national and local planning policy, and in conjunction with any relevant provisions, standards, targets or other requirements set out in policy and legislation.

Concept and pre-planning application stage:

Considering the whole range of sustainable design issues at the early stages of a development proposal, through an iterative and integrated design process, typically helps you achieve lasting sustainable development at similar cost.

The Sustainable Design Toolkit supports this by providing a simple yet methodical framework, together with objective and up-to-date design guidance that clients, applicants and the Local Planning Authority can refer to and use when preparing and discussing design solutions.

Planning application stage:

A clear and consistent method for demonstrating and assessing the sustainable design merits of development proposals is looked-for by both applicants and Local Planning Authorities.

The Sustainable Design Toolkit supports this by providing a simple PDF template that applicants can use to prepare a Sustainable Design Statement that covers all of the necessary design issues in a methodical and integrated fashion. The Sustainable Design Statement can then form part of a planning application (or brief at the early concept/pre-app stage), providing an explanation of the rationale behind the proposed design response.

A Sustainable Design Statement produced using the Sustainable Design Toolkit gives the Local Planning Authority confidence that the applicant has been made

Concept

Pre-Planning

Planning Application

Construction

aware of the breadth of sustainable design issues upfront and a level of confidence that relevant sustainable design issues have been considered. The Local Planning Authority can then review the Sustainable Design Statement alongside the guidance contained in the Sustainable Design Toolkit to determine whether those design issues have been adequately addressed, whether the applicant's design rationale is sound, and whether the proposed design solution is appropriate when considered alongside all relevant policies.

Construction stage:

The Sustainable Design Toolkit also contains guidance that project managers and contractors can use to ensure detrimental impacts are avoided or mitigated during the construction and post-completion phases of developments, for example on protecting and maintaining important habitats during and after construction.

Design Aims & Outcomes

Remain resilient through changing environmental circumstances

Contribute positively to local place and the public realm

Protect and enhance the local natural environment and ecosystems

Accommodate the diverse and changing needs and abilities of users and occupants

Minimise the carbon and ecological footprint of the building and its construction

Sustainable and well designed schemes should achieve the following aims...

Provide safe and secure homes to live in and places to work

Enable occupants to use and manage resources sustainably, adopting the hierarchy of avoid, reduce, reuse and recycle

Offer pleasant and healthy indoor and outdoor spaces year round for occupants

Support active and sustainable lifestyles

Your Development Proposal

Project details

Please work through and complete all the relevant boxes and questions. Once you have completed all sections and relevant questions, click on the 'Save Sustainable Design Statement' button on the right to save a PDF statement which can be used during pre-application discussions or form part of your planning application. You can save this PDF at any time and return to it later.

Save Sustainable Design Statement

Client name

Project name/reference

Agent name (if applicable)

Name of other agents/consultants (if applicable)

Address of project

Please provide a brief description of the development

Your proposal

Sustainable Design Summary

Briefly summarise how your proposal will achieve the design aims and outcomes on page 4, outlining any key constraints, and set out any alternative options that were discounted and the reasons why.

> Your proposal

Masterplanning

Q1

What are the overall vision and design principles for the development?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Masterplanning

Q2

Summarise the site context and how it informs the vision and design principles.

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Masterplanning

Q3

How does the proposal accord with relevant local and national policies, strategies and statements?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

> **Your proposal**

Masterplanning

Q4

Outline any community and stakeholder engagement and how it has influenced the vision and proposals.

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Energy and Climate Change

Q1

How will the layout and design of the site contribute toward reducing energy demand for heating, lighting and cooling?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Energy and Climate Change

Q2

Outline proposals for site wide renewable and low carbon energy technologies?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Energy and Climate Change

Q3

How will the development be made resilient to climate change and reduce the urban heat island effect?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Landscape & Biodiversity

Q1

What measures will be taken to create, protect and enhance landscape features and habitats?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

> ## Your proposal

Landscape & Biodiversity

Q2

Where the development impacts on the local landscape and biodiversity, what mitigation measures will be put into place?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Design & Safety

Q1

How will the proposed development scheme provide a sustainable place for people?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

> Your proposal

Design & Safety

Q2

How will the design of the development deliver place making principles?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Design & Safety

Q3

How will the design allow for easy movement through the site and integration with surrounding areas?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Design & Safety

Q4

How will the design and layout of the site promote inclusive, safe and secure neighbourhoods?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Design & Safety

Q5

How will sustainable modes of travel be promoted?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

> **Your proposal**

Water

Q1

How will water consumption be reduced across the development?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

> Your proposal

Water

Q2

How will water be managed sustainably to meet drainage, flooding and water quality objectives?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

> Your proposal

Air & Noise

Q1

How will air pollutants, dust and other emissions arising from construction be minimised?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ **Refer to Advice & Guidance**

> Your proposal

Air & Noise

Q2

How will construction noise be minimised?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

> **Your proposal**

Air & Noise

Q3

How will the location and layout of land uses reduce noise pollution and nuisance for sensitive occupiers?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Your proposal

Materials & Waste

Q1

How will the environmental footprint of the development be reduced and managed through its lifecycle?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

> Your proposal

Materials & Waste

Q2

How will the scheme allow for the sustainable management of waste?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

Next Steps

That's it! All done.

Thank you for considering and responding to the above questions.

Please use the buttons below to print or save this document.

Save your responses

Click here to save your responses so you can print or continue working later.

Print your responses

Click here to print only the relevant pages of this document (Pages 5-27).

Print full document

Click here to print the full document, including Advice & Guidance notes.

Examples, Solutions & Advice

Masterplanning

Q1 What are the overall vision and design principles for the development?

◀ **View your response to this question**

Advice and Guidance

1 The vision and its underlying principles should be consistent with relevant policies, strategies and regulation. See the 'More information' for further guidance on developing a vision and principles, and a range of national and Hertfordshire policy and strategy documents.

Q2 **Summarise the site context and how it informs the vision and design principles.**

◀ **View your response to this question**

Advice and Guidance

1 Current land use patterns and trends, and the grain and form of the built environment including the public realm and open space.

2 Existing movement through the site and around it, including existing transport networks, public transport provision, and connectivity with surrounding areas and land uses.

3 Natural features, ecology and biodiversity (including protected species) within and adjoining the site.

4 Wider landscape character and networks of green/blue infrastructure.

5 Designated sites and landscapes (including local designations), local services and amenities.

6 Demographic, social and cultural context of the existing community and potential future users of the development.

7 Economic appraisals (e.g. housing and retail markets).

Examples, Solutions & Advice

Masterplanning

Q3 How does the proposal accord with relevant local and national policies, strategies and statements?

◀ **View your response to this question**

Advice and Guidance

1   The planning framework consists of national, local and neighbourhood planning policy, guidance and duties, including any site specific local plans, briefs or orders.

2   A number of local strategies, plans or agreements may apply and will typically include:

- Economic or Regeneration Strategies
- Transport Strategies
- Public Health and Wellbeing Strategies
- Energy/Climate Change Strategies
- Landscape Strategies
- Open Space Strategies
- Biodiversity Action Plans
- Flood and Water Management Strategies or Plans
- Sustainable Community Strategies
- Land ownership
- Section 106 agreements
- Legal covenants and constraints.

Examples, Solutions & Advice

Masterplanning

Q4

Outline any community and stakeholder engagement and how it has influenced the vision and proposals.

◀ **View your response to this question**

Advice and Guidance

1   Identify those who may have an interest, role or need associated with the site and its development. It is crucial that the Local Planning Authority is involved at an early design stage to discuss and explore the potential options for the site.

2   Key stakeholders include:-

- Highway authorities

- Emergency Services

- Service providers (e.g. Local Education Authority, Strategic Health Authorities, RSLs)

- Statutory consultees such as the Environment Agency

- Natural England and English Heritage

- SuDS Approval Body.

3   Other key stakeholders will include:-

- Landowners, investors and funders

- Other developers

- Management and maintenance providers

- Utilities

- Town/Parish Councils

- Community groups and bodies

- Neighbouring residents and the wider community

- Local businesses and employers.

4   Methods of consultation and engagement include:-

- Open days and exhibitions

- Focus groups and workshops

- Community meetings

- Newsletters, local press and publications

- Websites and visual media (plans, 3D visuals, flythroughs)

- Social Media

- Questionnaires and surveys

- Participative tools such as Place Check, Charettes, Enquiry by Design and Planning for Real.

Examples, Solutions & Advice

Energy & Climate Change

Q1 How will the layout and design of the site contribute toward reducing energy demand for heating, lighting and cooling?

◀ **View your response to this question**

Advice and Guidance

1   Develop an understanding of the microclimate of the site throughout the seasons to inform the layout and design of the development.

2   A high level of insulation and thermal mass can help maintain a stable and comfortable internal temperature during periods of very hot and cold weather.

3   Orientate buildings so that rooms or spaces that have a high level of use are within 30 degrees of South, and design façades and fenestration/glazing to make optimal use of natural daylight and solar heat gain.

4   Locate taller buildings to the north of the site to avoid shadowing of other buildings.

5   Locate and position land uses, plots and buildings to ensure that the use of natural and cross ventilation (using openable windows, wind catchers and passive stack ventilation) in homes, schools and other high occupancy buildings is not compromised by disturbances arising from adjacent land uses or buildings, such as major roads or industrial areas. If mechanical ventilation has to be used, systems should incorporate heat recovery.

6   An air tight building envelope coupled with an appropriate passive ventilation strategy and appropriate design and control of air entering and leaving the building through access doors, will help to reduce air leakage and heat loss.

7   Ensure landscaping and other shading measures are considered in the strategic design of the site alongside building level measures to provide adequate shading to individual buildings and open or outdoor spaces. Deciduous trees and bushes, for example, can provide shading during summer months to mitigate overheating, but allow daylight through during winter months.

8   Provide training and awareness programmes for facilities staff and occupiers on building systems and technologies. If a technology or system will be complicated or costly to use then it is likely to be inappropriate.

9   Provide information boards and electronic displays to generate interest and incentivise sustainable use of heating and lighting.

10 Rooms or spaces used less often should face north with minimal fenestration on northern elevations to reduce heat loss during winter.

11 Avoid designing predominately west-facing plots and façades of buildings which have high occupancy rates (offices, schools, retail units) as the afternoon solar gain adds to the internal gains accumulated throughout the day from occupiers.

> **Examples, Solutions & Advice**

Energy & Climate Change

Q2 Outline proposals for site wide renewable and low carbon energy technologies?

◀ **View your response to this question**

Advice and Guidance

1   Combined Heat and Power units (CHP) can provide community heating and cooling depending upon the energy demand profile of the different occupiers within the site. Powered by gas or biomass, CHP is most efficient when run at full capacity continuously; therefore, heat generated during periods of low demand will need to be exported to other users to avoid 'dumping' it into the external environment and contributing to external overheating. The electricity generate by the CHP can either be used by occupiers of the site (termed 'private wire') or fed back into the National Grid, picking up the Feed-in Tariff payment in return.

2   Establish or connect to a district heating network, or future proof the development for one. If the site and mix of land uses allow, then the site could become an anchor load or node for a wider district heating network.

3   Depending upon the constraints and nature of the site, wind turbines may be a sustainable option for providing power to high electricity users within the site (private wire) or for feeding back into the National Grid in return for the Feed-in Tariff. Given the sensitivities of wind turbines, the decision making process should be transparent and involve the community and other stakeholders.

4   Solar arrays (photovoltaic or thermal panels) integrated on large roof spaces or ground level areas of the site can provide electricity or hot water for a building or group of buildings. Electricity can be fed back into the National Grid in return for the Feed-in-Tariff payment.

5   Inter-seasonal Heat Transfer may be suitable for larger schemes. These systems store summer heat in underground aquifers which is then used in the winter to provide space heating and hot water for buildings. Road energy systems work in a similar way, helping to keep roads and car parks cooler during the summer, and using the stored heat to clear ice and snow from highways and car parks in the winter.

Examples, Solutions & Advice

Energy & Climate Change

Q3 How will the development be made resilient to climate change and reduce the urban heat island effect?

◀ **View your response to this question**

Advice and Guidance

1   Use flood and water resilient materials on buildings façades and hard surfaces through the site. Try to choose materials that also reflect or reduce the absorption of solar energy.

2   Use oversized eaves and shading devices to provide solar shading. Oversized eaves and guttering can also protect windows and façades from heavy precipitation.

3   Use planting and landscaping around and throughout the site and at building level to provide shelter for users of the site (particularly vulnerable people) from the summer sun, heavy rain, and high winds.

4   Avoid excessive areas of dark hard surfacing, or balance it with soft landscaping, green and blue spaces and shading.

5   Create a network of green and blue infrastructure throughout the site (e.g. green roofs, water features, SuDS features, tree planting and soft landscaping) to provide shading and cooling during the summer and to shelter buildings during winter, whilst also providing habitat for local biodiversity and potential amenity space for users.

Examples, Solutions & Advice

Landscape & Biodiversity

Q1 What measures will be taken to create, protect and enhance landscape features and habitats?

◀ **View your response to this question**

Advice and Guidance

1   During construction, arrange site access to avoid loss or detrimental impact on key landscape features or habitats.

2   Provide appropriate screening or temporary landscaping to minimise impacts during construction on surrounding landscapes and habitats.

3   Conduct a landscape assessment of the site prior to construction to inform the design and ongoing management arrangements.

4   Time construction works and activities around key periods of activity for local wildlife (e.g. breeding, nesting, migration, foraging).

5   Ensure on-site identification and appropriate protection of trees and habitats within the site, or temporary relocation of habitats such as wild flower rich grassland, is carried out prior to construction works.

6   Create areas of new habitat that reflect the surrounding natural environment, such as species-rich grassland, networks of hedgerows and stands of native trees, and wetlands. They should be designed to provide stepping stones linking nearby habitats, to provide a mix of open and enclosed spaces and microclimates, and to serve as screening to help the development sit better within its surroundings.

7   If the site is home to protected species, such as Great Crested Newts, then special measures and requirements may need to be fulfilled. Contact your Local Planning Authority for advice.

8   Integrated multi-purpose public and private open spaces can deliver various landscape, biodiversity, sustainable drainage, amenity, sustainable travel and other objectives whilst minimising the amount of land take within the site.

9   Improving landscape and biodiversity in association with infrastructure development (highways and flood defences) offers multiple benefits and helps to fulfil the duty on infrastructure providers to achieve multiple benefits and sustainable outcomes.

10 Retain and store topsoil removed from the site, then reuse where possible to ensure habitat continuity for local species.

11 Provide information and interpretation boards for occupiers and the general public to describe the makeup of green and blue spaces and the benefits they provide, a code of conduct for using those spaces (e.g. not to disturb certain sensitive areas or planting), and how and why green spaces are maintained (e.g. segregated areas and mowing regimes).

12 Take opportunities on smaller scale developments for habitat creation and landscape improvements, for example leaving the corner of sports fields/parkland unmown, planting small wildflower areas and mowing paths in areas of longer grass in place of hard standing.

13 Biodiversity composition, habitat diversity and connectivity to other features should be taken into consideration.

Examples, Solutions & Advice

Advice and Guidance (continued)

14 Ecological surveys should be undertaken to inform the design, phasing and construction management of the development. Surveys will identify the ecological characteristics and what mitigation and enhancement solutions will be required to maintain or improve the ecological value of the site and surrounding area. Surveys must be carried out by a qualified professional who is a member of the Institute of Ecology and Environmental Management (IEEM) or have equivalent qualifications.

15 External lighting within or adjacent to green spaces should be avoided or minimised where there are sensitive species and habitats such as bats.

16 Maintain valued public views from, through and to surrounding landscapes and townscapes.

17 Create new habitats and foraging routes for bats and birds. When doing so consider the different species present in the site which need to be protected or supported by such measures. For example, different bat species have different foraging and hunting requirements which will need to be supported by a variety of layouts and landscaping schemes.

Q2 Where the development impacts on the local landscape and biodiversity, what mitigation measures will be put into place?

◀ **View your response to this question**

Advice and Guidance

1 Ensure on-site identification and appropriate protection of trees and habitats within the site, or temporary relocation of habitats such as wild flower rich grassland, is carried out prior to construction works.

2 Retain and store topsoil removed from the site, then reuse where possible to ensure habitat continuity for local species.

3 Create new landforms to protect visual amenity and help integrate the development into the wider landscape.

4 Incorporate appropriate buffer zones, screening, fencing and boundary treatments that are in keeping with the surrounding area to protect visual amenity, mitigate harmful impacts on adjacent habitats and the wider landscape, and to provide attractive boundaries 'edges'. Typical buffers include ten metres from main rivers,

eight metres from smaller watercourses and ponds, and 20 metres from woodland to the edge of property boundaries.

5 Retain and protect existing landscape features and habitats, such as individual standard trees, hedgerows and tree belts, and natural water features (e.g. ponds and ditches).

6 Develop robust Landscape, Habitat and Green Infrastructure Management Plans that clearly set out the objectives and methods of managing habitats, species and green and blue spaces. The plans should cover a period up to at least 10 years post-completion depending on the value of habitat it covers. Management and maintenance arrangements should be in place during the construction phase.

Examples, Solutions & Advice

Design & Safety

Q1 How will the proposed development scheme provide a sustainable place for people?

◄ **View your response to this question**

Advice and Guidance

1 The proposed mix of land uses should be appropriate to the location and context of the site, taking into account the needs of the local area, for example public transport provision, employment, schools, health care, leisure and retail provision.

2 Density and scale should be appropriate for the location, for example higher densities for urban infill sites and lower densities for sites on the edge of towns and villages. Densities within larger sites should vary according to character areas (e.g. higher around local centres) and reflect the characteristics of the site and area (e.g. topography, higher densities situated closer to existing transport hubs).

3 Provide suitable variety and proportion of residential tenures appropriately situated throughout the site to meet local needs. Larger developments should make provision for all tenures whilst smaller developments should look to support the existing mix of tenures or provide tenures which are underprovided in the wider area.

4 A diversity of size and type of housing should be provided to accommodate different household needs and types.

5 Adaptability, accessibility, connectivity and flexibility of zones, open spaces, and individual buildings within the site should be considered as part of the master planning process so that the development can respond to future changes in climate, economy, society, demography, and lifestyles in a sustainable way.

6 Shared space or 'Home Zone' street and open space design will allow a range of overlapping activities to make use of the space throughout the day helping to create an active, inviting and vibrant public realm.

7 Public and private open spaces should be intelligently designed to be able to accommodate various needs and uses over the lifetime of the development. Objectives and uses that need to be considered include Green & Blue Infrastructure, sustainable drainage, private and public outdoor amenity space, sustainable travel, place making, and social and economic needs and aspirations.

8 Create or connect to a network of open and green spaces to provide outdoor amenity space that will be valued and used by residents and occupiers.

9 Provide space for food growing, either in the form of allotment and/or smaller and dispersed area for private and communal food growing.

Examples, Solutions & Advice

Design & Safety

Q2 How will the design of the development deliver place making principles?

◀ **View your response to this question**

Advice and Guidance

1   Size, block, plot, building layouts, and landscaping should define the street hierarchy and character areas, and create an appropriate separation between public and private spaces and specific land uses.

2   The height, scale, massing and bulk of buildings should be consistent with the street hierarchy and proposed use of the buildings. Corner buildings should be designed to aid sense of place, legibility and an active public realm. This can be achieved by a higher storey height, innovative architecture or altered building lines.

3   Create vistas, clear views and deflected views within, into and out of the site. These help create character and identity, as well as aiding navigation through the site and integration with surrounding areas.

4   Make use of existing iconic, historic or significant buildings or features, and/or create a new landmark building(s) to enhance character and a sense of place.

5   Reinterpret elements of the surrounding area's character and appearance in the design, layout, architecture and material choice in order to achieve continuity with existing areas without stifling creativity.

6   Materials should be of a high quality, durable, easy to maintain and consistent with the design context of the site.

7   Appropriate maintenance and management arrangements of public buildings and open space should be in place to ensure longevity and continuity, which together with consistent and comprehensible architecture and good urban design will help to create a sense of worth and pride in the development.

8   Create visual amenity within the new development and maintain visual amenity of existing neighbourhoods adjoining the site through appropriate siting and treatment of signage, materials choice, street furniture and landscaping.

9   Buildings and green infrastructure (especially trees) should be arranged to define road layout and aid legibility.

10   Ensure a positive response to the existing streetscene where part of the development fronts onto an existing street or public open space.

11   Maintain valued public views from, through and to surrounding landscapes and streetscapes.

12   Integrate designated cycling and pedestrian routes into road layouts.

13   Provide adequate, safe and high quality private, communal and public outdoor space and facilitate safe linkages to nearby open and green spaces to promote physical activity and enable informal interaction between people.

Examples, Solutions & Advice

Design & Safety

Q3 How will the design allow for easy movement through the site and integration with surrounding areas?

◀ **View your response to this question**

Advice and Guidance

1. A clear and well-signed network of safe cycling and pedestrian routes throughout the site will aid permeability and promote sustainable forms of travel whilst contributing to a more active and safe public realm.

2. Ensure appropriate location and design of gateways and access points into the site to aid connectivity, legibility and integration within the site and the surrounding area. For example gateways could include public art within a distinctively designed public realm clearly bounded by distinctive architecture, landmark building(s) and landscaping.

3. Where possible, routes into and through the site should connect with existing routes and access points in order to utilise the historic character and form of the built environment. Where existing access points and routes do not exist, new ones should be legible and make a positive contribution to place making and the creation of safe and inviting open spaces.

4. Primary routes within the site should connect directly to primary routes in the wider area, without feeding through routes with less capacity or that are primarily residential in character.

5. Incorporate landmarks and buildings with distinctive architectural designs to help visitors and users of the site to orientate themselves. Where possible, create direct and deflected views of landmarks and distinctive buildings to further aid wayfaring and orientation.

6. Design, materials, signage and street furniture should lend themselves to easy place navigation whilst also adding to a sense of place and high quality public realm.

7. Incorporate sight lines and promote connectivity and integration through layout design, creation of public space and active frontages onto the existing neighbourhood.

Examples, Solutions & Advice

Design & Safety

Q4

How will the design and layout of the site promote inclusive, safe and secure neighbourhoods?

◀ **View your response to this question**

Advice and Guidance

1   Create a vibrant public realm and passive surveillance of open space, parking areas and cycle and pedestrian routes via the mix and location of different land uses, building layouts and active building frontages.

2   The layout of the site should not result in any isolated, redundant or hidden spaces as these can become the focus of antisocial activities and criminality.

3   Design high quality internal and external communal spaces and shared facilities, where users and residents feel safe and have a sense of ownership and belonging.

4   Principal entrances accessible to all should front directly onto the street or public open space. A single point of access for buildings will also provide security advantages, but ensure principal entrances, and any boundary fencing or walls are not intimidating or unwelcoming.

5   Screening and privacy for private outdoor spaces, and a clear demarcation between public and private space.

6   Screening and secure enclosures for outdoor storage areas.

7   Ensure any security gates are set back sufficiently to allow the largest vehicle manoeuvrable on-site to queue without obstructing the street or footpath.

8   Provide adequate lighting of public space and routes through the site, building entrances, car parks, cycle parks and storage areas.

9   Provide safe and secure cycle storage.

10 Provide adequate, safe and high quality private (including communal) outdoor space, and facilitate safe linkages to nearby green spaces, to promote good mental and physical health and enable informal social interaction between occupiers.

11 Provide a mix of housing types and facilities to suit the needs of different age groups and household types, such as bungalows for the elderly.

12 Ensure the provision and design of social infrastructure reflects and responds to local social, cultural and economic diversity.

Examples, Solutions & Advice

Design & Safety

Q5 How will sustainable modes of travel be promoted?

◀ **View your response to this question**

Advice and Guidance

1   Large developments may support, and can benefit from, dedicated public transport routes and services which link to the wider public transport network.

2   Produce a Sustainable Travel Plan for the site in conjunction with key stakeholders (such as anchor occupiers of the site, large employers or retail stores). The plan may consist of actions and agreements such as ongoing finance to employ a travel plan coordinator, individual travel plans for local schools and local employers, or a car share club for residents and employees.

3   All residential buildings should be within 400 metres of public transport hubs within the site, with legible and safe routes to those hubs. If there is a high proportion of elderly or disabled residents, this should fall to 200m.

4   Adequate and secure cycle storage should be provided at all new public buildings, leisure and tourist facilities (including public open spaces) and transport hubs to promote alternatives to the car.

5   Shared space or 'Home Zone' street design for all residential streets will reduce the dominance of vehicular traffic within the development, allow other forms of movement to take place, and help to create a more attractive and vibrant public realm.

6   Low speed limits for vehicular traffic throughout the site (10-20mph).

7   Pedestrianised areas with cycle and loading access only should be considered, particularly for areas with a concentration of commercial and retail land use.

Examples, Solutions & Advice

Water

Q1 How will water consumption be reduced across the development?

◀ **View your response to this question**

Advice and Guidance

1 Community scale water re-use systems, such as rainwater harvesting present good opportunities for managing and reducing the use of mains water across whole site.

2 Water efficient landscaping practices can dramatically reduce or even eliminate irrigation needs. Maintaining or re-establishing drought-tolerant plants fosters a self-sustaining landscape that requires minimal supplemental water and provides other environmental benefits. The planting of native species should be considered where possible since these tend to require less water for irrigation and attract native wildlife.

3 Where viable, and in accordance with groundwater protection objectives, lower grade ground water could be used as a water resource for irrigation purposes. This could be particularly beneficial in times of drought for areas with a large amount of public green space that requires some level of maintenance.

4 Leak detection devices can be used to prevent damage from burst pipes in unoccupied buildings or to irrigation systems, with water saving as an added benefit. Many products are designed to detect burst pipes and leaks and shut off the water supply to minimise water loss and damage. Most provide a simple switch to turn off the water when a building is unoccupied for any length of time.

5 Install flow regulated or auto stop taps, waterless urinals and dual/low volume flush toilets. If using traditional urinals you can incorporate sensors to manage flushing sustainably.

6 Sub-metering of mains water as well as grey/rainwater systems with a connection to a Building Management System if possible, will allow monitoring of water consumption and further incentivise the efficient use of water.

Water

Q2

How will water be managed sustainably to meet drainage, flooding and water quality objectives?

◀ **View your response to this question**

Advice and Guidance

1   Soakaways receive and filter water runoff from roofs and gardens areas before it percolates into the ground below.

2   Rainwater harvesting tanks and water butts collect rainwater from roofs for washing, flushing toilets and irrigating gardens and landscaped areas.

3   Filter strips are gently sloping vegetated areas that treat runoff from adjacent impermeable areas, such as roads and footways.

4   Filter drains are deep narrow channels filled with permeable materials that filter and convey runoff to other parts of a SuDS scheme, and can be designed to allow infiltration into the ground below (infiltration trenches).

5   Swales are broad, shallow and grassy channels that convey or store water runoff, or allow water to infiltrate into the ground below.

6   Bioretention areas collect and treat water runoff before discharging it downstream or allowing infiltration to the ground below.

7   Pervious/permeable pavement allows water to infiltrate through hard surfacing into an underlying layer where it is stored and filtered before it infiltrates into the ground or is conveyed to other parts of a SuDS scheme.

8   Underground geocelluar attenuation systems use plastic crates to store large volumes of water runoff prior to discharge to other parts of a SuDS scheme, infiltration to the ground below, or for use in irrigation.

9   Infiltration basins are shallow depressions in grassy or lightly vegetated areas designed to store runoff temporarily until it infiltrates into the ground below.

10 Detention basis are shallow dry depressions that store water runoff for a specific duration. They are typically designed to accept additional water runoff during intense storms and to provide habitat for biodiversity.

11 Wetlands consist of a series of wet ponds and pockets of dense mixed and wetland vegetation that serve to remove pollutants and provide habitat for biodiversity.

12 Oil interceptors or separators can be used to capture polluted run off from driveways and the highway before it is conveyed to SuDS features and watercourses.

Examples, Solutions & Advice

Air & Noise

Q1 How will air pollutants, dust and other emissions arising from construction be minimised?

◀ **View your response to this question**

Advice and Guidance

1 Locate dust generating activities away from sensitive receptors.

2 Wheel washing all vehicles.

3 Dampening and sweeping roadways.

4 Locating (dampened) stock piles to take account of prevailing wind/sensitive receptors.

5 Dealing and replanting completed earthworks as early as practicable.

6 Using low emission vehicles and plant equipment

7 Dampening stone cutting.

Q2 How will construction noise be minimised?

◀ **View your response to this question**

Advice and Guidance

1 Avoid site drilling wherever possible.

2 Keep site grinding, cutting and similar noisy activities to a minimum, and at appropriate times of the day.

3 Avoid vibro-compaction of the ground as much as possible.

4 Consider the use of off-site manufacturing where possible, such as the cutting of non standard concrete blocks off site under controlled conditions.

5 Timing of deliveries should avoid conflict with neighbouring land uses such as schools.

Examples, Solutions & Advice

Air & Noise

Q3 How will the location and layout of land uses reduce air and noise pollution and nuisance for sensitive occupiers?

◀ **View your response to this question**

Advice and Guidance

1   Locate noise and emissions generating land uses (e.g. manufacturing) away from sensitive land uses (e.g. residential care homes or dwellings).

2   Orientate buildings so that external building services and plant do not disturb sensitive properties or discourage occupiers from using passive ventilation and outdoor private and public spaces.

3   Position buildings which are less sensitive to act as screens or baffles between sources of noise or emissions and sensitive land uses.

4   Use landscaping and land levels to provide buffers and breaks between areas generating noise and emissions and sensitive land uses.

Examples, Solutions & Advice

Materials and Waste

Q1 How will the environmental footprint of the development be reduced and managed through its lifecycle?

◀ View your response to this question

Advice and Guidance

1 Use waste management software or a similar project tool to minimise waste and maximise recycling.

2 Design-out waste at the initial design stage by prioritising the reuse and recovery of materials, exploring off-site construction methods, materials optimisation, waste efficient procurement and creating a building structure which is adaptable and easy to alter and deconstruct.

3 Reuse buildings, structures and demolition material on site where possible, for example masonry for earthworks and hard standing; subsoils and excavated topsoil for earth bunds and landscaping schemes, and processed wood waste for use as mulches and landscaping material.

4 Segregate mixed waste streams where feasible to maximise recycling of demolition and site waste, such as cardboard and plastic packaging.

5 Clearly label waste bins and skips to improve waste sorting and segregation.

6 Order materials that are delivered without packaging, or that use recyclable, reusable or returnable packaging.

7 Use lifecycle assessments to understand the environmental footprint of materials being used in construction. Lifecycle assessments will consider variables such as carbon emissions associated with manufacturing and transport, water consumption, and the use of primary resources as opposed to recycled material.

8 Consider off-site manufacturing techniques and methods to reduce demand for materials on site and subsequent waste materials.

9 Source materials locally as they should have fewer 'road miles' and a smaller carbon footprint.

10 Establish targets for the reuse and recycling of construction waste, and ensure sorting and disposal of waste. Monitoring should be in place to ensure waste is being properly sorted and disposed and that targets are being achieved on site.

Q2 How will the scheme allow for the sustainable management of waste?

◀ View your response to this question

Advice and Guidance

1 Provide well designed, safe and suitably located outdoor and kerbside waste storage facilities.

2 Provide a suitable private outdoor space to enable food growing and composting for residents.

3 Establish collective commercial reuse and recycling schemes.